Al- SAMBASY: Jurnal Kajian Pendidikan
Vol. 3 No. 1 November 2026, hal., 42-57
https://sagorvos.net/index.php/SAMBASY
e-ISSN: 3089-3844

AI-Curriculum-Delivery Towards Sustainable-Development-Goals Attainment in African-Tertiary-Education Challenges, Implications & Way Forward

Josephine Ese Konyeme
Department of Science Education, Faculty of Education, University of Delta, Agbor, Delta State, Nigeria

Samuel Ademu Awuja
Department of Educational Foundations, Faculty of Education, University of Delta, Agbor, Delta State, Nigeria
Email*: samuel.ademu@unidel.edu.ng

Abstract

The speedy advancement of Artificial Intelligence (AI) offers significant opportunities for transforming curriculum delivery and advancing sustainable development goals within African tertiary education. This article investigates the role of AI-adjusted curriculum delivery in enhancing quality, inclusive, relevant and future-oriented higher education while identifying the challenges and implications related to its adoption. The article employs a conceptual review method, drawing on relevant international and African literature on AI in education, curriculum transformation, sustainable development and higher education. The review shows that AI can improve personalized learning, instructional effectiveness, assessment, digital competencies, graduate employability and access to educational material. Nevertheless, inadequate digital infrastructure, limited AI competencies, funding constraints, ethical concerns, data-privacy issues, digital inequality and weak institutional policies remain significant obstacles to effective delivery in African tertiary institutions. The article argues that successful AI combination needs context-sensitive curriculum reform, lecturer capacity training, responsible AI governance, enhanced infrastructure and greater university–industry collaboration. It concludes that AI needs to be strategically integrated as a human-centered instrument for achieving educational quality and sustainable development rather than as a replacement for educators.

Keywords: AI-curriculum-delivery, sustainable-development-goals, attainment, African-tertiary-education, implications, way forward.

Introduction

The emergence of Artificial Intelligence (AI) has greatly altered the landscape of knowledge acquisition, teaching, learning, research and institutional administration around the world. Unlike earlier educational technologies that basically functioned as platform for information access and communication, contemporary AI systems are increasingly capable of generating content, analyzing complex information, personalizing learning experiences, assisting assessment and assisting decision-making. As a result, higher institutions are being forced to

reconsider traditional methods to curriculum development and delivery to get graduates ready for societies increasingly greatly shaped by automation, digitalization, data-driven decision-making and intelligent technologies. UNESCO has placed emphasis that the speedy development of AI gives both opportunities and risks for education and therefore needed the development of human-centered, ethical, inclusive and sustainable techniques to AI integration in educational systems (UNESCO, 2023a, 2024). Recent scholarship also shows that AI has the potential to transform higher education while simultaneously raising concerns about equity, academic integrity, privacy, bias, digital dependency and the dynamic roles of educators and learners (Tlili et al., 2023; Zawacki-Richter et al., 2019).

The increasing influence of AI equally coincides with the international commitment to attaining the United Nations Sustainable Development Goals (SDGs), specifically SDG 4, that seek to ensure inclusive and equitable quality education and enhance lifelong learning chance for all. Higher institutions of learning occupy a central position within the SDG framework as a resultbecause of that universities are not only responsible for imparting knowledge but also for generating research, updating human capital, encouraging innovation and proffering solutions to complex social, economic, technological and environmental challenges. The integration of sustainability into university curricula is therefore highly recognized as a significant mechanism for translating the SDGs from global policy aspirations into educational service. Leal Filho et al. (2021) claim that systematic integration of the SDGs into university curricula needs institutional, curricular, pedagogic and individual considerations. Further recent evidence points out although universities around the world continuously reference the SDGs, their incorporation into teaching and curriculum remains fragmented and, in several cases, superficial (Dutta et al., 2026). This condition makes curriculum transformation specifically significant in ensuring that graduates get not only disciplinary knowledge but equally the competencies needed to contribute meaningfully to sustainable development.

Within this context, AI-adjusted curriculum delivery could be understood as the deliberate adaptation of curriculum content, teaching methods, learning activities, assessment practices and educational materials through proper applications of AI to enhance learning outcomes and respond to emerging societal requirement needs. Such methods extend beyond simply introducing AI platforms into classrooms; rather, it includes rethinking what students have to learn, how knowledge needs to be acquired, how learning could be assessed and how graduates must apply their competencies to real-world developmental challenges. UNESCO's AI competency frameworks place emphasis on significance of developing critical understanding, ethical awareness, practical AI skills, human-centered values and the capacity to utilize AI responsibly (UNESCO, 2024). Thus, an AI-adjusted curriculum needs to balance technological competence with critical thinking, creativity, ethical reasoning,

collaboration, problem-solving and social responsibility. When properly designed, AI-assisted curriculum delivery has the capacity to facilitate personalized learning, enhance access to educational materials, assist teachers in instructional readiness and strengthen the alignment between academic programs and dynamic labor-market requirements.

The relevance of this transformation has become even highly pronounced in Africa, whereby higher education systems face the dual challenge of expanding access while enhancing quality, relevance, employability, innovation and developmental effect. African universities operate within contexts characterized by speedily growing youth populations, constrained infrastructure, unequal digital access, insufficient funding, skills shortages and persistent mismatches between university curricula and labor-market demands. UNESCO states that despite tertiary enrolment in Africa having multiplied substantially, access remains greatly below the global average while several young people gaining entrance into the labor market continue to have little or no skills needed for employment in emerging sectors. The organization consequently identifies curriculum modernization, stronger university relationship with industry and the development of future-oriented skills as significant components of African tertiary education transformation (UNESCO, 2024). Equally, the African Union's Continental Higher Education Strategy for Africa emphasizes on quality, relevance, innovation, science and technology and the development of competencies has the capacity to supporting sustainable developmental strategies all over the continent.

Despite these chances, the adoption of AI in African tertiary education cannot be removed from the structural and contextual problems confronting the continent's higher education systems. Limited technological infrastructure, unreliable electricity and internet connectivity, insufficient digital competencies among lecturers, financial constraints, inadequate institutional policies, data-privacy concerns and unequal access to emerging technologies can possibly restrict the effective utilization of AI in teaching learning processes. There is equally the danger that uncritical adoption of externally developed AI technologies can reproduce cultural, linguistic, economic and epistemological biases that capable inadequately reflect African realities. In Nigeria, for examples, existing literatures have enumerated persistent challenges including curriculum relevance, infrastructure, lecturer preparedness, funding and institutional capacity while emerging evidence points out that AI-driven digital transformation is constrained with gaps in digital skills, infrastructure and policy implementation (Joel & Mustapha, 2019; Wike, 2024). Recently Nigerian empirical studies nevertheless reveal that AI can assist personalized learning, accessibility, research productivity, decision-making and the advancement of SDGs when properly integrated into higher education institutions systems in Africa.

The challenge is not simply whether African tertiary education should therefore adopt AI, but how AI can possibly be strategically combined into curriculum delivery without undermining educational quality, human agency, equity, cultural relevance and the wider objectives of sustainable development goals. Existing studies has greatly examined AI usages in education, sustainable development in tertiary education and curriculum reform separately; however, there is a need for a more context-sensitive synthesis linking these three distinct dimensions within African tertiary education. In specifically, insufficient attention has been paid to how AI-adjusted curriculum delivery can possibly respond simultaneously to educational quality, graduate challenges employability, innovation, inclusion, sustainability and the institutional realities of African universities. Recent research findings in Nigeria demonstrate increasing scholarly interest in AI and tertiary education, involving its relationship with curriculum relevance and labour-market demands, but equally reveal continuing gaps in curriculum responsiveness, interdisciplinary integration, lecturer readiness and university partnership with industry (Angwaomaodoko et al., 2026; Ogunode & Ukozor, 2023). This gap offers a strong justification for current study examining AI-adjusted curriculum delivery not merely as a technological innovation but as a potential instrument for educational and developmental transformation in African nations.

Against this backdrop, this article examines Artificial Intelligence-Adjusted Curriculum Delivery and Sustainable Development in Africa, with specific attention to the challenges, implications and prospects for African tertiary education. The article claims that the effective usage of AI in African tertiary education needs a shift from technology-centered adoption towards context-responsive, human-centered, ethically governed and sustainability-oriented curriculum transformation. Such transformation must involve curriculum redesign, lecturer capacity training, enhanced digital infrastructure, responsible AI governance, stronger university partnerships with industry, locally relevant digital content and assessment methods that lay emphasis on higher-order thinking and authentic problem-solving. The article therefore seeks to contribute to the emerging discourse on how African tertiary institutions can possibly leverage AI to strengthen educational quality and relevance to advance the SDGs. Ultimately, the successful integration of AI into curriculum modernization delivery should be measured not only by the quantity of AI tools introduced into African universities, but also by extent to which such integration enhances learning, expands inclusion, develops relevant competencies, assists innovation and prepares graduates to address Africa's persistent complex and sustainable-development challenges.

2.0 Literature Review

Artificial Intelligence (AI) has recently increasingly become an imperative subject of discourse within contemporary educational research settings, especially in relation to the transformation of teaching, learning, assessment and institutional decision-making. Existing literature reports AI as a wide collection of computational technologies capable of performing tasks that traditionally need aspects of human intelligence, including prediction, language processing, pattern recognition, content generation and adaptive decision-making. In African tertiary education, these capabilities have been used via intelligent tutoring systems, learning analytics, automated assessment, recommendation systems, conversational agents and generative AI. Zawacki-Richter et al. (2019), in a systematic research review of AI usage in tertiary education, identified four wide areas of operation: profiling and prediction, assessment and evaluation, adaptive systems and personalization and intelligent tutoring systems. More recent studies have reported that the emergence of generative AI has expanded this landscape through bringing new possibilities for content creation, personalized learning, research assistance and instructional support. Nevertheless, the literature stresses that technological capability only does not promise educational enhancement; successful delivery depends on pedagogical design, institutional preparedness, educator competence and proper governance.

The main theme emerging from the literature about the capacity of AI to assist personalized and student-centered learning. Conventional higher education systems continuously operate via standardized curriculum structures whereby students receive similar content, instructional activities and assessment experiences apart from differences in learning pace, previous knowledge, abilities and educational requirements. AI-enabled adaptive learning systems offer an opportunity to respond to such likely differences by analyzing learner data through adjustment of instructional content and recommendations of such accordingly. Recently, systematic research evidence revealed that personalized learning is one of the dominant findings of in research connecting AI, higher education plus sustainability. AI can potentially identify learning challenges, recommend relevant materials, offer immediate feedback and help institutions in pointing out students who may possibly require additional help. These capabilities are specifically relevant to SDG 4 because they greatly contribute to enhancing educational quality plus inclusiveness. However, personalization similarly raises problems regarding surveillance, student-data protection, algorithmic bias and excessive usage on automated systems. Hence, the educational usefulness of AI-assisted personalization ultimately solely rests on whether technological adaptation is followed by better pedagogical and quality ethical practices.

Curriculum modernization represents another significant dimension of the AI–in education discourse. The speedy evolution of AI automation has shifted the

competencies demanded by present workplaces, thereby creating pressures on universities to reconsider whether existing curricula in use adequately prepare graduates for emerging professional environments. Literature continuously advocates curricula that combine digital literacy, computational thinking, data literacy, AI-literacy, critical thinking, creativity, communication, ethical high-quality reasoning and problem-solving. AI-adjusted curriculum delivery result involves more than bringing an isolated course on artificial intelligence into an already existing program. It needs a wider reconsideration of curriculum content, instructional methods, assessment modes, learning resources and graduate competencies. Recently research on AI and sustainable higher education reports that curriculum integration and pedagogical innovation as central dimensions of AI-empowered institutional reform. Similarly, African scholarship showcases the growing need to align university programs with technological and industrial developments. In this case, curriculum adjustment needs to be understood as a continuous process in which universities should respond to technological change while maintaining the social, ethical, cultural and developmental purposes of higher education.

The relationship between AI and sustainable development has equally gotten increasing scholarly attention. Higher education institutions in Africa nations significant are recognized as important actors in attaining the Sustainable Development Goals because they impart knowledge, develop human capital, carry out research, support innovation and affect social and economic development. Serafini et al. (2022) established that SDG implementation within Africa higher education encompasses teaching, research, outreach, governance and institutional operations, implying that sustainability cannot be attained via isolated curriculum initiatives alone. More recently reviews of literature have similarly reported that SDG integration across universities still remains fragmented, with several institutions struggling to shift from symbolic commitment towards systematic implementation. AI prompts an additional novel dimension to this discussion because it has the capacity to potentially assist resource optimization, personalized learning, accessibility, institutional analytics, modernizing research productivity and decision-making. Nevertheless, the relationship is not inherently positive: AI itself needs energy, infrastructure, data and substantial computational resources capable of reproducing social inequalities when access to its profitability is uneven. To the effects, literature supports a more critical interpretation whereby AI needs to be evaluated according to its actual contribution to educational, social, economic and environmental sustainability rather than being handled as inherently sustainable.

SDG 4 offers a specifically important framework for investigating AI-adjusted curriculum delivery due to the fact that it focuses on inclusive and equitable quality education and lifelong learning opportunities. Recent systematic evidence reports that AI is capable of contributing to SDG 4 using personalized learning, predictive

analytics, adaptive educational systems, accessibility platforms and flexible learning environments. AI could equally contribute indirectly to SDG 10 by assisting learners who have historically experienced constructions to educational participation. At any rate, the literature reports that the same technologies can intensify inequality when students have no equal access to reliable internet connectivity, digital tools, quality data, plus AI literacy. This is particularly significant in developing and low-resource contexts, where technological infrastructure substantially weakens high-income educational systems. Thus, AI-adjusted curriculum delivery needed to be guided by an equity principle: technological innovation should expand educational opportunities rather than create new forms of exclusion. The achievement of SDG 4 via AI right now depends not simply on adoption but also on accessibility, affordability, inclusiveness, quality assurance and responsible adjustment curriculum delivery.

The African higher education context introduces additional considerations into the AI and curriculum debate. African universities face great challenges including infrastructure, funding, digital connectivity, human capacity, research modernization capacity and unequal access to emerging technologies. Falebita and Kok (2024) state that AI is greatly being integrated into African higher education, especially within STEM education, but emphasis the significance of strategic goals of institutional readiness for effective adoption. A wider review of AI link to sustainable development in Africa similarly points out infrastructural limitations, poor socioeconomic conditions, human-capital constraints and governance challenges as factors affecting the continent's capacity to transmit AI potential into sustainable results. These conditions signal that models of AI acceptance developed basically in technologically advanced nations cannot simply be put into usage in African universities without contextual adaptation. AI-adjusted curriculum delivery in Africa should therefore account for local realities, involving language, culture, institutional materials, connectivity, lecturer competencies, student circumstances and national development plan.

The Nigerian tertiary education offers provides a particularly relevant case for assessing these issues. Emerging Nigerian literature reports that AI adoption is expanding allover universities, but its implementation is accompanied by great infrastructural, pedagogical, ethical and institutional problems. Bali et al. (2024), in their analysis of emerging AI trends in Nigerian higher education, demonstrate the increasing relevance of AI to the country's educational transformation while highlighting the need for proper implementation approaches. Similarly, recent research report on Nigerian higher education reports that AI could enhance accessibility, productivity, personalized learning, research activities, decision-making and global citizenship, but that institutions continue to face problem including inadequate digital literacy, limited resources, privacy, cyber security and ethical

challenges. Research output specifically examining curriculum relevance in the age of AI further points out that Nigerian universities should reconsider the degree to which existing programs reflect the competencies required by AI-influenced labor markets. These findings show that the Nigerian handicap is not only technological adoption but equally the wider question of whether African higher education curricula are adequately responsive to technological plus socioeconomic transformation.

Another main challenge identified in the literature is the readiness of educators to combine AI effectively into curriculum delivery. The introduction of AI has brought changes to the role of lecturers from being basically transmitters of information towards becoming facilitators of learning, critical-thinking developers, learning designers, mentors and ethical guides. Inadequate AI literacy among academia can limit the educational benefits of AI regardless of the availability of technological infrastructure. Recent Nigerian research evidence indicates limited digital and AI literacy among educators as a persistent obstruction to effective implementation while studies of AI adoption among Nigerian university academia also raise challenges about academic integrity, student over dependence and potential reductions in critical thinking. Likewise international research reports emphasize that educators need proper professional development to understand not only how AI instruments operate but equally when, why and under what ethical conditions they need to be used. The literature therefore put forward that curriculum reform should be followed by lecturer capacity development; otherwise, AI could simply be added to existing teaching practices without producing meaningful pedagogical reform.

Ethical governance comprises a further theme running via literature on AI in higher education. The increasing application of AI-generated content, automated decision-making, student analytics and personalized systems bring about regarding privacy, data protection, algorithmic bias, intellectual property, transparency, academic integrity and human agency. UNESCO (2023, 2024) consequently advocates a human-centred method that places emphasis on ethical considerations and human rights at the center of AI design and educational application. Recent systematic reviews also identify governance and policy as main challenges to sustainable AI implementation in African higher education. Nigerian scholarship affirms this statement, identifying the absence of detail regulatory frameworks, data privacy, algorithmic bias, intellectual property and institutional capacity as significant barriers to responsible AI adoption. The implication is that curriculum adjustment alone cannot be detached from institutional governance. Universities should clear policies defining acceptable AI utilization, assessment expectations, data protection requirements, academic-integrity standards and the responsibilities of students and academia. Without such governance, speedy AI adoption may possibly produce inconsistent services gearing towards unintended educational outcomes.

Altogether, the literature reveals that AI possesses considerable high potential to reshape curriculum delivery, enhancement educational quality, assist personalized learning, improve institutional efficacy and uniquely contribute to selected Sustainable Development Goals. Nevertheless, the literature similarly reveals a great tension between technological potential and contextual delivery. International recent research has established relatively firm evidence about AI's usages in personalization, accessibility, prediction, assessment and educational management while African literatures greatly document the opportunities and constraints linked with implementation in resource-constrained contexts. What remains as it is comparatively underdeveloped is combination is, context-sensitive framework that champion the link among AI-adjusted curriculum delivery, sustainable development and the structural realities of African tertiary education. Almost all the existing literature greatly considers AI adoption, sustainability, curriculum reform in African, or higher education challenges as separate matter rather than assessing their intersection as a unified transformation agenda. This gap offers the basis for the current article, seeking to conceptualize AI-adjusted curriculum delivery as a strategic pathway for advancing sustainable relevant African tertiary education while simultaneously addressing infrastructure, human capacity, ethical governance, equity, curriculum relevance and institutional preparedness. Recent systematic literature reviews support the actual need for such move for an integrated perspective by identifying pedagogical, policy, governance, infrastructure and equity challenges as interconnected determinants of whether AI is capable genuinely contribute to sustainable African higher education.

3.0 Study Objectives

The broad objective of this article is to assess the capacity of Artificial Intelligence (AI)-adjusted curriculum delivery as a strategic technique to advancing sustainable development within African tertiary education, irrespective locations with particular attention to the challenges, implications and prospects connected with its adoption.

Specifically, the article seeks to:

1. Examine the role of Artificial Intelligence in transforming curriculum delivery with pedagogical practices within African tertiary education.
2. Assess the degree to which AI-adjusted curriculum delivery contributes to the achievement of relevant Sustainable Development Goals (SDGs), especially SDG 4 on quality education.
3. Identify the main infrastructural, technological, pedagogical, institutional, ethical and human-capacity challenges influencing the integration of AI into curriculum delivery in African tertiary education.

4. Examine the implications of AI-driven curriculum adjustment for lecturers, students, curriculum designers, institutional management and other stakeholders in African higher education.
5. Explore the extent to which AI-adjusted curricula can improve graduate competencies, employability, innovation, digital literacy, critical thinking and readiness for emerging labor-market demands.
6. Examine the ethical, social, cultural and equity considerations connected with the adoption of AI in curriculum development and delivery within the African tertiary education context.
7. Propose context-sensitive strategies and a sustainable framework for combining AI into curriculum delivery in manners that are inclusive, ethical, culturally relevant and responsive to Africa's educational and developmental needs.
8. Offer recommendations for policymakers, tertiary institutions, curriculum developers and educators on strengthening AI readiness and leveraging AI to assist sustainable transformation of African higher education.

Appraisal of analytical direction

The objectives are deliberately arranged to move from examination → assessment → challenges → implications → opportunities → ethical considerations → framework → recommendations. This gives the article a logical scholarly progression and which makes it easier for the later sections—particularly the discussion, proposed framework and way forward—to directly respond to the objectives.

3.0 Problem Statement

Despite the increasing adoption of Artificial Intelligence (AI) and the growing worldwide emphasis on attaining the Sustainable Development Goals (SDGs), curriculum delivery across several African tertiary institutions remains highly constrained by traditional teaching methods, inadequate digital infrastructure, limited AI competencies among lecturers and students, insufficient funding, weak institutional support and curricula that do not always sufficiently reflect ever-changing technological and labor-market demands. This situation brings about a significant gap between the capabilities offered by emerging AI technologies and the capacity of African tertiary education systems to utilize them for enhancing educational quality, relevance, accessibility, innovation, reform and sustainable development. Additionally, the uncritical combination of AI leads to additional challenges relating to academic integrity, data privacy, algorithmic bias, digital inequality, cultural relevance and overdependence on automated systems. As a result, while AI can generate considerable opportunities for transforming curriculum delivery and assisting SDG attainment, specifically SDG 4 on quality education, its

benefits could remain limited or even deepen existing inequalities if implementation delivery is not appropriately contextualized to African current realities. The major problem, therefore, is the absence of a sufficiently coordinated, inclusive, ethical and context-responsive method to integrating AI into adjusted curriculum delivery in African tertiary education. This necessitates a critical assessment of the challenges and implications of AI-adjusted curriculum delivery and the development of practical strategies whereby African tertiary institutions can harness AI to enhance sustainable, equitable and future-oriented education.

4.0 Discussion

The research from the reviewed literature clearly shows that Artificial Intelligence (AI)-adjusted curriculum delivery represents a great opportunity for transforming African tertiary education from largely traditional and content-centered methods towards more carefully adaptive, learner-centered, competency-based and technology-responsive models. AI has the capacity to facilitate personalized learning, automated and formative feedback, intelligent content recommendation, learning analytics and enhanced access to educational resources. However, its educational usefulness depends largely on how deliberately it is integrated into African curriculum and pedagogy. Simply merging generative AI tools into existing classrooms without reconsidering curriculum objectives, instructional mode, assessment techniques and graduate competencies could produce limited transformation. The implication is that African tertiary education needs to regard AI not merely as an instructional technology but as a catalyst for curriculum restructuring. Such restructuring must emphasize higher-order thinking, creativity, digital and AI literacy, problem-solving, collaboration, ethical reasoning and the capacity to apply knowledge to real-world developmental challenges. This position is in line with the wider literature reviewed which claims that effective AI integration needs pedagogical and institutional transformation rather than technological adoption singly.

Further discussion points out that AI-adjusted curriculum delivery can uniquely contribute to the Sustainable Development Goals, especially SDG 4, by offering opportunities for more inclusive, flexible, accessible and personalized higher education in Africa. AI-assisted learning environments could potentially support students with different learning needs, offer immediate feedback, facilitate access to learning materials and support lecturers in identifying students who need additional academic effort. These possibilities are specifically relevant to African tertiary education systems where large student populations assemble in small halls and limited academic resources can place heavy pressure on professors and institutions. However, AI need not be presented as an automatic solution to African educational inequality. Unequal access to digital tools, reliable electricity, affordable internet

connectivity, AI-enabled platforms and relevant digital skills could result in a widening rather than narrowing of educational disparities. Hence, the contribution of AI to sustainable development goals largely depends on whether its delivery is guided by principles of inclusion, affordability, accessibility, equity and responsible innovation. For African universities, education attaining the developmental benefits of AI would consequently need investment in digital infrastructure alongside curriculum reform.

A critical concern emerging from the discussion so far is the preparedness of the African tertiary education landscape and their academic staff to manage AI-driven educational transformation. Inadequate infrastructure, limited institutional funding, insufficient educators training, weak digital competencies and the absence of comprehensive AI policies can significantly restrict effective implementation. In addition, ethical challenges surrounding academic integrity, plagiarism, issues of assessment authenticity, data privacy, algorithmic bias, intellectual property and student overdependence need deliberate institutional responses. This means that professional development for educators should extend beyond primary technical training to involve AI pedagogy, ethical AI use, application, assessment redesign, data protection and critical evaluation of AI-generated information. African tertiary universities should also, as a matter of urgency, establish clear guidelines governing acceptable and unacceptable uses of AI by both students and academic staff. Rather than trying to prohibit AI completely, institutions need to develop assessment formats that reward critical analysis, originality, practical application, reflection and demonstrable understanding. Such an attempt would enable AI to function as a support mechanism while preserving human agency and the fundamental educational purposes of higher education.

Ultimately, the successful implementation of AI-adjusted curriculum delivery in Africa needs a context-sensitive and sustainability-oriented approach. African tertiary institutions should shift from simply importing AI-driven educational models developed in technologically advanced nations without adapting them to local socioeconomic, cultural, linguistic, infrastructural and educational realities. A sustainable mode should combine curriculum redesign, lecturer capacity development, building enhanced infrastructure, ethical governance, locally relevant AI applications, university–industry partnerships and continuous monitoring of educational learning outcomes. Governments and regulatory agencies also have a significant role in establishing policies that enhance responsible AI adoption while fostering investment in research, innovation, digital infrastructure and affordable connectivity. The central implication of the discussion is therefore that AI should serve as an instrument for strengthening human capability rather than replacing the human foundations of education. When strategically and ethically integrated, AI-adjusted curriculum delivery would help African tertiary institutions produce graduates who are technologically competent, innovative, ethically responsible,

adaptable and capable of contributing to the attainment of sustainable development objectives. The transformation needs to consequently be judged not justified not equally by the quantity of AI technologies adopted, but by their attainable contribution to educational quality, equity, relevance, graduate competence and sustainable development across educational development in all part of African societies.

5.0 Conclusion

Contextual discussion emerging from review: Artificial Intelligence-adjusted curriculum delivery presents a significant opportunity for transforming African tertiary education towards greater relevance, inclusiveness, innovation and sustainability. Nevertheless, its success solely depends on addressing current infrastructural, human-capacity, ethical, financial and institutional challenges. AI should therefore be integrated as a human-centered and context-responsive educational implement, rather than as a replacement for educators and traditional educational usefulness.

6.0 Summary

This article examined the key role of AI-adjusted curriculum delivery in advancing sustainable development within African tertiary education. The review has seriously established that AI is capable of improving personalized learning, curriculum relevance, accessibility, assessment, digital competencies and graduate employability while contributing specifically to SDG 4. Notwithstanding, inadequate infrastructure, limited AI literacy, insufficient funding constraints, ethical challenges, digital inequality and weak institutional policies remain major barriers. The article consequently emphasizes the urgent need for coordinated curriculum reform, capacity development, responsible governance and sustainable investment to ensure that AI contributes to the transformation of African higher education.

7.0 Suggestions/Recommendations

1. Curriculum redesign: African tertiary education needs to regularly review and redesign curricula to add AI literacy, digital competencies, critical thinking, creativity, problem-solving, ethics and sustainability-oriented competencies.
2. Lecturer capacity development: The management of universities should establish continuous professional-development training programs to prepare lecturers with practical AI skills, AI pedagogy, ethical awareness and innovative assessment strategies.
3. Investment in digital infrastructure: Governments and institutions, as a matter of urgency, should prioritize reliable electricity, (not eclectic type) affordable

internet connectivity, digital tools, computing facilities and other infrastructure required for equitable AI adoption.

4. Development of AI governance policies: Tertiary institutions need to establish clear-cut policies addressing academic integrity, data privacy, intellectual property, algorithmic bias, responsible AI operation and acceptable utilization of generative AI.
5. Promotion of equitable access: AI-enabled educational resources must be made accessible and affordable to students and staff from disadvantaged backgrounds to prevent technological innovation from adding to existing educational inequalities in African tertiary education.
6. Strengthening university–industry partnerships: Universities can collaborate with technology companies, industries, research institutions and professional organizations to ensure that curricula remain fixed and aligned with emerging labor-market demands.
7. Development of locally relevant AI solutions: African tertiary education should foster research and development of AI applications capable of reflecting African languages, cultures, socioeconomic realities, educational needs and developmental priorities.
8. **Integration of SDGs across programs:** Institutions should deliberately integrate AI related curriculum reforms with relevant SDGs, specifically SDG 4 while similarly addressing employment, innovation, inequality, gender, economic growth and other development priorities.
9. **Continuous evaluation:** Universities experts should establish mechanisms for monitoring and evaluating the educational, ethical, social and developmental outcomes of AI integration rather than measuring success alone by the number of AI technologies adopted.
10. **Government and institutional commitment:** African governments, regulatory agencies and university management need to offer sustainable funding, policy support, research grants and institutional frameworks imperative for responsible and long-term AI-driven transformation of tertiary education.

References

Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? *Proceedings of the 2021 ACM Conference on Fairness, Accountability and Transparency*, 610–623. https://doi.org/10.1145/3442188.3445922

Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2024). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International, 61*(2), 228–239. https://doi.org/10.1080/14703297.2023.2190148

Dutta, D., Moganti, L. K., & Kundu, D. (2026). Integrating sustainable development goals in higher education: A review and framework. *International Journal of*

Educational Development, 122, 103535. https://doi.org/10.1016/j.ijedudev.2026.103535

Ifenthaler, D., Majumdar, R., & Gorissen, P. (2024). Artificial intelligence in education: Implications for policymakers, researchers and practitioners. *Technology, Knowledge and Learning, 29*, 1693–1710. https://doi.org/10.1007/s10758-024-09747-0

Leal Filho, W., Frankenberger, F., Salvia, A. L., Azeiteiro, U., Alves, F., Castro, P., Will, M., Platje, J., Orlovic Lovren, V., Brandli, L., Price, E., Doni, F., Mifsud, M., & Ávila, L. V. (2021). A framework for the implementation of the Sustainable Development Goals in university programs. *Journal of Cleaner Production, 299*, 126915. https://doi.org/10.1016/j.jclepro.2021.126915

Miao, F., & Holmes, W. (2023). *Guidance for generative AI in education and research*. UNESCO.

Miao, F., & Cukurova, M. (2024). *AI competency framework for teachers*. UNESCO.

Miao, F., Shiohira, K., & Lao, N. (2024). *AI competency framework for students*. UNESCO.

Pisica, A. I., Edu, T., Zaharia, R. M., & Zaharia, R. (2023). Implementing artificial intelligence in higher education: Pros and cons from the perspectives of academics. *Societies, 13*(5), 118. https://doi.org/10.3390/soc13050118

Serafini, P. G., de Moura, J. M., de Almeida, M. R., & de Rezende, J. F. D. (2022). Sustainable Development Goals in higher education institutions: A systematic literature review. *Journal of Cleaner Production, 370*, 133473. https://doi.org/10.1016/j.jclepro.2022.133473

Tlili, A., Shehata, B., Adarkwah, M. A., Bozkurt, A., Hickey, D. T., Huang, R., & Agyemang, B. (2023). What if the devil is my guardian angel: ChatGPT as a case study of using chatbots in education. *Smart Learning Environments, 10*, 15. https://doi.org/10.1186/s40561-023-00237-x

Watermeyer, R., Phipps, L., Lanclos, D., & Knight, C. (2024). Generative AI and the automating of academia. *Postdigital Science and Education, 6*(2), 446–466. https://doi.org/10.1007/s42438-023-00440-6

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education—Where are the educators? *International Journal of Educational Technology in Higher Education, 16*, 39. https://doi.org/10.1186/s41239-019-0171-0

African Union Commission. (2016). *Continental Education Strategy for Africa 2016–2025 (CESA 16–25)*. African Union.

Bali, B., Garba, E. J., Ahmadu, A. S., Takwate, K. T., et al. (2024). Analysis of emerging trends in artificial intelligence for education in Nigeria. *Discover Artificial Intelligence, 4*, 110. https://doi.org/10.1007/s44163-024-00163-y

Falebita, O. S., & Kok, P. J. (2024). Strategic goals for artificial intelligence integration among STEM academics and undergraduates in African higher education: A systematic review. *Discover Education, 3*, 151. https://doi.org/10.1007/s44217-024-00252-1

Ogunode, N. J., & Ukozor, C. U. (2023). Curriculum revolution in higher education: The mighty role of artificial intelligence. *Indonesian Journal of Innovation Studies, 24*. https://doi.org/10.21070/ijins.v25i.971

Olatunde-Aiyedun, T. G. (2024). Artificial intelligence (AI) in education: Integration of AI into science education curriculum in Nigerian universities. *International Journal of Artificial Intelligence for Digital, 1*(1).

Schoon, A., Smit, A., Uzuegbunam, C. E., & Bosch, T. (2025). Adoption and perceptions of generative AI among South African academics. *Teaching in Higher Education, 31*(2), 248–265. https://doi.org/10.1080/13562517.2025.2571911

Angwaomaodoko, E. A., Yunusa, E., & Abalaka, F. F. (2026). Higher education in the age of artificial intelligence: An empirical review of curriculum relevance and labour demands in Nigeria. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.7158278