ARTIFICIAL INTELLIGENCE AND EFFECTIVE TEACHING OF HEALTH EDUCATION IN LAGOS STATE UNIVERSITY OF EDUCATION, LAGOS STATE NIGERIA

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Abstract
Effective teaching of Health Education in today's world requires the availability of technological applications and programmes which may be lacking in most educational institutions due to series of factors. Its adoption will not only enhance teaching, but will also promote efficiency in the imparting Health knowledge. This study therefore, explored Artificial Intelligence (AI) for effective teaching of Health Education in Lagos State University of Education. It sourced for perspectives on AI's academic benefits, the challenges to its implementation and strategies for successful application. The study adopted a descriptive survey research design. A sample of three hundred and thirty-five respondents were drawn from two thousand students. The sample size was selected using a purposive sampling technique. The research instrument was modified, with a reliability coefficient of 0.86 for data collection on exploring respondents' perceptions, challenges and recommendations related to the use of Artificial Intelligence (AI). Two objectives, three research questions and one hypothesis were raised for the study. Data were analysed using mean and ANOVA at 0.05 level of significance. The result recorded a significant value of 0.002 compared at 0.05 level of significance with a df of 3, and an F-value of 156.032.Therefore, the hypothesis was rejected. The findings revealed that AI's adoption for effective teaching of Health Education is been expected and will enhance effective teaching, as most lecturers and students are painstakingly getting used to it gradually, but not in terms of its ethical application and use. It was also observed that most applications are driven by individual interest and desire rather than institutional directives and policy formulations. However, several barriers to the use of AI were found including funding, resistance to technological change, and technical know-how. The development of policy frameworks and sponsorship training of educators for professional development among others was proposed as part of the recommendations.

Keywords: Artificial intelligence, Effective teaching, Health education

Introduction
Artificial Intelligence has emerged across the globe as a transformative technology, which has seriously influenced several sectors significantly including education. AI reference of computer systems ability to perform different tasks of problem solving and decision making is an improvement that can be adopted across institutions all over. AI integration into education has

brought intelligent innovations and series of approaches of handling instructional strategies, thus improving expected outcomes in Health Education. Adequate Health Education knowledge can be acquired through effective use of AI tools and gadgets which requires getting acquainted with what operates globally, and putting into consideration its ethical principles of use and guide lines. Artificial Intelligence in Health Education will not only help, but will give a direction on what to be taught, how it should be taught and when it should be taught. The availability of Artificial Intelligence as a tool in structuring health lessons and sourcing for updated facts in the classroom setting will not only promote understanding among students, but will enhance the independent research and enquiry on the part of the students.

Teaching Health education using AI offers numerous opportunities and requires the use and understanding of several applications relating to it, which can be used to source for relevant and updated quality materials in order to enhance effective teaching of Health Education. Health Education basically relies on some constant fundamental areas that are paramount which can be acquired through adaptive learning systems. More so, AI technologies including simulations, tutoring systems and chatbots application can help to reflect a positive change in students developing interest in some core and cognitive areas in health education, these include areas such as: biostatistics, epidemiology, environmental health sciences, social and behavioural sciences, and health policy and management which most students find tough to learn (Ghaffar, Rashid, Wanyenze, and Hyder 2021);Winskell, Evans, Stephenson, del Rio, and Curran, 2014).

Artificial Intelligence assist in promoting Health Education into an ideal situation, though, health education occurs in a natural teaching and learning atmosphere be it orally, verbal or formally which can prompt its teaching in a formal method. However, one may say that traditional teaching methods have dominated the field of education, which is heavily dependent upon didactic pedagogical methods, face-to-face interaction, standardized curricula among others that can be supported by Artificial intelligence (Griffiths, Li, Tang, Ma, Hu, Meng, 2010; Wartman, and Combs 2018). It will interest you to know that despite all these methods are foundational, they have excessive limitations in scalability, accommodation of diverse learning needs, and quick information dissemination, especially in the context of technological use and challenges that may cut across globally crises such as COVID-19 pandemic (Liu, Liu, Liu, Luo, and Xia, 2020).

It is worthy of note that AI can serve as a medium of communication, teaching and interaction of Health Education even in the midst of a global crisis. However, contemporary teaching of health education in this ICT driven world faces several challenges that impact its effectiveness and application process. The non-use of technological gadgets and compatible programmes of AI origin can make instructors fail learner's zeal and quest for the technology in teaching and learning, putting into consideration the diverse demographic and socio-economic backgrounds of learners and tutors, which may definitely lead to gaps in health literacy (Woodruff, Angelos, and Valaitis, 2008). More so, it is good to get acquainted with the

fact that the un-dynamic nature of traditional educational resources can result in disseminating non-current ideas, outdated information, restrictions of global trends, and the non-responsiveness of health education to emerging global health threats (Ghaffar, Rashid, Wanyenze, and Hyder 2021).

However, considering the growing nature of AI use across all facets of life, there is a high demand to enhance its practical skills of students, practicing professionals, and community members in the use of Artificial Intelligence in disseminating information, teaching in the classrooms, enlightening individuals, change attitudes and behaviours among others in which traditional lecture-based methods fall short in addressing. While been confronted with these challenges, the emergence of Artificial Intelligence (AI) in educational reform heralds a new era of potential solutions across the globe especially in the area of education. As an emerging technology of the 21st century, Artificial Intelligence (AI) has penetrated all fields of health education for various reasons and needs.

The era of frontal teaching and concentration on traditional teaching method is gradually fading out, and Artificial intelligence (AI) as an emerging trend is transforming educational practices worldwide and across various sectors. The necessary need of Integrating Artificial Intelligence (AI) into educational systems is to promote personalised learning, improve rapid understanding techniques, automate administrative tasks, improve rational and logical thinking for research purpose and enhance engagement by adapting to individual learner pace and needs (Gligorea, Cioca, Oancea, Gorski, Gorski, and Tudorache, 2023). In the higher education settings and in the developed world, the significance and incorporation of AI in supporting effective teaching and programs, and promoting adaptive learning systems have reduce routine burdens on lecturers and tutors, thus revolutionising how students interact with contents and educational materials in the class room settings among other activities, which have led to a good transformation and improvement in the education sector thereby, promoting practical activities that are necessary for research purposes, which also to addresses learning gaps and improve inclusivity by allowing educators to provide targeted support to diverse learners (Rigley, Bentley, Krook, and Ramchurn, 2023). These technologies promise.

To effectively integrate AI technology into teaching health education in schools, there is the need for a blended curriculum that should encompass both theoretical courses and practical training using virtual simulations of real-world data. The theoretical component may be designed to cover the basics of health, conceptual/ health theories and applications of AI in practicum health, such as disease identification pattern, data analysis, design of model constructions among others. In doin this, students will get acquainted with practical knowledge component and this will allow students focus on work with real-world health data in a controlled environment through advanced simulation platforms, such as simulating epidemic outbreaks, optimizing attitude/lifestyle change and promoting individual learning and research abilities/strategies. (Wang, and Jianxiang 2024)

Artificial Intelligence prospects will put into the past the rigidity of traditional educational practices and systems which are getting so obsolete but are still dominant in developing countries.It will help to promote opportunities for continuous lifelong learning practices and rapid adaptation to effective health education and its environments (Wang, He, Wei, Li and Liu 2022). It is crystal clear that if AI is successfully integrated into health education, then, there is the potential to enhance its quality and effectiveness. Also, to innovate the tools and methods of imparting health education knowledge into learners, ultimately equipping present and future health educationist, experts, students and professionals with the capabilities needed to meet the multifaceted health challenges of the 21st century.

The Lagos State University of Education is a specialised institution dedicated to academic excellence in teacher educationwhich provides appropriate environment for AI to thrive, despite this, and the continuous efforts by stakeholders to integrate digital technologies of AI into teaching health education at all levels, there is a significant gap in its full implementation in schools. However, barriers such as infrastructure limitations, insufficient funding, and a lack of clear policy guidelines have hindered the effective adoption of AI. This study addressed these challenges by exploring experts' perceptions on how AI can enhance effective teaching of Health Education in Lagos State University of Education and also, expert perspectives on the role of AI in transforming teaching methodologies among health education stakeholders in the universities.

Methodology

The survey design was used for the study. A sample of three hundred and thirty-five respondents were drawn from a population of about two thousand students. The sample size was selected using a purposive technique, which was drawn from selected departments in the University.The instrument used for the study was a structured questionnaire (Artificial Intelligence Research Instrument (AIRI)) with a response format of four-point Likert scales. The instrument was validated by experts in the field of Health Education and Promotion. A pilot study conducted was carried out among students of another institution which did not form part of the study. The reliability of the instrument was carried out using the Pearson Product-Moment Correlation coefficient (PPMC), and a value of 0.86 was achieved. The instrument was modified from a standardized instrument with a reliability coefficient of 0.86. The statistics of mean and standard deviation were used to analyse the research questions while ANOVA was used to analyse the hypothesis at 0.05 level of significance.

Results

Table 1: Summary of responses on AI promoting understanding for effective teaching

S/N	Understanding about AI	Mean	SD	Decision
1.	AI technology is too complex for me to grasp.	4.56	1.10	Accept
2.	I consistently follow latest news and updates about AI	6.12	2.45	Accept
3.	I have identified opportunities to learn more about AI around my campus	5.74	2.19	Accept
4.	AI is a regularly topic I discuss with friends, family, and classmates	3.24	1.43	Accept
5.	I have attended some workshops on AI	2.34	1.20	Accept
		4.4	0.88	

Table 1 shows the responses on items under AI promoting understanding for effective teaching of health education. AI technology is too complex for me to grasp (mean =4.56, SD= 1.10), I consistently follow latest news and updates about AI (mean = 6.12, SD= 2.45), I have identified opportunities to learn more about AI around my campus (mean=5.74, SD=2.19), AI is a regular topic I discuss with friends and family and class mates (mean=3.24, SD=1.43), I have attended some workshops or seminars on AI (mean=2.34, SD=1.20). The mean value for this table is 4.40 while the Sd is 0.88.

Table 2: Summary of responses on the use of AI for effective teaching of Health Education

S/N	Use of AI	Mean	SD	Decision
1.	I regularly use AI- tools and applications in my studies	5.56	2.10	Accept
2.	AI-powered tools are very necessary for my academic performance	5.12	2.25	Accept
3.	I feel that it is necessary to verify the validity and accuracy of the responses that AI generates.	4.74	1.29	Accept
4.	AI has greatly impacted on my learning experience	6.24	2.43	Accept
5.	I am comfortable submitting a prompt to an AI like Chat GPT and turning in the answer it provides	3.34	2.20	Accept
		5.00	1.10	

Table 2 shows the responses on items under the use of AI for effective teaching and learning of Health Education. I regularly use AI tools and applications in my studies (mean =5.56, SD= 2 .10), AI-powered tools are very necessary for my academic performance (mean = 5.12, SD= 2.25), I feel that it is necessary to verify the validity and accuracy of the responses that AI generates (mean=4.74, SD=1.29), AI has greatly impacted on my learning experience (mean=6.24, SD=2.43), I am comfortable submitting a prompt to an AI like Chat GPT and

turning in the answer it provides (mean=3.34, SD=2.20). The mean value for this table is 5.00 while the Sd is 1.10.

Table 3: Summary of responses on the perceptions of lecturers using AI for effective teaching

SN	Perceptions of Lecturers using AI	Mean	SD	Decision
1.	AI can contribute positively to social issues	4.53	1.10	Accept
2.	I worry about AI's impact on personal privacy	6.11	2.45	Accept
3.	I would feel embarrassed if someone found out that I used AI for schoolwork	5.72	2.19	Accept
4.	AI technology can enhance creativity and innovation	3.21	1.43	Accept
5.	AI has the potential to reduce human biases	2.31	1.20	Accept
		4.38	0.87	

Table 3 shows the responses on items under the perceptions and attitudes towards AI for effective teaching. AI can contribute positively to social issues (mean =4.56, SD= 1.10), I worry about AI's impact on personal privacy (mean=6.12, SD=2.45), I would feel embarrassed if someone found out that I used AI for school work (mean = 5.74, SD= 2.19), AI technology can enhance creativity and innovation (mean=3.24, SD=1.43), AI has the potential to reduce human biases (mean=3.34, SD=1.20), I am comfortable submitting a prompt to an AI like Chat GPT and turning in the answer it provides (mean=3.34, SD=2.20)). The mean value for this table is 4.38 while the SD is 0.87.

Table 4: Showing the summary ofArtificial Intelligence as it enhances the effective teaching of health education in Lagos State University of Education

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	387.046	3	124.239	156.032	.002
Within Groups	1176.290	1492	.596		
Total	1563.336	1492			

Table 4 aboveshows that there is a statistical difference on Artificial Intelligence as it enhances the effective teaching of Health Education in Lagos State University of Education. The significant value observed was .002 at 0.05 level of significance at a df of 3 with an F-value of 156.032 therefore the hypothesis is rejected.

Discussion of findings

This study's findings in Table 1 reveals that most of the respondents have a good understanding about the benefits of AI in Health Education which may promote the knowledge and acquisition of its application in the society. Voogt et al (2013) who stated that educators are expected to be aware and abreast with current competencies which helps in the need to develop educators that can integrate AI tools intelligently in the system. The result is in line with Salas- Pilco et al (2022) who stated that AI's ability helps to offer good initiative to offer real-time feedback which facilitates enabling practice and experiential learning in reinforcing objective views and basic awareness and understanding in teaching and learning. In Table two, the findings reveals that effective use of AI in the dissemination of area contents in Health Education will go a long way in enhancing effective teaching of the course. Spaci and Spaci (2020) stated that AI's ability to adapt educational content and provide remote learning opportunities aligns with the global trend of using AI to bridge resource gaps in health education, which is a pressing issue in low and middle-income countries. This result is in line with the belief that AI has a lot of perceived benefits and good traits in personalised learning (Gligorea et al 2023). However, in a study conducted by Chen et al (2020) as cited by Mwogosi and Simba (2025) indicated that achieving these benefits necessitates a supportive infrastructure and policy framework presently lacking in a country like Tanzania and in some third world countries. Table three findings revealed that the perceptions shown towards AI for the effective teaching of health education is somehow appreciable. The result is in line with Igwama et al (2024) as cited by Mwogosi and Simba (2025) who stated that community-based programmes can foster and promote perceptions, attitudes and acceptance of AI technologies, especially in non-urban areas, which can further promote AI's adoption within localities, schools and communities. Table four findings revealed that Artificial Inelligence will enhance the effective teaching of Health Education, this result is in line with Mwogosi and Simba (2025) who stated that integrating AI is a strategy, that could be very useful particularly in teaching, and for understanding the social and systemic factors influencing its implementation. Furthermore, they stated that in their study,participants highlighted the role of AI as a mediating tool within the educational environment, linking it to practical skills and clinical decision-making abilities necessary in health education care.

Conclusion

In the study, it was observed that though a lot of persons including students, teachers, educators, policy makers among others are aware about the importance, use and efficiency of AI, however, they tend to be limited in its use due to technical skills, adequate gadgets and training. However, several scholars believe that AI will enhance effective teaching, and its understanding and importance is getting more known by lots of academic especially as it relates to the benefits of using it to teach Health Education. Very few are yet to come to terms with its suitability in education. More so, the study concluded that effective AI use,

implementation and integration depend solely on educators' familiarity, coupled with relevant related tools and technical skills in applying these technologies in the classroom setting which can promote hands-on competencies in all areas. Based on the conclusion of this study, the following recommendations were made

i. There is the need for Federal Government of Nigeria (including health education) to enact good Policy framework and facilitator guide for the training and adoption of AI for teaching subjects/discipline in schools.
ii. University management should collaborate with AI providers in order to establish a strong relationship and access to affordable services for staff of the institution.
iii. Concerned stake holders should invest in the development of infrastructural and resource allocation so that AI visibility can be all encompassing in the institution.
iv. There should be consistent monitoring and continuous improvement of the programme by University heads after training and professional seminars and workshops are to be organised for staff.

References

Blavo, J.F.; Omolade, A.O., Oroleye, A.A. and Oyeleye, O. (2025)Perceived factors influencing the exercise activity behaviour and lifestyle of teachers in Lagos State, Nigeria. *Zaria Journal of Empirical Studies in Education 6.(1) 53-60*

Ghaffar, A, Rashid, S.F, Wanyenze, R.K, and Hyder, A.A. (2021) Public health education post-COVID-19: a proposal for critical revisions. *BMJ Glob Health*. 6: e005669. doi:10.1136/bmjgh-2021-005669

Gligorea, I., Cioca, M., Oancea, R.,Gorski, A-T., Gorski, H.and Tudorache, P.(2023)*Adaptive learning using artificial intelligence in e-learning: a literature review", Education Sciences,* 13: 12, 1216 https://doi.org/10.3390/educsci13121216.

Griffiths, S.M, Li, L.M, Tang, JL, Ma, X, Hu, Y.H, Meng, Q.Y. (2010). The challenges of public health education with a particular reference to China. *Journal of Public HealthEducation*. 124:218–24. doi: 10.1016/j.puhe.2010.02.009

Hamet, P, and Tremblay, J. (2017). Artificial intelligence in medicine. *Metabolism.* 69S:S36–40. doi: 10.1016/j.metabol.2017.01.011

Liu, X, Liu, C, Liu, G, Luo, W, and Xia, N. (2020) COVID-19: Progress in diagnostics, therapy and vaccination. *Theranostics*. 10:7821–35. doi: 10.7150/thno.47987

Mwogosi, A & Simba R (2025)Integration of AI into teaching methodologies in health training institutions in Tanzania. *Journal of Research in Innovative Teaching & Learning*. https://doi.org/10.1108/JRIT-03-2025-0069

Rigley, E., Bentley, C., Krook, J. and Ramchurn, S.D. (2023) Evaluating international AI skills policy: a systematic review of AI skills policy in seven countries, *Global Policy.*

Sapci A.H. and Sapci H.A.(2020)Artificial intelligence education and tools for medical and health informatics students: systematic review, JMIR Medical Education, 6:1 e19285, doi: https://doi.org/10.2196/19285

Salas-Pilco, S., Xiao, K.and Hu, X. (2022)Artificial intelligence and learning analytics in teacher education: a systematic review", Education Sciences, 12: 8,569, doi:https://doi.org/10.3390/educsci12080569

Wang, J and Jianxiang, L (2024) Artificial intelligence empowering public health education: prospects and challenges. Public Health Education and Promotion: Research Topic Arts and Design in Public Health in a Digital Age: *A Multidisciplinary Perspective* 12

Wartman, S.A, and Combs, C.D. (2018) Medical education must move from the information age to the age of artificial intelligence. *Acad Med*. 93:1107–9. doi: 10.1097/ACM.0000000000002044

Winskell, K, Evans, D, Stephenson, R, del Rio, C, and Curran, J.W. (2014) Incorporating global health competencies into the public health curriculum. *Public Health Rep*. 129:203–8. doi: 10.1177/003335491412900216

Woodruff, J. N, Angelos, P, and Valaitis, S. (2008). Medical professionalism: one size fits all? [J]. *Perspect Biol Med*. 51:525–34. doi: 10.1353/pbm.0.0056

Yu, K. H, Beam, A. L, and Kohane, I.S. (2018). Artificial intelligence in healthcare. *Nat Biomedical Eng*. 2:719–31. doi: 10.1038/s41551-018-0305-z