

# Artificial Intelligence and Curriculum Implementation of Post-Basic Education and Career Development (PBECD) in Nigeria

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**Abstract:** This paper discussed the application of AI in curriculum Implementation of Post-Basic Education and Career Development (PBECD) schools. The paper concluded that AI aids effective school management, lesson presentation, improve learning engagement, assists in conduct of examinations, aids online teaching and learning, aids effective classroom management, aids fast marking and result preparation and aids effective school security. Based on this findings, the paper hereby recommended full integration of AI for management and curriculum implementation of Post-Basic Education and Career Development (PBECD) schools in Nigeria.

**Key points:** Artificial intelligence and Post-Basic Education and Career Development (PBECD).

## Introduction

Post-Basic Education and Career Development (PBECD) is an education after basic education.

Post-Basic Education and Career Development (PBECD) is an education designed for career development and for preparation of the receiver for tertiary institutions. Post-Basic Education and Career Development (PBECD) is the bridge between basic education and tertiary education. Federal Republic of Nigeria, (2013) defined Post-Basic Education and Career Development (PBECD) as the education children receive after a successful completion of ten years of Basic Education and passing the Basic Education Certificate Examination (BECE) and Junior Arabic and Islamic Studies Certificate Examination (JAISCE). It includes: (i) senior secondary education, (ii) higher school; and (iii) continuing education given in Vocational Enterprise Institutions (VEIs) to either Basic Education graduates who are not proceeding to Senior Secondary Schools, or Senior Secondary graduates that are not proceeding to the tertiary level, as a means of preparing them for the world of work, wealth creation and entrepreneurship.

The objectives of Post-Basic Education and Career Development (PBECD) are to: to provide holders of the Basic Education Certificate and Junior Arabic and Islamic Studies Certificate with opportunity for education of a higher level, irrespective of gender, social status, religious or ethnic background; to offer diversified curriculum to cater for the differences in talents, disposition, opportunities and future roles; to provide trained manpower in the applied sciences, technology and commerce at sub-professional grades; to provide entrepreneurial, technical and vocational job-specific skills for self-reliance, and for agricultural, industrial, commercial and economic development; to develop and promote Nigerian languages, art and culture in the context of world's

cultural heritage; to inspire students with a desire for self-improvement and achievement of excellence; to foster patriotism, national unity and security education with emphasis on the common ties in spite of our diversity; and to raise morally upright and well-adjusted individuals who can think independently and rationally, respect the views and feelings of others and appreciate the dignity of labour. The realization of the objectives of Post-Basic Education and Career Development (PBECD) depends on the availability of materials and human resources available in the educational institutions. Artificial intelligence (AI) is included in the materials resources.

### **Concept of Artificial intelligence**

Frankenfield (2023) defined Artificial intelligence (AI) as simulation of human intelligence by software-coded heuristics. Artificial Intelligence is a branch of science producing and studying the machines aimed at the stimulation of human intelligence processes. Alagbe (2023) viewed 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. Ogunode & Ukozor (2023) defined 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 the social economic and political development of the society. Artificial Intelligence is an application or program constructed to carry out tasks with human-like intelligence. Artificial intelligence (AI), according to Copeland (2023) is the ability of a digital computer or computercontrolled robot to perform tasks commonly associated with intelligent beings. 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 past experience. Frankenfield (2023) defined Artificial intelligence (AI) as simulation of human intelligence by software-coded heuristics. Artificial Intelligence is a branch of science producing and studying the machines aimed at the stimulation of human intelligence processes. From the above, Artificial intelligence (AI) can be defined as an organized facilities with a similar simulation of human intelligence to carry out an organized tasks similar to what human being can do. Artificial intelligence (AI) are machines programme forms with capacities and abilities to execute tasks and responsibilities that human beings are performing with the assistance of human-like intelligence.

### **Curriculum Implementation of Post-Basic Education and Career Development (PBECD)**

Curriculum implementation is the act of executing the planned curriculum in the school to modify behave of the learners (Akin-Ibidiran, Ogunode & Ibidiran 2022). Chikumbi & Makamure, (2000), conceptualized curriculum implementation as putting into practice the officially prescribed courses of study, syllabuses and subjects. 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 can also be viewed as the process of the planned prescribed courses of study being translated into syllabuses, schemes of work and lessons by professional teachers to be delivered to students in the classroom online or physically. Curriculum implementation is the process of carrying out an organized and planned curriculum document into actions 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 (Akin-Ibidiran, et al, 2022).

Ejike, & Oke (2018), curriculum implementation fosters curriculum evaluation and this guides the learning outcomes. The major implementers of curriculum are the teachers. They set up learning opportunities aimed at enabling learners acquire the desired knowledge, skills, attitudes and values through adoption of appropriate teaching methods and materials to guide students' learning. The curriculum planned and developed is implemented through the medium of instruction. This is why curriculum implementation is seen as the daily activities of school management and classroom teacher in the pursuit of the achievement of the objectives of the school curriculum, all in a bid to

realize the national philosophy of education. Okebukola (2004), viewed curriculum implementation as the transition of the objectives of the curriculum from paper to practice. That is, only effective curriculum implementation ensures achievement of the objectives for which the curriculum was designed to attain. From that above, curriculum implementation can be seen as execution of an organized curriculum programme in the educational institutions. Curriculum implementation is the conversion of theoretical curriculum programme to reality via teaching and learning in the educational institutions.

### **Application of Artificial intelligence for Management of Post-Basic Education and Career Development (PBECD) in Nigeria**

There are many benefits of AI in the curriculum implementation. In this paper, AI has led to aid effective school management, lesson presentation, improve learning engagement, assist in conduct of examination, aid online teaching and learning, aid effective classroom management, aid fast marking and result preparation and aid school security.

#### **Aid Effective School Management**

AI can aid effective management that will aid effective implementation of curriculum in the Post-Basic Education and Career Development (PBECD) schools. Effective management is critical for smooth curriculum implementation. Ogunode & Olowonefa (2023) opined that AI has the capacity to improve data generation, distribution, storage and computation in school for effective decision and planning for effective school management. Ogunode (2021) asserted that one of the major function of education administration is planning of educational programme and projects. Planning is very vital to the realization of the objectives of secondary school education. Educational institutions must be planned to be able to achieve its objectives and education must be planned too to be able to realize its goals. Data is what is needed to plan and take decisions. Data is very important for planning educational programme. Without current educational data, planning is impossible. AI can give school management insights into their operations they might not have been aware of. The rapidly expanding population of generative AI can play these roles in schools data management: classification of data by obtaining, extracting, and structuring data from documents, photos, handwriting, and other media. Cataloging by helping to locate schools data. Improve quality of data collected by reducing errors in the data management process. Data security in school by keeping data safe from bad actors and making sure it's used in accordance with relevant laws, policies, and customs and ensuring data integration by helping to build "Management databank of schools. Also, Westagilelabs (2022) noted that to eliminate manual administration work in n schools, colleges and universities such as scheduling, rescheduling classes, marking attendance, grading papers, finance, and accounting and record keeping. 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, Plan and schedule meetings, Automate routine, student forms, enrollments, and other paperwork to the correct department, Shorten 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. Igbokwe, Chan, & Tsi (2023); (2023) and Ogunode, Edinoh & Chinedu (2023) agreed that AI can assist effective school management.

#### **Lesson Presentation**

Curriculum implementation deals with lesson planning and presentation. Lesson planning and lesson presentation is a major function of a teachers in the Post-Basic Education and Career Development (PBECD). The teachers is saddled with responsibilities of planning a simple and presentable lesson plan that will stimulate learning in the classroom. AI resources have been proved to have the capacity to aid the teachers to prepare bot lesson plan and aid the teachers to present the lesson perfectly. Ogunode et al (2023) asserted AI can be applied to aid delivery of lecture or implementation of teaching programme in educational institutions. Westagilelabs (2022) observed that tutoring programs or intelligent tutoring systems (ITS) based on artificial intelligence are equipped to handle personalized feedback and instructions for one-on-one teaching. They can help

in scenarios where human tutors are not available for small lessons that can be taught and evaluated online. It can be an effective tool in e-learning platforms to teach languages, geography, circuits, medical diagnosis, computer programming, mathematics, physics, genetics, chemistry, etc. They are designed to factor in engagement, metrics for grading and comprehension.

### **Improve Learning Engagement**

One of the objective of curriculum implementation is to ensure that learners learn what they supposed to learn in the schools. It is the duties of the school managers and teachers to ensure teaching is learners-centered. Ogunode (2021) noted that teaching that is learner centered produces positive result. It has been advocated that school should ensure teachers make their teaching and instructional resources learner centered. Making teaching learner centered have been one of the challenges teachers are facing. Deployment of AI into classroom can make teaching learner centered and improved students engagement. Borbajo, et al (2023) observed the integration of AI technologies in the classroom was found to enhance student engagement and motivation. AI-based educational tools, such as adaptive learning platforms and intelligent tutoring systems, provide personalized and interactive learning experiences. These technologies adapt to individual student needs, pacing, and learning styles, fostering greater student engagement and intrinsic motivation. Students showed increased interest and active participation in their learning process, leading to improved learning outcomes. On enhanced personalized learning, Borbajo, et al (2023) noted that AI integration facilitated personalized learning experiences by tailoring instruction to individual student abilities and preferences. Intelligent algorithms analyzed student data and provided adaptive feedback, suggesting targeted learning materials and activities. This personalized approach allowed students to learn at their own pace and focus on areas where they needed additional support.

Consequently, students demonstrated improved comprehension, retention, and mastery of academic content. Also, Ogunode et al (2023) with the assistance of AI, attendance management improves the employee; s real-time attendance tracking facilities. It provides efficient output by eliminating the need for manual data entry and reducing administrative burdens. Additionally, an AI-based attendance system provides efficiency and accuracy in attendance tracking applications that curb employee overpayment and underpayment. All employees are paid as per their working hours or working days. AI attendance tracking system saves HR time. They can invest their time in other administrative work. AI provides accurate data on early leaving, overtime, leaves, shifts, and more. By automating processes and reducing the need for manual labour, organizations can save costs associated with traditional attendance methods and data entry. AI attendance management system prevents extra time consumption and expenses.

### **Assists in Conduct of Examination**

Curriculum implementation also ensure effective assessment of students' academic progress. Post-Basic Education and Career Development (PBECD) managers and administrators are to ensure effective conduct of examination every end of the school term. Examination is one of the most crucial programme of educational institutions. Examination programme supersede all other school programme. Conducting a smooth examination have been a problems for many educational institutions due to population increment overtime. Ogunode Edinoh, & Chinedu, (2023) maintained that AI can help conduct fair exams with the use of AI-powered remote proctoring. With its help, school authorities can easily conduct exams for remote learners. The authorities can prevent cheating during exams by analyzing the images/video streams produced by AI proctors. These proctors keep an eye on the candidate by detecting voices or the presence of another person apart from the examinee. Lecturers can also use AI to manage their course materials.

### **Aid Online Teaching and Learning**

Deployment of AI in management of school can aid effective delivering of curriculum via online teaching and learning in Post-Basic Education and Career Development (PBECD) schools. Bordia, (2023) maintained with the help of AI, students can learn from anywhere at their own pace without having to attend physical classes. They can connect with learners from all over the world and

participate in similar courses. AI is modifying education models and teaching-learning techniques around the globe. As learners can quickly access information, they can resolve their doubts in a short time. This powerful technology is also promoting the culture of lifelong learning by empowering students with the required information in a span of a few seconds. Bordia, (2023) and Borbajo et al., (2023) opined that with AI, the education industry can change traditional learning methods to provide an enriched learning experience for students. Now students can learn from any corner of the world thanks to the power of artificial intelligence. Universal access to education is one of the applications of AI in education. Quality education is accessible to students outside their classrooms. They can participate in global courses and learn from anywhere without worrying about their geographical location. AI technologies can aid teachers to effectively deliver teaching of programme in schools (Singh, & Jain, 2022; Ogunode & Ukozor 2023)

### **Aid Effective Classroom Management**

Curriculum implementation has a relationship with classroom management. Effective curriculum implementation can only take place in an organized classrooms. Teachers are also saddled with responsibilities of classroom management. Ogunode & Edet (2023) defined classroom management as the systematic ways involve in planning, organizing and coordinating classroom (students and resources) for effective implementation of teaching and learning. Classroom management is the proper coordination and organization of classroom resources both human and materials for smooth implementation of teaching and learning program. Classroom management entails all activities and actions geared towards ensuring an atmosphere of classroom that promote effective teaching and learning under instructor supervision. Teachers are always faced with the problem of managing classroom for effective teaching and learning to take place. AI can aid effective classroom management. AI can assist teachers to monitor student's attendance in classroom. AI can aid teachers to manage instruction in the classroom (Ogunode, et al 2023; Alagbe, et al 2021; Chen, Chen, & Lin,2020)

### **Aid Fast Marking and Result Preparation**

Deployment of AI for school management can assist both the teachers and school managers in the marking of student's exams and preparation of student's report cards. Ogunode et al (2023) remarked that AI can assistant teachers and lecturers especially exam officers prepare students result very fast and reliable. Westagilelabs (2022) 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. 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. AI can aid effective marking of students online based examinations and also help to prepare the result on time.

### **Aid Effective School Security**

School security is very important in curriculum implementation. The teachers, students and school administrators need a secured school environment to implement school programmes. Source security (2023) noted that security is a 24-hour challenge. Protecting schools involves the deployment of a range of security and physical handling tools. Reducing risk requires that access to school buildings be controlled, while also preserving an „open“ campus atmosphere that promotes a learning environment. Schools should be an inviting place for students and families, so technological solutions aimed at restricting access should be low-profile and unobtrusive. School security must also be designed in layers, or concentric circles of protection, starting at the school's perimeter and working inward to secure individual classrooms and other internal areas. Source security (2023) listed the following AI devices to solve security problems in tertiary institutions to include Video surveillance. Video surveillance is a technology that is unobtrusive and can promote security beginning at the outermost boundaries of the school environment – at the perimeter and as

automobiles drive onto school grounds. Surveillance can keep a silent and constant watch as people come and go. Furthermore, incorporating new artificial intelligence (AI) and deep learning technologies is increasing the real-time capabilities of video surveillance to provide early warning of a possible security threat as it enters a campus. AI and deep learning analyse the content of video feeds and provide usable information to security personnel, including analysis of trends and real-time alarms when an event takes place.

### **Conclusion and Recommendations**

This paper discussed the application of AI in management and implementation of curriculum in Post-Basic Education and Career Development (PBECD) schools. The paper concluded that AI Aid effective school management, lesson presentation, improve learning engagement, assist in conduct of examination, aid online teaching and learning, aid effective classroom management, aid fast marking and result preparation and aid school security. Based on this findings, the paper hereby recommended full integration of AI in management of Post-Basic Education and Career Development (PBECD) schools in Nigeria.

### **References**

1. AFSA (2022). Artificial intelligence and education. <https://www./artificial-intelligence-and-education>.
2. Akin-Ibidiran T. Y, Ogunode N., J & Ibidiran J., A. (2022). Analysis of Factors Responsible for Poor Curriculum Implementation in Tertiary Institutions in Nigeria. *Electronic Research Journal of Social Sciences and Humanities*, 4( IV),1-11
3. Alagbe, J, Awodele, O & Ayorinde, I. (2021). Is Nigeria ready for Artificial Intelligence in schools? <https://punchng.com/is-nigeria-ready-for-artificial-intelligence-in-schools/>
4. Borbajo, N. M., Malbas, M. H., & Dacanay, L. R. (2023). Reforming education: the global impact of integrating artificial intelligence in the classroom environment. *American Journal of Language, Literacy and Learning in STEM Education*, 1 (05), 16-27.
5. Bordia, D. (2023). How is AI used in education and academics? Retrieved June 22, 2023 from <https://blog.teachmint.com/how-is-ai-used-in-education-academics>
6. Copeland, B.J (2022). Artificial Intelligence. <https://www.britannica.com/technology/artificial-intelligence>
7. Chikumbi, T. J. & Makamure, R. (2000). Curriculum theory, design and assessment the commonwealth of learning, module 13. Retrieved July 23, 2022 from [www.col.int/stamp/module13.pdf](http://www.col.int/stamp/module13.pdf)
8. Chan, C. K. Y., & Tsi, L. H. (2023). *The AI revolution in education: Will AI replace or assist teachers in higher education?* arXiv preprint arXiv:2305.01185.
9. Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *Ieee Access*, 8, 75264- 75278.
10. Ejike, C, N., & Oke,. G., E. (2018). Challenges of Curriculum Implementation and the Realization of National Philosophy of Education in Nigeria. *International Journal of Management, Social Sciences, Peace and Conflict Studies (IJMSSPCS)*, Vol.1 No.1, p.g. 62 – 67
11. Frankenfield, J, (2023). Artificial Intelligence: What It Is and How It Is Used <https://www.investopedia.com/terms/a/artificial-intelligence-ai.asp>
12. Federal Republic of Nigeria (2013). National policy on education. Yaba, Lagos. Nigeria: NERDC Press.
13. Igbokwe, I. C. (2023). Application of artificial intelligence (AI) in educational management. *International Journal of Scientific and Research Publications*, 13(3).300-307

14. Ogunode, N., J., Edinoh, K. & Chinedu, O., R (2023). Artificial intelligence and Tertiary Education Management. *Electronic Research Journal of Social Sciences and Humanities*, 5, (IV), 18-31
15. Ogunode N., J. & Olowonefa J., A. (2023). AI Education in Nigerian Schools. *International Journal of Human Computing Studies*, 5(10),47-55
16. Ogunode, N. J. & Gregory, D. M. (2023). Artificial Intelligence (AI) in educational administration. *International Journal on Orange Technologies*, 5(10), 7-16.
17. Ogunode, N. J., & Ukozor, C. U. (2023). Curriculum revolution in higher education: the mighty role of artificial intelligence. Retrieved June 22, 2023, from <https://ijins.umsida.ac.id/index.php/ijins/article/view/971/1183>
18. Ogunode, N. J., Agbade, O. P., & Bassey, U. O. (2023b). Barriers to effective usage of artificial intelligence in tertiary institutions in north-central Nigeria. *Web of Semantics: Journal of Interdisciplinary Science*, 1(1), 38-43.
19. Ogunode, N., J. & Edet, I., N. (2023). Classroom Management. *International Journal of Inclusive and Sustainable Education*, 2(10),62-70
20. Okebukola, C. (2004). Quali municipal, Imo State for effective implementation of the UBE. *Journal of Curriculum Organization of Nigeria*. 37-44
21. Singh, S., & Jain, P. (2022). Applications of Artificial Intelligence for the development of sustainable agriculture. In: Kumar, P., Tomar, R. S., Bhat, J. A., Dobriyal, M., Rani, M. (eds) *Agro-biodiversity and Agri-ecosystem Management*. Springer. [https://doi.org/10.1007/978-981-19-0928-3\\_16](https://doi.org/10.1007/978-981-19-0928-3_16)
22. Source security. (2023). Enhancing the security of educational institutes with AI-enabled video security systems. Retrieved June 22, 2023, from <https://www.sourcesecurity.com/news/security-educational-institutes-video-security-systems-co-3425-ga-co-12558-ga.1557484245.html#:~:text=AI%20and%20deep%20learning%20technologies,from%20entering%20the%20learning%20environment>.
23. Westagilelabs (2022).How Artificial Intelligence (AI) is transforming education: 8 cutting-edge applications. <https://www.westagilelabs.com/blog/8-applications-of-artificial-intelligence-in-education/>