

ARTIFICIAL INTELLIGENCE AND SUSTAINABLE STUDENTS' SERVICES DELIVERY IN HIGHER INSTITUTIONS IN NIGERIA

EDE GILBERT ONYEMACHI (PhD)

gloriousdawn.4u@ gmail.com
07039702230

DEPARTMENT OF EDUCATIONAL MANAGEMENT
FEDERAL COLLEGE OF EDUCATION, OBUDU, CROSS RIVER STATE

&

ABUGIEYE DORINDA UBELOKA

07060410508
Dorindarlin@gmail.com
Department of Educational Management
FCE Obudu.

Abstract

The emergence of Artificial Intelligence (AI) as a technology-driven tool that can perform human tasks has brought strategic changes in all aspect of human development and more profoundly in the educational sector. This study provides an overview of the potentials of integrating artificial intelligence for sustainable students' service delivery in higher institutions of learning in Nigeria. Students' services being a grey area of educational programme need innovative approaches as artificial intelligence to address some of such basic challenges. For instance the scare resources available for educational development has created a yearning gap in students' needs visa-vise the resources available for students' sustainable service delivery. Consequently, there is need for innovations for equity and easy access in the distribution of available academic resources through technology driven tools of artificial intelligence for the sustenance of student services. A technologically- driven practices of artificial intelligence such as the Learning Management Systems(LMS), Digital Management Tools(DMT), AI powered study supports including Online collaboration tools can provide students with sustainable services with a mere click of a button in real time. For an institution to provide a sustainable students service that is equitable, efficient, and of high-quality, on long-term without compromising future capacity and efficiency, artificial intelligence is needed to provide such support and services in a way that meets global practices. Despite these advantages, the implementation of AI in student services is associated with several challenges, including concerns about data privacy and security, limited technological infrastructure, inadequate digital skills among staff and students as well as issues related to digital divide. These challenges may limit the effective adoption of AI, particularly in developing countries as Nigeria. However, it is expected that with adequate planning and investment from individuals and governments, such challenges can be easily be addressed.

Keywords: Artificial intelligence, sustainable service, students' service delivery.

Introduction

This paper examines the role of Artificial Intelligence (AI) in improving student services in tertiary institutions in Nigeria. Student services amongst others includes: students' academic advising, registration and records management, library services, counseling, financial aid, and career guidance. These students' services play a vital role in supporting students' academic success and overall development. However, the growing population of students and increasing administrative

demands has created the need for more efficient and innovative service delivery systems in students' services. Artificial Intelligence therefore, offers new opportunities for enhancing student services through the use of technologies such as chatbots, machine learning, predictive analytics, and intelligent information systems (Anani, Nyamekye, & Bafour-Koduah, 2025). These tools can help automate administrative tasks, provide real-time responses to students' inquiries, personalize academic support, and improve institutional decision-making through data analysis. Anani et al (2025) believe that AI-powered systems can also assist in identifying students who may be at risk of academic difficulties, thereby enabling early intervention and improved academic outcomes. This paper highlights the applications of artificial intelligence and students services, benefits, and potential challenges in the context of modern higher education in Nigeria.

Though artificial intelligence has the potential to significantly enhance the efficiency and effectiveness of student service delivery in tertiary institutions, its successful implementation requires proper planning, investment in technological infrastructure, staff training, and the development of policies that promote ethical and responsible use of technology in education. Such challenges are highlighted in the course of this paper.

Definition of concepts

Sustainable students' service delivery

Sustainable service delivery refers to the ability of schools, colleges, and universities to provide equitable, efficient, high-quality, and long-term educational services that meet present needs without compromising future capacity. According to Williamson, & Eynon, (2020) a consistent, efficient and long term provision of students support services is a way that meets current students' needs without reducing the ability of future students to receive the same quality support. Students' services can therefore only be sustainable when such services show continuity and are reliable and available over time. Such services will not be dependent on temporary funding or on individuals. There has to be evidence of efficiency in resource allocation and use, avoiding waste. In addition there has to be evidence of equity and accessibility to students with disability or disadvantaged background. Such services have to address possible changes in enrollment, technology advancement or emergencies.

However, student services in tertiary institutions traditionally revolves around; academic advising, admission and registration support, counseling services, library services, financial aid management, and career guidance amongst others. Now the need for artificial intelligence arises due to the growing population of students, increasing administrative workload, and the demand for efficient service delivery (Ezeoguine, & Eteng-Uket, 2024) It is on this note that Artificial Intelligence (AI) has thus emerged as one of the most transformative technologies of the 21st century, influencing different sectors of society including education. In tertiary institutions, the integration of artificial intelligence into student services is gradually reshaping how universities and colleges provide academic, administrative, and welfare support to students.

Artificial intelligence

Artificial intelligence refers to the ability of computer systems to perform tasks that normally require human intelligence, such as learning, reasoning, problem-solving, decision-making, and language understanding. Artificial intelligence is a branch of computer science that focuses on creating machines and soft wares that can think, learn and make decisions in ways that require human intelligence Basha, Gull, & Alquqa, (2025). Computer tools such as machine learning, chatbots, predictive analytics, and intelligent data systems, are AI tools with the capacity to automate routine administrative processes and provide personalized support to students. In tertiary institutions, AI-powered platforms are increasingly being used to enhance student engagement, streamline academic administration, and improve the overall quality of student services. Artificial Intelligence

Aspects of students' service delivery

Students' services are categorized chain of school programmes or activities aimed at providing students with the basic and complementary needs to make students learn. One of such

activities is academic advising. Segovia-García (2024) defined academic advising as a structured support service in which advisors help students plan their studies, make informed academic decisions and achieve educational and career goals. Bearman, Ryan, & Ajjawi (2023) identified counseling and mental health support as an important aspect of students' support which is health services for students' emotional, psychological and social well-being, helping students cope with academic pressure, personal challenges and life transitions. Important areas of health and mental counseling services include understanding feeling and behaviours, developing coping skills and making positive decisions.

Another aspect of students' services is course registration and records. Registration and records services are core administrative student services responsible for admitting students, registering courses and managing academic records throughout a student's study duration which keeps the student in touch with the school programme of events. Alade & Afuwape, (2024) described students registration and record services as the process of systematic collection, storage and management of student information such as; personal data, course registrations, grades and transcripts and enrolment and graduation status. The key functions of registration and records include; students admission and enrolment, course registration, academics records management, verification and documentation and graduation and processing. In view of advent of technology, digital registration and records systems in modern institutions have created opportunity for; online registration portals, student information system (SIS) and cloud based record storage. The benefits are enormous including; faster service delivery, reduced paperwork and improved accuracy and transparency.

A crucial aspect of student services is financial aid and scholarship services. They are student support services designed to reduce the financial burden of education and ensure that qualified students can access, continue and complete their studies regardless of economic background. The financial aid can come in form of scholarship. According to Mashilo, & Shekgola, (2024) scholarships such as student service are merit-based services on academic excellence, talent hunt and leadership capability. They also mentioned special scholarships based on gender, disability or field of study; such services come in form of bursaries and grants, student loans, fee accounts and waivers. This category of student services promotes equity and access to education. It as well reduces dropouts' rates due to financial hardship. Modern institutions use technology to manage online scholarships, automate eligibility screening and track disbursement and utilization of funds. The benefits among others include; transparency, efficiency and faster service delivery.

Central to students' service programme is the library and learning support. Library services according to Wang, Rashid, & Lu, (2026) are learning support services that provide students with learning resources, research assistance and skill development support to enhance academic success. The components of library services are print resources as textbooks, journals reference materials. It also includes e-libraries as e- books and e- journals, online data bases and institutional repositories. There are also information literacy support to help train students on research skills, citation and referencing guidance and on how to avoid plagiarism.

Artificial intelligence and sustainable students' service delivery

Integration of artificial intelligence for sustainable students' service delivery is the process of domesticating artificial intelligence in addressing students' needs. Artificial intelligence (AI) as a technology- driven practice for students' services is to deploy digital systems to enhance students' optimum access to facilities that sustain their interest in learning and other broader academic programmes. The process involves the use of intelligent systems capable of learning, reasoning, and decision-making to address on a consistent basis students' every day academic and social needs for academic excellence. Integration of Artificial intelligence into education according to Baker & Inventado, (2014) supports academic sustainability as it optimizes resources, enhance access, and improve learning outcomes for students learning and school

administrative effectiveness. Artificial Intelligence (AI) therefore, is observed to playing increasingly important role in improving sustainable service delivery for students within educational institutions.

The application of AI in student services offers several benefits. For instance (Luckin, Holmes, Griffiths, & Forcier, 2016) have noted that it enables institutions to provide real-time responses to student inquiries through virtual assistants and chatbots, improve academic advising through data-driven recommendations, and enhance early identification of students at risk of academic failure or dropping out. AI can also support mental health services by providing digital counseling platforms, facilitate efficient course registration systems, and improve access to digital libraries and learning resources (Luckin, Holmes, Griffiths, & Forcier, 2016).

Artificial intelligence have as important feature; instructional content of learning materials used to support teaching and learning. Such learning materials include; textbooks, lecture note and slides. Zawacki-Richter, Marin, , Bond, & Gouverneur, (2019) enumerated several other learning tools ai provides as students' support including ; videos and animations, quizzes and assessments including simulations and interactive AI-driven platforms which adapt instructional content to provide students with the privilege of personalized learning paths which helps students to work at their learning pace, abilities, and interests. Ai improves instructional content by adapting to student ability. Students working according to their abilities reduce dropout rates, support inclusive education and promote long-term academic success. Inclusive learning is supported through caption and language support. The educational importance being its support for large population of students and this can reduce academic stress through guided and flexible learning.

Artificial intelligence feature of using learning analytics to track progress in academic programmes help students and student counsellors adjust appropriately when slack is observed in performance. This is in view of the automatic feedback and grading provided in real time. The system provides virtual tutors or chatbots for student support and recommends learning content based on learner needs and resources based on learning gaps. The system converts content into multiple formats (texts, audio and videos at the same time providing real time feedback to learners (Johnston, Wells, Shanks, Boey, & Parsons, (2024). Another benefit of is its efficient academic administration when AI automates routine services such as course registration, timetable scheduling, grading support, and academic advising. The process improves efficiency, reduces delays, and ensures continuity of services. Artificial intelligence also plays significant role in academic administration involving; student admission and registration, course scheduling and timetabling including records and result processing. It also involves examination management, academic advising and monitoring and staff workload and deployment. The feature brings about fast service delivery in students admissions with improved student satisfaction on sustainable basis.

There are other digital student support systems through AI chatbots and virtual assistants which can provide 24/7 access to information on admissions, financial aid, academic requirements, and counseling referrals, enhancing service accessibility and reliability. It helps students through online academic advising, study resources and tutorials including progress tracking. Administratively, artificial intelligence provides online registration and course enrollment, results and transcript access and fee payment and clearance system. According to Holmes, Bialik, , & Fadel, (2019) through AI, the counseling and welfare support for students can come in form of virtual counseling sessions and mental health platforms. Such services are vital for career and employability support. There are career guidance portals, internship and job alerts and CV and job alerts. The system contains email and notification systems, chatbots for quick responses and student portals and mobile apps. Furthermore on advising and guidance, AI uses chatbots answer routine questions as courses, deadlines. This feature reduces students stress and long waiting times, thereby enhancing student satisfaction and engagement as it supports student large student population.

The AI data-driven decision making process when enabled analyzes student data to predict learning challenges. The system Identify at-risk students, and inform early intervention strategies, thereby promoting sustainable academic progression. Peterson (2025) on this note believes that there is resource optimization through predictive analytics of artificial intelligence as it helps institutions manage classrooms, libraries, energy use, and digital infrastructure more efficiently, supporting environmental and economic sustainability..

On other areas of administrative services, Ai provides automatic admissions screening and course registration with faster processing records, fees and transcripts for students. The system according to Mashilo & Shekgola (2024) cares further for students' wellbeing, by detecting stress, disengagement patterns, referrals to counseling or support resources ethically and privately. On career and employability, Roll, & Wylie (2016) noted that the system can provide skill gap analysis and internship matching for institutions. The common advantage is the personalization of services to each students' needs early support for students who need it most. In all the advent of ai has engendered the benefits for sustainability and availability of improved equity and inclusion in student services. The system has reduced operational costs and resource wastage, enhanced quality and consistency of service delivery for student support for lifelong learning and future readiness.

Challenges and Ethical Considerations of ai and sustainable student services.

The benefits of integrating Artificial Intelligence for sustainable service delivery are obvious but, there are challenges inherent in its adoption. Some of which are issues of data privacy, ethical concerns, digital divide, lack of technological infrastructure, and limited technical expertise that hinder effective implementation of AI-driven student services. Additionally, there are concerns on over-reliance on technology and the potential reduction of human interaction in student support systems.

There is need for data privacy and security, clear consent, strong protection against unauthorized access and data branches. Students records, grades, health, finances can be accessed by hackers or unauthorized staff if the system are weak and this can result in identity theft, blackmail and reputational damage Ifenthaler & Yau, (2020). There are situations where students may not be informed or not have understanding of the rules governing data access and collection.

There are also the possibility of AI bias and profiling. A case when ai system may label students as risk incorrectly and this can reinforce social or economic bias. This way students can be treated unfairly based on opaque models. Chen, Chen, & Lin. (2020) identified the challenges of poor data storage and security systems which may arise from outdated software and weak password that also expose systems to attacks common in underfunded institutions and rapidly digitizing schools.

Lack of clear policies and enforcement

Mazaheriyani & Nourbakhsh (2025) observed the challenges of digital divide among students that can marginalize reasonable number of students from having access thereby creating a digital divide. The digital divide refers to the gap between students who have reliable access to digital technologies (internet devices, digital skills) and those who do not. This divide creates challenges in modern education system. . Many students lack smartphones, tablets or lap tops. The effect is that there is difficulty of students completing assignments and participating in online learning. There is also the challenge of poor internet connectivity especially for institutions located in rural settings. Students in rural or low income areas often experience slow internet, high data costs, and no network coverage. The effect is missed classes, late submissions, and reduced engagement due to economic inequality, Pitts, Marcus & Motamedi. (2025). Thus family income affects digital access. Students from disadvantaged backgrounds fall behind their peers. . Some students and even teachers lack skills in; using learning platforms, online research, digital communication tools with the effect that technology becomes barrier instead of support tool. There is also urban and rural gap. Urban students usually have better; infrastructure, electricity supply and ICT support. This lack of opportunity results in unequal learning opportunities across the area. The impact of digital divide is that it leads to; low achievement, reduced motivation and increased dropout. Exclusion from students

services result in students without access who cannot fully benefit from; online registration, E-libraries, AI- powered academic support and virtual counseling services. Need for adequate training for both lecturers and students for optimal use of ai infrastructure. These challenges, call for critical examination by tertiary institutions on how artificial intelligence can be effectively integrated into student service systems.

Summary and conclusion

Artificial Intelligence is a powerful tool for enhancing students' sustainable service delivery by improving efficiency, accessibility, and quality in education. When ethically implemented and supported by appropriate policies, AI can help educational institutions achieve sustainable development goals while ensuring students receive consistent and future-oriented services.

This seminar paper examined the role of artificial intelligence (AI) in enhancing student services in tertiary institutions. The study highlighted that student services such as academic advising, registration and records management, library support, counseling, financial aid, and career guidance are essential components of the educational system that support students' academic success and overall well-being. With the rapid advancement of technology and the increasing population of students in higher institutions, traditional methods of delivering these services are becoming less efficient and require innovative solutions.

The paper discussed how artificial intelligence can improve the efficiency, accessibility, and quality of student services through tools such as chatbots, predictive analytics, intelligent tutoring systems, and automated administrative platforms. AI-driven systems can help institutions respond quickly to student inquiries, personalize academic advising, identify students at risk of poor academic performance, and improve access to digital learning resources. These technologies also support data-driven decision making in institutional management.

The paper also identified several challenges associated with the implementation of artificial intelligence in student services. These challenges include concerns about data privacy and security, inadequate technological infrastructure, limited technical expertise among staff, high cost of implementation, and the digital divide among students. These issues may hinder the effective adoption of AI in many tertiary institutions, particularly in developing countries.

Artificial intelligence has the potential to significantly transform student service delivery in tertiary institutions by making services more efficient, responsive, and personalized. When properly implemented, AI can support academic administration, improve communication between students and institutions, and enhance students' academic experiences.

For tertiary institutions to fully benefit from artificial intelligence there must be adequate investment in technological infrastructure, staff training, and policies that ensure data privacy and ethical use of technology. Institutions should also adopt a balanced approach that combines AI technologies with human support systems to ensure that students continue to receive personal guidance and emotional support where necessary.

Recommendations

- 1) There is need for sustained digital infrastructural development in higher institutions of learning for easy access to the digital-driven artificial intelligence.
- 2) Constant training to be provided for both lecturers and students for the use of artificial intelligence
- 3) The federal Government should come up with a policy on the use of artificial intelligence to guard against both ethical and other challenges on the use of artificial intelligence.
- 4) There should be institutional policies from every institution to regulate the use and security of users in their institutions.
- 5) Institutions should also incorporate the use of artificial intelligence in their administrative system for more effective, efficient and sustainable students' service delivery

REFERENCES

- Alade, A., & Afuwape, M. (2024). Artificial intelligence (AI) in higher education: A threat or helping hand in improving student–instructor communication. *International Journal of Communication and Public Relation*, 9(4), 45–61. <https://doi.org/10.47604/ijcpr.2987?>
- Anani, G. E., Nyamekye, E., & Bafour-Koduah, D. (2025). Using artificial intelligence for academic writing in higher education: The perspectives of university students in Ghana. *Discover Education*, 4, 46. <https://doi.org/>
- Baker, R. S., & Inventado, P. (2014). Educational data mining and learning analytics. In J. A. Larusson & B. White (Eds.), *Learning analytics: From research to practice* (pp. 61–75).
- Basha, S. E., Gull, M., & Alquqa, E. K., . (2025). The role of AI in university students' mental health: A bibliometric review. *Discover Social Science and Health*, 5, 131. <https://doi.org/>
- Bearman, M., Ryan, J., & Ajjawi, R. (2023). Discourses of artificial intelligence in higher education: A critical literature review. *Higher Education*, 86, 369–385. <https://doi.org>
- Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE Access*, 8, 75264–75278.
- Ezeoguine, E. P., & Eteng-Uket, S. (2024). Artificial intelligence tools and higher education students' engagement. *Edukasiana: Jurnal Inovasi Pendidikan*, 3(3), 300–312. <https://doi.org/10.56916/ejip.v3i3.733?> Papanda Journal
- Ifenthaler, D., & Yau, J. Y. K. (2020). Utilising learning analytics for study success: Reflections on current empirical findings. *Educational Technology Research and Development*, 68
- Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Boston, MA: Center for Curriculum Redesign.
- Johnston, H., Wells, R. F., Shanks, E. M., Boey, T., & Parsons, B. N. (2024). Student perspectives on the use of generative artificial intelligence technologies in higher education. *International Journal for Educational Integrity*, 20, 2. <https://doi.org/10.1007/s40979->
- Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. (2016). *Intelligence unleashed: An argument for AI in education*. London: Pearson.
- Mashilo, M., & Shekgola, M. (2024). Utilising artificial intelligence chatbots for student support at comprehensive open distance e-learning higher learning institutions. *Journal of Education, Society & Multiculturalism*, 5(1), 26–48. <https://doi.org/10.2478/jesm-2024->

- Mazaheriyani, A., & Nourbakhsh, E. (2025). Beyond the hype: Critical analysis of student motivations and ethical boundaries in educational AI use in higher education.
- Peterson, S. (2025). Addressing student use of generative AI in schools and universities through academic integrity reporting. *Frontiers in Education*, 10. <https://doi.org/10.3389/educ.2025.1610836>? Frontiers
- Pitts, G., Marcus, V., & Motamedi, S. (2025). Student perspectives on the benefits and risks of AI in education. *arXiv Preprint*.
- Roll, I., & Wylie, R. (2016). Evolution and revolution in artificial intelligence in education. *International Journal of Artificial Intelligence in Education*, 26, 582–599.
- Segovia-García, N. (2024). Optimizing student support: A review of the use of AI chatbots in higher education. *European Public and Social Innovation Review*, 9. Mendeley
- Wang, D, Y S., Rashid, S. M., & Lu, X. T. (2026). Artificial intelligence in higher education: A systematic review of its impact on student engagement and the mediating role of teaching methods. *Frontiers in Education*, 10. [tps://doi.org/10.3389/educ.2025.1648661](https://doi.org/10.3389/educ.2025.1648661)? Frontiers
- Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology*, 45(3), 223–235.
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education. *International Journal of Educational Technology in Higher Education*, 16(39).