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Curriculum Revolution in Higher Education: The Mighty Role of Artificial Intelligence

Revolusi Kurikulum di Pendidikan Tinggi: Peran Dahsyat Kecerdasan Buatan

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Abstract

This study investigates the pivotal role of artificial intelligence (AI) in enhancing curriculum implementation within Nigerian tertiary institutions. Utilizing secondary data from diverse sources, the research underscores AI's multifaceted contributions to curriculum execution, encompassing lecture planning, instructional resource preparation, presentation, student assessment, script marking, assignment allocation, student readiness, progress monitoring, and the selection of optimal teaching methodologies. The findings emphasize the indispensable impact of AI on education. Consequently, the study advocates increased government funding for tertiary institutions and the judicious deployment of AI to harness its transformative potential in curriculum implementation on a global scale.

Highlights:

- **AI Optimization:** Artificial intelligence streamlines lecture planning, resource preparation, and assessment, enhancing curriculum efficiency.
- **Learning Enhancement:** AI improves student readiness, progress monitoring, and personalized teaching methodologies.
- **Funding Imperative:** Adequate government funding is crucial to harness the full potential of AI in education.

Keywords: Artificial Intelligence, Curriculum Implementation, Higher Education, Educational Technology, Government Funding

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INTRODUCTION

Tertiary education can be conceptualized as a planned and organized educational system designed for the total development of man/woman and the total transformation of society through the utilization of teaching, research, and provision of community service. Tertiary education can also be viewed as post-basic and secondary school education that embraces advanced teaching, research, and community service [1]. Tertiary education is an advanced educational system meant for human capital development through teaching, research, and provision of community service. Tertiary education is the third tier of education that is designed for the production of skilled professionals for socio-economic and technological advancement [2].

Tertiary education or higher education is the professional education and vocational education carried out by students based on completing secondary education [3]. It is the main social activity of training senior specialized talents and vocational personnel. Generally, high-level learning, research, social activities, and other educational content are completed with the help of schools and other carriers. Higher education is one of the important parts of the education system.

Federal Government of Nigeria National Policy on Education defined tertiary education as an education given after Post Basic Education in institutions [4] such as Universities and Inter-University Centres such as the Nigeria French Language Village, Nigeria Arabic Language Village, National Institute of Nigerian Languages, institutions such as Innovation Enterprise Institutions (IEIs), and Colleges of Education, Monotechnics, Polytechnics, and other specialized institutions such as Colleges of Agriculture, Schools of Health and Technology and the National Teachers' Institutes (NTI). Tertiary education as the postsecondary school education designed for the production of manpower [5]. Higher education is an education that awards certificates after the completion of the program.

The development of modern science and technology and production requires higher education to be more and more integrated as a whole, which is reflected in higher education as the integration of courses. It is to make basic education and professional education, application research, and development research permeate each other and cross-carry out, and train students to adapt to the needs of social development and have the skills to solve complex issues. Nowadays, every country develops higher education vigorously and strictly controls teaching achievements. Its importance lies in enhancing the level of social productivity and promoting the dual development of economy and culture [6].

The goals of Tertiary Education are to: Contribute to national development through high-level manpower training; provide accessible and affordable quality learning opportunities in formal and informal education in response to the needs and interests of all Nigerians; provide high-quality career counseling and lifelong learning programs that prepare students with the knowledge and skills for self-reliance and the world of work; reduce skill shortages through the production of skilled manpower relevant to the needs of the labour market; promote and encourage scholarship, entrepreneurship and community service; forge and cement national unity; and promote national and international understanding and interaction [7].

Tertiary Educational institutions shall pursue these goals through: Quality student intake; quality teaching and learning; research and development; high standards in the quality of facilities, services and resources; staff welfare and development programmes; provision of a more practical based curriculum relevant to the needs of the labour market; generation and dissemination of knowledge, skills and competencies that contribute to national and local economic goals which enable students to succeed in a knowledge-based economy; a variety of flexible learning modes including full-time, part time, block release, day-release, and sandwich programmes; access to training funds such as those provided by the Industrial Training Fund (ITF), Tertiary Education Trust Fund (TETFund); Students Industrial Work Experience Scheme (SIWES) that is well structured, coordinated and supervised; maintenance of minimum educational standards through appropriate regulatory agencies; an all-inclusive credible admissions policy for national unity; supporting affordable, equitable access to tertiary education through scholarships and students' loans; inter-institutional co-operation and linkages; and dedicated services to the community through extra-mural and extension services [8].

METHODS

The realization of tertiary education goals and program depends on effective curriculum implementation [9]. Tertiary institutions are saddled with the responsibilities of curriculum implementation. Curriculum implementation is the act of executing the planned curriculum in the school to modify the behavior of the learners [10]. Curriculum implementation is the process of carrying out an organized and planned curriculum document into action in the educational environment through professional teachers, learners, school administrators, and parents as well as interaction with physical facilities, instructional materials, and psychological and social environments. Curriculum implementation is the act of executing a planned curriculum document into the practical curriculum [11].

Conceptualized curriculum implementation as putting into practice the officially prescribed courses of study, syllabuses, and subjects [12]. From the above, curriculum implementation is the virtual and practical execution of

prescribed courses of study in school, syllabuses, and subjects in the classrooms within a given time. Curriculum implementation according to Garba, [13] is putting the curriculum to work for the achievement of the goals for which the curriculum is designed. Curriculum implementation as the transition of the objectives of the curriculum from paper to practice. That is, only effective curriculum implementation ensures the achievement of the objectives for which the curriculum was designed to attain. Curriculum implementation as day-to-day activities that school management and classroom teachers undertake in the pursuit of the objective of any given curriculum. Effective Curriculum implementation depends on human and material resources which include technological resources.

From the above, curriculum implementation in this paper can be conceptualized as the physical and virtual execution of an organized and planned learning program in educational institutions. Curriculum implementation is the process of carrying out organized prescribed courses of study, syllabuses, and subjects in the schools. Curriculum implementation is the implementation of four essential phases of the curriculum development process: planning, content and methods, implementation, and evaluation and reporting putting into consideration - the method and instructional resources. Curriculum implementation is the process of how the planned curriculum is passed and transferred to students to facilitate learning in educational institutions. Curriculum implementation process that involves assisting students in acquiring a planned knowledge or an organized experience in educational institutions. The curriculum implementation process can be divided into four phases: planning, content and methods, implementation, and evaluation and reporting.

The attainment of tertiary education goals and programs hinges on technology resources and other human and material resources. Artificial Intelligence has been identified by As one of the technological resources that can transform the entire educational system positively. Artificial Intelligence, [14] is a simulation of human intelligence by software-coded heuristics. Artificial Intelligence is a branch of science producing and studying machines aimed at the stimulation of human intelligence processes. Artificial Intelligence as the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings [15]. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from experience.

Artificial Intelligence (AI) as programs designed with human-like intelligence and structured in the forms of computers, robots, or other machines to aid in the provision of any kind of service or tasks to improve social economic, and political development of the society [16]. AI is an application or program constructed to carry out tasks with human-like intelligence. Artificial Intelligence (AI) is a collections system, packages, and applications designed for digital computers or computer-controlled robots to carry out assignments and tasks with human-like intelligence [17] viewed Artificial Intelligence (AI) as the ability of a computer or machine to mimic the capabilities of the human mind - learning from examples and experience, recognizing objects, understanding and responding to language, making decisions, solving problems - and combining these and other capabilities to perform functions a human might perform, such as greeting a hotel guest or driving a car. From the above, Artificial intelligence, in this paper is the ability of a machine to carry out tasks usually carried out by human intelligence. Artificial intelligence is a branch of science that deals with programming machines with a simulation of human intelligence to perform similar tasks normally carried out by human beings. Artificial intelligence (AI) is the intelligence of machines or software to carry out human-related tasks. Artificial intelligence (AI) is the packaging of machines or simulation or approximation of machines with human intelligence to function and carry out tasks like human beings.

RESULT AND DISCUSSION

Artificial Intelligence and Curriculum Implementation in Nigerian Tertiary Institutions

Deployment of Artificial Intelligence in tertiary institutions can help curriculum implementation in the following ways: lecture planning and preparation, preparation of instructional resources for lecture implementation, lecture presentation, assessment of students, marking of script, assigning of assignments, preparation of students, monitoring students' progress and select appropriate teaching method results.

Lecture Planning and Preparation

One of the aspects of curriculum implementation in tertiary institutions is lecture planning and preparation by academic staff. To realize the objective of curriculum implementation lectures must be presented to the students and before the lecture presentation, there is a need for lecture planning and preparation which is the first step. Artificial Intelligence has helped many lecturers in lecture planning and preparation. Noted that to reduce manual teaching by lecturers in schools, colleges, and universities such as lesson planning, lesson preparation, scheduling, rescheduling classes, marking attendance, grading papers, finance, and accounting and record keeping [18]. This streamlines the regular, mundane tasks that no longer need to be done by the staff. AI tools can perform various functions like ending truancy alerts, report cards, and other correspondence to the parents automatically, planning and scheduling meetings, Automate routines, student forms, enrolments, and other paperwork to the correct department, Shortening the time spent on progress reports AI, Streamline any other record-keeping tasks. It can enable teachers and professors to focus primarily on improving educational quality instead of manual paperwork and reducing work pressure. Observed that AI can assist teachers in grading, lesson planning, and providing feedback [19].

Preparation of Instructional Resources for Lecture Implementation

Academic staff is saddled with the responsibilities of instructional resources planning and organization for effective delivery of lectures in the classrooms. Instructional resources for lectures need adequate planning and organization. Artificial Intelligence can help lecturers prepare their lectures for effective curriculum implementation in lecture halls and classrooms. Concluded that smart content can range from digital textbooks, guides, instructional snippets, and videos to AI tools that create customized environments for the educational organization based on strategies and goals [20]. Personalization in education is the future global trend that can be accomplished by identifying the areas in which AI tools can play a role. For instance, schools can create AR/VR-based learning environments as well as web-based lessons to accompany them. AI Monitoring and Evaluation tools can streamline content for different learning styles and match pace with diverse learning curves. When many students submit an incorrect answer, AI and ML-powered algorithms can identify the areas that can be improved in the curriculum to fill in the gaps in defective or ineffective content and help teachers correct it.

Lecture Presentation

Another aspect of curriculum implementation is lecture presentation. This aspect is very important because it determines a lot about the curriculum understanding by students. Lectures must be presented well to realize their objectives by lecturers. Artificial Intelligence has assisted in lecture implementation in tertiary institutions in different ways. Noted that the teaching contents and methods in colleges and universities have been improved [21]. Under the new situation, according to the needs and the ability of colleges and universities, the subject system of artificial intelligence or artificial intelligence has been established. Artificial intelligence literacy has been brought into the general education system, and the student's general interest, sustainable development, and global governance have been cultivated. AI can help in creating personalized learning experiences for students by analyzing their learning styles and abilities. This will allow educators to customize their teaching methods, curricula, and materials to meet the individual needs of each student. AI can be used to create personalized learning experiences for students. AI-based learning systems can analyze student data, such as their learning style, pace, and preferences, and then provide them with tailored learning experiences. This can lead to improved engagement, motivation, and ultimately, better learning outcomes [22].

Assessment of Students

Lecturers are also saddled with the responsibility of evaluating the students to know if the lecture objective and outcome have been achieved. These assessments or evaluations are done through continuous assessment or administration of tests to students. Lecturers can use Artificial Intelligence to administer online tests. Submitted that AI can automate the assessment and grading process [23], saving time and providing objective evaluation. AI can also be used to analyze large amounts of student data, such as assessment scores and behavioral patterns, to identify areas where students may be struggling and provide targeted interventions [24]. Overall, the integration of AI in educational management has the potential to enhance teaching and learning practices and improve student outcomes. Indeed, AI can help educators identify which teaching methods and materials are most effective in enhancing learning outcomes. This information can be used to refine and improve the curriculum, resulting in better student performance.

Marking of Script

Marking of students' scripts by lecturers can be made easy with the deployment of Artificial Intelligence. Scripts marking is one of the responsibilities of lecturers and Artificial Intelligence (AI) can be used to mark student's scripts. Observed that AI-powered grading software combines Machines Learning to create calculating systems after it collects important data on metrics for grading assignments from papers that have been graded by teachers/professors [25]. The tools are designed to understand and replicate the teachers' human grading process earlier. Teachers' inputs + AI combination can grade essays, papers, and tests in seconds, even in different languages. They can easily integrate them into an existing virtual environment or cloud-based platform. They are handy when the number of papers is significant so that the teachers can be occupied by more value-based work instead of wasting hours in grading.

Assigning of Assignments

The deployment of Artificial Intelligence (AI) in tertiary institutions can help lecturers to assign assignments to students online. One of the aspects of curriculum implementation is to ensure students' involvement. Student's involvement in curriculum implementation can be in assigning the students assignments. Maintained that Artificial Intelligence (AI) can assist lecturers and teachers in assigning assignments [26]. He asserted that students can be given online assignments and submit them online after the completion of the projects or assignments.

Preparation of Students' Results

Curriculum implementation also deals with the preparation of students' results in tertiary institutions. Lecturers are saddled with the function of preparing students' results after examinations. Artificial Intelligence (AI) has assisted many lecturers in preparing students' results and releasing them to the students. Noted that AI can assist

administrators/teachers in analyzing large volumes of data, such as student performance data, attendance records, and resource allocation [27]. AI-powered systems can identify patterns, trends, and insights that can inform decision-making processes. Administrators can use this information to develop data-driven strategies for improving student outcomes, allocating resources effectively, and evaluating programs and initiatives.

Selection of Appropriate Teaching Method

Lecturers are saddled with the responsibility of selecting the right teaching method to suit a particular lecture topic and using it to deliver the lecture in the classrooms. Lecturers can ask about Artificial intelligence apps and get the right answers on the teaching method that is best suited for a lecture topic. Concluded that Artificial intelligence has completed the function of low-level teaching in higher education [27]. At present, the application of intelligent auxiliary teaching systems in colleges and universities is more and more extensive. In the specific teaching links, through data collection and analysis, classification and matching can understand students' learning situation in all aspects and at multiple levels, and establish an effective communication bridge between teachers and students. It helps college teachers design teaching plans, collect teaching materials, answer questions online, test and evaluate teaching, and reduce the burden of daily work. So teachers have new teaching methods to cultivate students' innovative thinking, unity, cooperation ability, emotional interaction ability, complex problem-solving ability, and other social skills.

Monitoring Students Progress

Deployment of Artificial Intelligence in tertiary institutions can help to monitor students' academic performance in tertiary. Asserted that teachers can monitor students' learning trajectory remotely [28], push personalized learning resources in time, and provide remote guidance to intelligent teaching platform at any time to automatically generate preview reports so that teachers can master students' learning situation; in class, through intelligent teaching platform, teachers and students can interact in real-time, so that teachers can "one to many" to solve different students' problems and monitor each student's learning in real-time After class intelligent platform through the data analysis of student's classroom learning, the intelligent judgment of students' knowledge difficulties, easy to achieve personalized learning guidance. Submitted that AI algorithms can analyze data on student performance, attendance, and other factors to predict which students may be at risk of falling behind and intervene early [29].

CONCLUSION

This paper examined the contributions of artificial intelligence in curriculum implementation in Nigerian Tertiary institutions. Using secondary data collected from both print and online publications the paper concluded that artificial intelligence has assisted in curriculum implementation in the following areas; lecture planning and preparation, preparation of instructional resources for lecture implementation, lecture presentation, assessment of students, marking of script, assigning of assignments, preparation of students, monitoring students progress and select appropriate teaching method results. Based on the findings of this study, the following recommendations are made. Governments should increase the funding of tertiary institutions and ensure the effective deployment of artificial intelligence since its contributions to curriculum implementation cannot be underestimated.

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