

**ARTIFICIAL INTELLIGENCE:
A CORNERSTONE TO THE DEVELOPMENT
OF DISTANCE LEARNING IN NIGERIA UNIVERSITIES**

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Abstract

This article examines the concept of Artificial Intelligence in relation to the development of distance learning in Nigeria Universities. The paper discusses some definitions of Artificial Intelligence (AI) in order to provide a good foundation for the paper. The article x-rays the different stages of technological development in the school system and how they have affected the growth and development of education generally. the sequence of such technological development started with the invention of the black board, chalk, slate, pen, computer internet, social media, online teaching, mobile teaching, blended teaching, Artificial Intelligence and the lots of others. The paper goes further to relate the invention of Artificial Intelligence (AI) to the development of distance learning in Nigeria Universities such as the National Open University of Nigeria. The article also identifies some challenges to Artificial Intelligence (AI) as a corner stone to the development of distance learning in the Nigeria Universities. These include ignorance about the benefits of AI by both the Lecturers and the students, cost of installation and maintenance, epileptical power supply, limited access to technology, digital literacy gap, digital security and lack of capacity building and infrastructural development among others. The paper recommends the deployment of Artificial Intelligence to the execution of distance learning in Nigeria Tertiary Institutions such as the Nigeria Conventional Universities and specifically the National Open University of Nigeria (NOUN) which is typically for distance learning in Nigeria.

Key words: Artificial Intelligence, Cornerstone, Development, Distance Learning, Nigeria Universities.

Introduction

Technology revolution keeps on growing and developing every day through inventions and different new technological breakthrough which can improve the world of man greatly in the classroom setting. The earliest form of technology in the school is the invention of black board, chalk, paper slate, ink, pen and other products. All these invented materials have contributed greatly to the development of education throughout the world. In addition to this, is the development of different types of instructional materials such as visual, audio, audio-visual and several other teaching equipment and machines. The invention of computer is also a major development to the teaching and learning in the classroom. This has led to the development of computer and digital literacy among the teachers and the students. It is the development of computer and digital literacy that ushered in the revolution of education sector by the internet the social media and other teaching machines. The development of internet has promoted distance learning modes. This is done through e-learning, educational networking, video-conferencing, mobile learning, blended learning, adaptive learning, robotic learning and the host of other learning modes available for the distance learning execution in the recent times.

The technology revolution has gone further to the development of social media platforms through which teaching and learning can be carried out with or without the conventional mode of face-to-face teaching format. For instance, teaching can be done online now through zoom, google classroom, Microsoft classroom. Carnivas, blackboard learn, moodle and other relevant online learning modes. The development of electronic books, interactive board and other electronic boards are greatly promoting teaching and learning especially distance learning education. The technology development in the recent times is the invention of Artificial Intelligence (AI) which is also of a great use in and outside of the classroom. It is specially of a great value to the promotion of distance learning in Nigeria Universities especially the distance learning education. This paper therefore intends to x-ray the various ways in which AI can be a great value to the development of distance learning in Nigeria Universities.

What Is Artificial Intelligence (AI)?

According to the Oxford Dictionary, Artificial Intelligence is the theory and development of computer systems to be able to perform tasks normally requiring human Intelligence such as visual, perception, speech, recognition, decision making and translation between language. Artificial Intelligence (AI) is also defined as a field of science concern with building computer 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 analyse. In the same vein, Artificial Intelligence (AI) is a set of technologies that enables computers to perform a variety of advanced functions including the ability to see, understand and translate spoken and written languages, analyse data, make recommendations and other more functions. AI is a broad field that encompasses many different disciplines including computer, Science data analytics and statistics, hardware and software engineering, linguistics neuroscience and even philosophy and psychology (<https://cloud.google.com/learn>).

According to CoureraStaff (2024), Artificial Intelligence (AI) refers to computer systems capable of performing complex tasks that historically only a human could do, such as reasoning, making decisions or solving problems. Stryker and Karlakoglu (2024) defines Artificial Intelligence (AI) as the technology that enables computers and machines to stimulate human learning, comprehension, problem solving, decision making, creativity and autonomy. Craig (2024) equally defines Artificial Intelligence as the simulation of human Intelligence processes by machines especially computer systems. Examples of AI applications includes expert systems, Natural Language Processing (NLP), speech recognition and machine vision. Copeland (2024) asserts that Artificial Intelligence (AI) is the ability of a digital computer or computer-controlled robot to perform tasks associated with Intelligence beings. Kite-Powell (2021) also defines

Artificial Intelligence as the Simulation of humans intelligence process by machines, especially computer systems. Summarily, therefore, artificial Intelligence refers to the man technological advancement through the development of theory and development of computer systems which are able to perform tasks such as visual perception, speech, recognition, decision making, translation between language, analyze data, make recommendations and solving problems and other functions which normally requiring human intelligence.

Relevance Of Artificial Intelligence In The Classroom

Artificial Intelligence (A+I) can be used to perform teaching activities in the classroom for instance, AI can be automated in a way that it can teach in the classroom. The teaching process in any subject can be automated in the Artificial Intelligence and it will perfectly perform the act of teaching. For example, the teacher lesson plan can be easily planned through AI and it will sequentially teach the lesson as programmed in it. AI can easily find a stimulating way of introducing the lesson based on stated objectives of the lesson. This is quite essential in distance learning of different universities. AI can be designated into study centres of the universities especially National Open University of Nigeria to teach different courses just like the human teacher.

In the same vein, in the area of production or instructional materials, AI can be useful. In recent time AI perform physical tasks of human beings such as painting, construction and modelling, it is therefore imperative that AI can design and produce suitable instructional materials that can be used in the classroom especially for distance learning students in designated study centres. In the same vein AI can produce models, specimen, animation, cartoons real images which can be used as instructional materials for facilitating teaching and learning in the classroom.

Artificial Intelligence can also be used to set examination, invigilate the examination and mark the examination scripts. For instance, AI can be used to automate processes like varying documents like examination scripts and they can equally be used to ask simple questions in the classroom. Lower order questions such as questions that does not require critical thinking can be asked by AI. For example, in English Language, AI can be used to demonstrate preposition such as, on the table, under the table, beside the table and so on. AI can perfectly be used to act these simple demonstrations in the classroom. These demonstration will make the lesson more explicit to the distance learning students who have little or no opportunity of having face-to-face interaction with the human teacher. Additionally in teaching English Language, Ai can be used for demonstration, dramatization and act play-scene Literature in English to different categories of students in conventional schools and distance learning institutions.

Artificial Intelligence has been automated in designing and construction of different shapes and models. In this vein it means AI can be used for the designing of different instructional materials such as charts, posters and even models for the teaching and learning process. The use of instructional materials is inevitable in the art of teaching and learning. This has improved greatly the performance of students in the conventional classroom setting. It is equally very importance to note that, AI can produce instructional materials for the use of distance learning students especially in the different Study Centres of our universities that run distance learning programmes such as the National Open Universities of Nigeria (NOUN). Distance Learning Institute (DLT) of University of Lagos and the host of other distance learning Institutions.

Artificial Intelligence is not limited by time of the day, the need for break or other human encumbrances. When running in the cloud, AI and machine learning can be “always on” continuously working on its assigned tasks. The implication of this is that, AI can be used to teach and perform other classroom assignments at any point in time. That is, AI can teach the students on distance learning programmes at their convenient time of the day or season of the year. AI can also engage the distance learning students on individualized instruction whereby each of the

students go at his or her own pace in their different learning situation. For instance the fast learners can learn at their own pace likewise the average students and the slow learners.

Artificial Intelligence has ability to analyse vast amounts of data quickly. This can easily accelerate a lot of breakthroughs in research and development in distance learning. For instance, AI can be used to gather research data from different parts of the world on distance learning programmes. Such data can be analyzed by Artificial Intelligence in a way that will proffer solutions to different educational problems that affect different types of distance learning programmes in different universities in Nigeria especially the National Open Universities of Nigeria (NOUN).

A major problem of education in Nigeria is examination malpractices. Artificial Intelligence can be automated in a way that it will be deployed to different Study Centres of distance learning to supervise the conduct of examination. For instance, Artificial Intelligence have been seen performing security duties in factories, supermarkets and other business organizations. If this is possible in these places, to use AI for invigilation during examinations in different Study Centres of distance learning programmes like the National Open Universities of Nigeria will be a simple task to perform. If AI can be also be used to control traffic in different cities in some advanced countries of the world, using it at Examination Centres during examination will be a very simple task.

Artificial Intelligence can process more information quickly than a human, finding patterns and discovering relationships in data that human may miss. The implication of this is that, AI can be used to assess students in different Study Centres of distance learning programmes fastly due to its fastness and accuracy in solving different problems in any subject areas in the classroom. Apart from this function, AI can also be used for continuous assessment of the students of different Study Centres. It is evident that more students are found in different types of Open and distance learning. For example, the National Open Universities of Nigeria has several thousands of students all over Nigeria. AI will definitely make their assessment very easy and accurate. Some of the good characteristics of AI are: it is able to analyse statistics data of a great volume, translate them to useful information and decision making. These characteristics simply indicate that AI can be used to process examination results of the students in our universities and other Institutions of learning. For instance, distance learning students in different universities running the programme are usually in several thousands. The National Open University of Nigeria has students in several programmes it is running in different Study centres in all the states in Nigeria including the federal capital Territory, Abuja. Apart from this, NOUN also have some Special Study and Community Study Centres all over Nigeria. The large volume of the students severally caused delay in releasing results, inadequate results processing, omission of results wrong grading of results and other related problem. But with the use of AI, considering several characteristics of AI as stated in this article, the utilization of AI will greatly improve processing of results in the conventional universities and Distance Learning Study and Community Centres throughout Nigeria.

Challenges of Associated With the Utilization Of Artificial Intelligence (Ai) For Distance Learning In Nigeria University.

It is going to be overstatement to say that the place of Artificial Intelligence for the development of distance learning in Nigerian Universities is enormous as pointed out in this article. Despite these wide range of the utilization of AI for the development of distance learning in Nigerian Universities, there are also some bottle necks to the effective use of Artificial Intelligence for distance learning in Nigeria Universities.

The use of AI is just coming to line light in several places including Nigeria Universities. This ignorance about the benefits of the utilization of AI for distance learning execution among a number of university Lecturers and Students is posing serious challenges to the utilization of AI

for execution of distance learning in Nigeria Universities. Till today, several Students and even Lecturers know very little about AI and its numerous benefits. Since they don't know much about AI, to use the technology advancement of AI becomes a mirage.

Additionally, the application of AI for teaching and learning in the university is hindered by lack of lecturers' and students' needed skills and competencies in AI concepts, working principles and functionality. The application of AI to distance learning by the Lecturers and Students can only be possible if they have effective and adequate skills and competencies to do so. In most universities this is a serious challenge for utilization of AI for development of distance learning in Nigeria Universities.

The cost of installation and maintenance of AI facilities is very enormous, most Universities in Nigeria have no AI facilities in campuses due to the cost of installation. In the same vein, some of them that AI have facilities, to maintain them is a serious problem due to economic challenges facing Nigeria as a nation and the different Universities across Nigeria individually. Since AI facilities are not available and those that are available are poorly maintained, the utilization of AI in these Universities for distance learning programme becomes impossible and learning non-existence.

Artificial Intelligence (AI) as a relatively new technological development in many Nigeria Universities. There are shortage of AI Engineers and other Experts with deep knowledge of AI to install and maintain AI facilities in Nigeria Universities and other similar institutions in Nigeria. Most of the Universities and other institutions of higher learning that have the facilities rely on foreign Engineers and other AI technicians to install and maintain them.

The issue of epileptical power supply in Nigeria especially now with removal of fuel subsidy, most institutions especially Universities find it grossly difficult to pay for the big bills from electricity companies. In the same vein, the cost of diesel is very high as a result of fuel subsidy removal. In fact several Universities in Nigeria are crying every day over high electricity bills and cost of running the university system with diesel generators.

Another major cog in the wheel of the utilization of AI for distance learning education in the universities in Nigeria is the frequent poor signal due to damaged equipments, poor power supply and some other associated teething problems. The issue of poor service signal and the rest are still facing effective functioning of AI in most universities in Nigeria especially those ones that are located in the rural areas.

Other challenges of utilization of the Artificial Intelligence for educational development generally include limited access to technology, digital literacy gap among educators and concerns about data literacy and security. Additionally, there is a need for capacity building and infrastructure development to support AI driven educational initiative (Usman, 2024). Nevertheless, the contributions of AI initiatives to distance learning in the Nigeria Universities cannot be under-estimated, AI provides opportunities to enhance teaching effectiveness, improve learning outcomes, better feedback opportunities between the distance learning facilitators and the wide-spread students and bridging of educational gabs across the socio-economic divides in Nigeria Society.

Conclusion

The development of Artificial Intelligence (AI) is really a blessing to teaching and learning. Schools today especially tertiary institutions such as universities and other tertiary institutions are faced with over enrolment, population explosion, delay in processing results, omission of results limited space for admission seekers to the universities and the host of other related problems. It is the opening of distance learning by different universities in Nigeria especially the National Open Universities of Nigeria (NOUN) that have reduced struggling for placement in the universities in Nigeria by the army of admission seekers yearly.

The deployment of Artificial Intelligence to the Nigeria system of education will bring a lot of development to Nigeria educational system especially the distance education. Artificial Intelligence (AI) could be used for teaching, assessment, supervision, invigilation and keeping of records in the universities and other tertiary institution. It is therefore inevitable to employ Artificial Intelligence to the distance education in Nigeria in order to improve the art of teaching and learning in the different distance learning Centres of Nigeria Universities especially the National Open Universities of Nigeria (NOUN) which is specifically established to foster distance learning education in Nigeria. The deployment of AI to foster distance learning in Nigeria may not be hitch-free due to some challenges such as cost, poor power supply, bad network on several occasion, governmental policy and several insurmountable problems on the path of incorporation of AI to foster distance learning in Nigeria. But with time all these challenges will be a thing of the past or at least be reduced to a greater extend with further development in AI technology.

Recommendations

The relevance of Artificial Intelligence to the development of distance learning in Nigerian Universities is eminent and humerous despite the existing challenges as well. In order to improve the use of Artificial Intelligence for development of distance learning in Nigeria Universities and other tertiary institutions, this paper propose the following recommendations.

1. There is the need for adequate capacity building to support adequate utilization of Artificial Intelligence in these institutions for them to enhance distance learning programmes.
2. The Government at all levels need to make a huge financial support to install and maintain the necessary equipment essential for the development and adequate function of the Artificial Intelligence equipment.
3. The supportive Experts such as different Engineers and technicians that will install and maintain the Artificial Intelligence equipment should regularly be on ground at any point in time.
4. There is the need for the Government University Administrators, non-governmental and Government Organisations to Support the utilization of Artificial Intelligence for distance learning.
5. The distance learners from the different Nigeria universities should endeavor to prepare themselves adequately for deployment of Artificial Intelligence for distance learning by ensuring they improve their computer and digital skills which are essential for the utilization of AI for teaching and learning.
6. Erratic power supply in the country should be addressed. Infact power supply to the Nigeria educational institution should be free and if not free, it should be highly subsidized.
7. There is the need for the government, individuals, philanthropist, governmental and non-governmental organizations and the management of the different universities in Nigeria to devote enough funds for training and retraining of the distance learning lecturers and facilitators on regular basis in the areas of computer and digital literacy.
8. There is the need for the government, non-governmental and governmental organization and other good Nigerians to lay their support to all the needs that will promote Artificial Intelligence driven distance learning education in Nigeria. The serious consideration for all these recommendations and other similar points not mentioned in this recommendations will go a long way to promote the utilization of AI for distance learning execution in Nigeria.

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