

ARTIFICIAL INTELLIGENCE (AI) DRIVEN AGRICULTURAL EDUCATION FOR ECONOMIC PROSPERITY AND NATIONAL DEVELOPMENT IN NIGERIA

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Abstract

The paper analyzed Artificial Intelligence (AI) Driven Agricultural Education for economic prosperity and national development in Nigeria. The study reveals that agricultural education is a programme of study designed to develop potential abilities of learners in farm practices for socio-economic and national development. Advancement in science and technology brought many innovations in the context of education, this include AI. AI is a technology-based driven innovation which is based on machine learning and is used for data analytics, predictions and forecasting, recommendations and intelligent data retrieval in teaching and learning process. AI-driven policies in education were aimed at improving learning situation, facilitate teaching, efficient school management and making decision in teaching and learning process. AI has the potential to innovate teaching and learning process and address some of the challenges in education. AI technology is rapidly advancing, it play an important role for economic and national development by providing students with professional skills and competencies for national development. The study recommended that government agencies such as National Information Technology Agency (NITDA) and Nigerian Communications Commission (NCC) need to outline the strategic roadmap that would ensure responsible AI integration in education and Nigerian governments need to invest more in education specifically in Information and Communication Technology (ICTs).

Keywords: Artificial Intelligence, Agricultural Education, Technology, Education, Innovation

Introduction

Agriculture is a subject area that focuses on crop and animal production for the benefits of mankind. While agricultural education is a programme of instructions that develop learner's abilities with skills, knowledge, competencies and attitude towards farm practices for socio-economic development of individuals and societies. Osinem (2017) highlighted agricultural education as the process of imparting knowledge, skills and attitudes in agriculture to the learner at any level of educational system. Agricultural education stresses on skills and knowledge development as well as providing technical background for learners to perform specific agriculture related jobs. The following are careers in agricultural education; agricultural science teachers, agricultural

educators, farm managers, agricultural extension agents, researchers in agricultural education, agent in agribusinesses and consultants.

Agricultural education is an integral part of school education which contributes to social, economic, political and national development. There are various innovations and strategies used for improving student learning condition and farmer's knowledge, skills and attitude in agricultural education system. However, technological advancement improves the teaching and learning of agricultural education by increasing students' academic achievement, facilitating teaching, increasing retention capacity of learners and aids practical demonstration of agricultural concepts. Advancement in science and technology

have made several efforts to promote teaching and learning process in agricultural education in particular. In recent times there has been a growing concern about the use of artificial intelligence (AI) (Cecilia, 2023).

Artificial intelligence (AI) is a technology-based driven machine that simulate human teaching and learning process. AI is an innovation in modern computing which is used to extract text and images, data and documents into structured data (University of LOWA Education, 2024). Also AI is a set of technologies that enable computers to perform a variety of functions which include deep learning, data analytics, intelligent data retrieval, predictions, forecasting, object categorization, natural language processing, suggestions or recommendations and many more (Adiguzel, Kaya & Cansu, 2023).

Artificial Intelligence (AI) Driven Agricultural Education

AI is a field of science concerned with building computers and machines that can reason, learn and act in such a way that would normally require human intelligence or that involves data whose scale exceeds what humans can analyze (Eggmann, Weiger, Zitzmann & Blatz, 2023). From (1960) to date, Computer-Assisted Instruction (CAI) presented learning instructions in a convenient way for learning, intelligent tutoring and offering tutorial programs that provides immediate feedback and tailored learning paths based on student responses. This innovation demonstrated the potential benefits of (ICTs) in education and is increasingly becoming attractive (Gellai, 2022). Today, AI significantly impacts on various sectors of human life such health system, manufacturing, transportation and is set to revolutionize education. Even though there are concerns that students may use generative AI tools to cheat in their assignments and the use of generative AI may lead to a decline in students' writing and critical thinking skills (Civil, 2023).

AI-driven policies in education aims to improve learning situation, facilitate

teaching, resource allocation and making decision in teaching and learning process. AI has the potential to innovate teaching and learning process and address some of the challenges in education. Chan and Zhou (2023) stated that generative AI tools is becoming accessible and rapidly integrated into various fields and industries. This has created an urgent need for schools to develop an AI education policy that would prepare students to understand the principles of this technology. As such graduates need to have a strong understanding of AI principles in order to succeed in their future careers; formulating AI policy in education would provide students with the necessary knowledge and skills to work with AI in a professional capacity (Chatterjee, 2020).

AI can be used to enhance student learning through personalized learning, real-time feedback and adapting to individual learning styles (Atlas, 2023). Educating students with AI, schools need to prepare students to be active participants in the development and implementation of AI technology so as to benefits society as a whole for national development. The use of AI in education becomes more prevalent; it is essential that students understand the principles behind AI technology in order to maintain academic integrity. An AI education policy can teach students about the ethical considerations surrounding AI as well as the impact of using AI in academic contexts for national development.

AI technology is rapidly advancing, it play an important role for economic and national development in the coming years by providing students and teachers with training in AI, schools should ensure that graduates are equipped to contribute to the national development (Bholat & Susskind, 2021). AI driven-policy should help students to become competent and responsible users of AI in their daily live activities (Abduljabbar, Dia, Liyanage & Bagloee, 2019). Given the potential benefits and risks associated with the use of generative AI in education, it is important to develop a proper AI education policy that

addresses these concerns and provides guidance on the responsible use of AI.

Conclusion

Agricultural education is a programme of study aimed at preparing its recipients with necessary skills, knowledge, competencies and attitude towards farm practices for socio-economic and national development. While AI is a technology driven innovation that have the ability to sense, think and act just like a human or work independently with a view to eliminate manual errors in data processing and analytics, perform repetitive tasks, process more information more quickly than a human, accelerate breakthroughs in research and development in education. It is pertinent to note that AI should not be underrated, as it transform the learning experience for students and teachers in shaping the future of education for economic prosperity and national development. Therefore, AI Driven Agricultural Education is needed so as to provide practical strategies for embedding AI and digital technologies into teaching and learning processes aims at creating a more accessible, efficient and innovative learning environment for economic prosperity and national development.

Recommendations

- i. Government agencies such as National Information Technology Agency (NITDA) and Nigerian Communications Commission (NCC) need to outline the strategic roadmap that would ensure responsible AI integration in education.
- ii. National and international organizations shall prioritize discussions and the formulation of AI regulation so as to establish institutional support system for AI practices in accordance with validated legal and ethical guidelines
- iii. Workshops and trainings shall be organized for teachers so as to

familiarize themselves with AI features and capabilities.

- iv. Government shall develop an ethical framework for AI use considering issues such as transparency and data privacy
- v. Nigerian governments need to invest more in education specifically in Information and Communication Technology (ICTs).

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