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Abstract

This paper explored the possibility of integrating Artificial Intelligence and entrepreneurship education into the curricular of Nigeria's tertiary institutions, motivated by the imperative to prepare students for the evolving demands of the digital age in relation to functional skills acquisition and entrepreneurship prowess by graduates of Nigeria's tertiary institutions. The study which philosophically analysed AI and entrepreneurship education in Nigeria's tertiary institutions was meant to find out the role AI could play in the teaching and learning of Entrepreneurship Education in Nigeria's tertiary institutions. This motivated the use of philosophical analysis to expunge on the feasibility or otherwise of deploying AI in the teaching and learning of Entrepreneurship Education in Nigeria's tertiary institutions. The research findings showcased the duo as veritable tools that are timely and indispensable in fostering the development of future entrepreneurial experts, capable of leveraging AI for scientific innovation and evolving technological landscape capable of harnessing Nigerian graduates with digital entrepreneurial skills. The paper recommended that the deployment of AI in Nigeria's tertiary institutions is not only apt but tenable. In view of this, all educational stakeholders particularly the Nigerian government at all levels should ensure adequate funding is made available; professional manpower is provided and equally ensure contemporary quality assurance. Furthermore, education in Nigeria should be prioritized by provision of workable and pragmatic educational policies with particular reference to the development of Entrepreneurship Education and the deployment of AI in all public tertiary institutions.

Keywords: Artificial Intelligence, Entrepreneurship, Education and Entrepreneurship Education

Introduction

Functional entrepreneurship education could undoubtedly help provide products of Nigeria's schools at the tertiary level with requisite skills and knowledge that are relevant and necessary for survival in this dispensation. This study investigates the integration of Artificial Intelligence (AI) and Entrepreneurship Education into the curricula of Nigerian tertiary institutions. This was highly motivated by the imperative to prepare students for the evolving demands of the digital age in relation to functional entrepreneurial skills acquisition and entrepreneurial prowess in graduates and would-be graduates of Nigerian tertiary education institutions of learning. Against this backdrop, the study is ultimately meant to foster the development of rigorously trained future entrepreneurial experts capable of leveraging AI for scientific innovation in evolving technological landscape that would invariably harness Nigerian graduates with digitalized entrepreneurial skills and concepts that could be transformed to meaningful ventures and credible innovations.

In other words, the development of AI in Nigeria tertiary institution is bound to undoubtedly enhance the effective implementation of Entrepreneurial Education for economic and educational empowerment of the Nigerian tertiary education graduates, in this global digitalized age. However, this development will surely task the Nigerian government, more particularly in line with increasing the funding and provision of gadgets, machinery, facilities and adequate power for efficiency and optimal utilization of all provisions made. That is to say, it behoves on the Nigerian government to ensure adequate investment in AI and Entrepreneurship Education infrastructures, facilities and professional manpower in all Nigerian tertiary institutions. Thus, the need for the government to substantially increase funding of tertiary institutions for the development of entrepreneurship education and deployment of the most current Artificial Intelligence in all public tertiary institutions across the nation.

Theoretical Framework

In the course of establishing a theoretical framework for this paper, literature related to the topic under investigation were reviewed. This actually formed the basis for the theoretical framework of the study. This hitherto resulted in the examination of all concepts and issues related to the philosophical analysis of Artificial Intelligence and Entrepreneurship Education in Nigeria's tertiary institutions. However, the theoretical framework was hinged on the principles and ideas of pragmatism and existentialism as philosophical schools of thought.

Pragmatism

Pragmatism as a philosophical school of thought has to do with practical experience as an agent of education in the course of teaching and learning in schools. etymologically as stated by Bagudo,¹ pragmatism is a derivative from the Greek word 'pragma', meaning action from which words like 'practice' and 'practical' were coined. Furthermore, the philosophy of pragmatism became known and flourished as an American philosophy, because the main proponents; Charles Pierce, Williams James and John Dewey were all American

¹ Bagudo, A. A. (2006). *Philosophical Foundations of Education*. Jos: Sainez Books Publishers, 189-260.

philosophers. The roles they played individually and collectively earned pragmatism a variety of names such as; instrumentalism, functionalism and experimentalism, thereby transforming the socio-political situation of America positively when fully endorsed by the society. Based on the foregoing, record has it that Dewey's age was one of rapid innovation in technology, gigantic expansion in industry and commerce, and most important of all, of an extremely individualistic outlook which had grown out of the economic philosophy of free enterprise and/or entrepreneurship.

Therefore, pragmatism (just like entrepreneurship and Artificial Intelligence), has to do with action which demonstrates putting whatever is learnt into practice and/or experimentation. It defines man as an experiencing organism interacting with his environment, encountering problems, but always navigating through contemporary measures fully utilized in attempting to solve the problems through thought (ideas) and action (practically). For man, according to Bagudo,² uses his thoughts, ideas and actions as instruments with which to act on his environment, with a view to changing it positively, and hitherto invariably removing the potential problems it poses.

Thus, to the pragmatists, any theory that works in practice is the true one; and the hypothesis that is proven and works is the true one. Therefore, Bagudo³ postulated that the education Dewey declared (just like entrepreneurship and Artificial Intelligence) does not stop with graduation, but a form of education that is for life. It is meant to be the teacher, particularly so, if a better society had to be developed. Thus, man is not expected to stand still and stagnate as a result of unemployment, because only when one seeks for viable avenues and look forward to always explore, exploit and utilize the knowledge he/she acquired pragmatically could man successfully live a constructive life.⁴

Basic Principles of Pragmatism as a Philosophical School of Thought

Pragmatism emphasizes the practical consequences of ideas and actions as the primary criteria for determining their truth and value. It prioritizes experience, action and the ability to solve problems with ease and dexterity, thus having an edge over abstract theorizing and/or fixed principles. The four (4) principles of pragmatism in education according to Sharma, Devi and Kumari,⁵ are:

- a) **Principle of Utility:** Everything to be taught by the teacher and subsequently learned by the students/pupils should have utility. This means that everything that the students should be involved in or exposed to should be useful, especially to the student. In most instances, many students are not bothered or care for learning abstract theoretical ideas that have no direct bearing and impact to their lives within and outside the school setting. Instead, students want to learn things that are absolutely relevant to their lives. Thus, the need to ensure the deployment of AI in the teaching

² *Ibid*, Bagudo, A. A. (2006).

³ *Ibid*.

⁴ Okoye, G. (2024). Philosophical Schools of Thought and their Implications. https://www.gouin.edu.ng.2024GOUNT/online_learning_platform.

⁵ Sharma, S., Devi, R. & Kumari, J. (2018). Pragmatism in education. *International Journal of Engineering Technology, Science and Research*, 5(1), 42-64.

and learning of Entrepreneurship Education in Nigeria's tertiary institutions should be fully utilized to ensure the exploration of all the relevant and meaningful areas that will ensure the students are more engaged and eager to learn, due to the utility they may derive from such engagements.

- b) **Principle of Interest:** Curriculum contents should also include the students' interests. Dewey, in Drew⁶ (a key pragmatist theorist), argues that students have four interests; conversation, investigation, construction and creative expression. Therefore, teachers, based on this principle, are expected to focus on creating lessons that involve talking with one another, investigating things through (as the basis and backbone of entrepreneurship education); experimentation (which AI is meant to play a major role in obtaining adequate results); and making things by self and being creative which eventually is bound to lead to not only mastery but near perfection in all entrepreneurial ventures introduced to the students as supported by AI tools.
- c) **Principle of Experience:** Pragmatists value experience over all else. Students can learn abstract things all day, but unless they experience those things first hand, they may never truly learn. Teachers should therefore create a lot of projects based on experimental and experiential lessons that AI can successfully execute, while the students follow the sequential order, being fully engaged to always 'learn by doing' irrespective of the resource person or assistant. Thus, to the pragmatists 'experience' is truly the best teacher.
- d) **Principle of Integration:** The pragmatists asserted that, for better results in learning, particularly entrepreneurship education ideas using the AI tools, the curriculum content in Nigeria's tertiary institutions should never be perceived as separate entities, rather it should be considered as parts of a whole. This simply means the students should always be able to connect the dots and integrating the workings of AI as they are being applied to the teaching and learning of Entrepreneurship Education in schools. For instance, creative arts, science and technology should not be seen as three different lessons, instead the pragmatic teacher links them together via the curriculum content by a process known as integration. In other words, science experiments, technology develops and creative arts displays that which is successfully invented as a result of the collaborative efforts in different disciplines.

The implementations of the above principles in the teaching and learning of Entrepreneurship Education in Nigeria tertiary institutions while deploying the AI tools include the following:

- i) Students learn best through experience. Therefore, all the necessary instructional materials should be provided for the students to learn things by themselves as facilitated by AI. That is to say, the students can always go off and experiment with entrepreneurial materials to learn how they work, e.g. deploying AI tools to design, construct and operate diverse instructional materials in order to enhance qualitative educational delivery. There should be a lot of scientific and entrepreneurial projects

⁶ Drew, C. (2024). The four principles of pragmatism in Education. Helpful Professor.
<https://www.helpfulprofessor.com/pragmatism-in-education/> Accessed 21/07/2025.

- and practical tasks that involve topics that are relevant to the students life in particular, the academic community and the entire community/society in general.
- ii) Play-based learning could be explored and utilized at this level through the initiation of challenging tasks to be unraveled through games and simulations programmed in computers. This is so because, one of the best ways of experiencing the world (and therefore learning in diverse forms) is through play. This is particularly true for early childhood students. Therefore, pragmatists believe that children at the early stages of development should spend a lot of time playing. However, through computer games and simulations, Nigerian students at the tertiary level could equally be engaged by the deployment of AI tools to perform myriads of entrepreneurial tasks in form of games that connotes advanced form of play. It is thus believed that, play-based learning in whatever capacity and whatever level facilitates experimentation and therefore makes students learn more about themselves and the world in which they live particularly their climes, as they partake and explore a lot of ideas and tasks in plays and games.
 - iii) Group work and negotiations are key: Pragmatists are neither idealists nor purists. This means that they are more interested in getting things done than achieving perfect results. In the classroom setting, however, it means that students need to learn how to get things done while simultaneously getting along with each other in order to achieve desirable and tangible results. A pragmatic classroom is one that will therefore inevitably involve a lot of group work, where students have to come to mutual agreement in consent and/or consensus to each other's views and skills. In tertiary institutions in Nigeria, therefore, teachers should be encouraged to always exploit the situation in the course of deploying AI tools in the teaching and learning of Entrepreneurship Education tasks by dividing them into groups where they will explicitly learn the relevance and merits of group work, cooperation and negotiation for better teaching and learning outcomes.

Existentialism

Existentialism, in another development, is a philosophical school of thought that is deemed by many to be the most influential human movement in the 20th century. That is why Omeregbe⁷ prefer to describe existentialism as a movement, rather than a philosophical school of thought. However, Bamisaiye, in Bagudo,⁸ described it as a commitment to individualism, concern for human condition and strategy of human problems such as; finitude, guilt, alienation, despair, death, freedom, choice, determination and responsibility among others. Thus, the philosophy of existentialism derived its name from the word 'existence'. This simply means that for a human being to exist, he/she has to be at the helm of his/her affairs, personally directing its main course, that is, tackling all existential problems. Similarly, central to existentialism is individual's commitment to excellent living while maximizing the utilization of the available resources at man's disposal for optimal result. That is to say, man should not be afraid of commitment at all times and should equally

⁷ Omeregbe, J. I. (1998). *Ethics: A Systematic and Historical Study*. Lagos: Joja Educational Research and Publishers Limited.

⁸ Bagudo, A. A. (2006), *Op. cit.*

commit himself deliberately for all intent and purpos, as freedom must be committed in action, as anybody seeking freedom without commitment only deceives himself.

According to Bagudo,⁹ the existentialists recognized two worlds, sharply in contrast to one another and identified as the Developed and the Developing worlds. In the developed world, man has succeeded in controlling his environment, thereby developing it to suit his own purposes through the application of science, technology, entrepreneurial skills and ideals, thereby entrenching domestic and industrial enterprises at an exponential rate. This is a practical evidence of human effort towards self-preservation, which is the most fundamental instinct of man against human facticity. In the developing world, however, man is more vulnerable to the ordeals of the facticity of human existence: death, decay, sickness, disease, disappointments, sorrows and man's powerlessness in virtually all facets of life and living; while in the developed part of the world, on the other hand, man has a higher life expectancy, food security, controlled or even eliminated the prevalence of some diseases, enjoyed more human empowerment, utilized all available natural and human resources at their disposal within their domain and beyond to better their lives as much as humanly possible, better than their counterparts in the developing world.

The fundamental essence of the foregoing narration is that, man is the catalyst of all the natural resources on earth. That is why he is at liberty to better his life or otherwise on this earth by fully utilizing his talents, potentials and inventiveness. Thus, ensuring that he maximizes his life's expectancy on the one hand, and reducing to the barest minimum the ordeals encompassed in the facticity of human existence on the other. The question is how? The answer obvious is through harnessing all resources available to him and aligning them to functional entrepreneurship education and the advanced form of scientific discovery, technological advancement and digitalized invention of a computerized contemporary knowledge in the form of Artificial Intelligence (AI). The integration of Entrepreneurship Education and AI in Nigeria's tertiary institutions would indubitably provide a new form of education and knowledge to the students that would seriously and invariably promote both individual human development and societal progression.

Basic Principles of Existentialism in Education

Existentialism in education emphasizes individual freedom, responsibility and the search for meaning in living and existence of being. It prioritizes the learner's subjective experience and encourages self-discovery, critical thinking and personal responsibility in the teaching and learning process. Thus, the basic principles of existentialism in education, according to Maden¹⁰ are as follows:

- 1. Existence precedes essence:** This core existentialist principle or idea suggests that humans are born without a predetermined nature or purpose. Man therefore creates his own essence through variety of choices and actions. By implication, this suggests that, in education, students are not meant to be docile or passive recipients of knowledge but active actors and creators of their own understanding and identity through exposure and coming in

⁹ *Ibid.*

¹⁰ Maden, J. (2021). What is existentialism? <https://www.philosophybreak.com> Accessed 23/07/2025.

contact with variety of options in the midst of numerous lucrative alternatives with impending possibilities of actualizing some in the course of existence. To this end, students in Nigeria's tertiary institutions of learning should have the leverage to utilize and manipulate AI tools in learning and developing a plethora of entrepreneurial ventures and tasks.

2. **Freedom and responsibility:** Existentialists believe that individuals are fundamentally free and that this freedom comes with the burden of responsibility. This is true of deploying AI tools in the teaching and learning of Entrepreneurship Education in Nigeria's tertiary institutions of learning as more resources is required to make it tenable and a lot of effort is expected both on the part of the teacher and the students to make it a reality. However, students are encouraged to make choices about their learning irrespective of the complexity of the subject matter at hand and they must also accept the consequences of the choices they make. This in turn, fosters a sense of ownership and accountability as a core principle of human existence.
3. **Authenticity and self-awareness:** Existentialism values living in accordance with one's own values and beliefs. Thus, AI tools should be deployed in Nigeria's tertiary institutions of learning to execute those entrepreneurial concepts and products that are of utmost value to Nigerians as a developing country. In education therefore, it means that students should be encouraged to explore their own thoughts, feelings and values and to also make choices that are meaningful to them as individuals and the society at large with little or no external imposition.
4. **Subjectivity and meaning making:** Existentialism recognizes that truth and meaning are not objective or universal but are shaped by individual experience and interpretation. Therefore, the AI tools to be deployed in the teaching and learning of entrepreneurship education in Nigeria's tertiary institution should be those that will be most suitable to be used in this part of the world as the students make meaning of what is learnt based on the experiences they have garnered so far. Thus, in the classroom setting, however, it means that the students' personal experiences and perspectives are valued as valid, and viewed as important sources of knowledge that inevitably enhances the quality of human existence.
5. **Open-ended inquiry and critical thinking:** The application of Artificial Intelligence in the subject of inquiry and result-oriented investigation in respective disciplines could be limitless particularly in a well-loaded discipline like entrepreneurship education. However, this could only be possible if the human mind is kept active in thought through critical thinking. Thus, existentialist education encourages students to grapple with complex, open-ended questions that would inevitably help them develop critical thinking skills that might eventually metamorphose into a critical mind. This is especially true when it is nurtured in the quest for seeking for undiluted truth in all matters of teaching and learning. This connotes that, rather than seeking for simple answers in the usual conventional form of learning, students are motivated to explore different perspectives in each matter and should also construct their own understanding in each instance, particularly at the higher rate in the realm of human existence; this should equally be followed and/or accompanied

by assured security in the quality of life one is bound to live in this planet earth to truly exist.

6. **The role of the teacher:** In an existentialist classroom, the education provided irrespective of the discipline and the audience involved is expected to be learner-centered. To this end, the teacher involved is expected to act as a facilitator rather than a conventional teacher and/or lecturer. By implication, this means that, in the process of teaching and learning entrepreneurship education in Nigeria's tertiary institutions, the learners should be given free-hand to explore to the maximum all the AI tools deployed to their institutions of learning at their disposal, particularly in the quest to learn, process and construct diverse tasks and concepts. That is to say, the teachers role is to create a supportive and/or conducive environment for the students in which they can eagerly and confidently explore their own ideas, make potential and/or substantive choices and equally take responsibility of their learning, active living and the impending consequences of their actions or in-actions in relation to their individual existence. Thus, existentialism by these standards is viewed as the fascinating way of thinking about the world and man's place in it.

Conceptual Framework

The conceptual framework is meant to highlight the key concepts that serve as a bedrock to the discourse in this write-up. Thus, concepts such as Artificial Intelligence (AI), Entrepreneurship, Education and Entrepreneurship Education were philosophically analysed both in content and in context. That is why issues related to the study under investigation were examined as they relate to Nigeria's tertiary institutions.

Artificial Intelligence (AI)

According to Wikipedia,¹¹ Artificial Intelligence (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 that involves data whose scale exceeds what humans can analyse with ease. However, Kurtianyk¹² sees it as a branch of computer science that uses computational models to perform tasks that previously required human intelligence to execute. In another development, Gofman and Jin¹³ postulated that, AI is a set of technologies that enable computers to perform a variety of advanced functions, including the ability to see, understand, translate spoken and written language, analyze data, make recommendations and more. It follows therefore, as observed by Kurtianyk¹⁴ that, 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, psychology and entrepreneurship. That is why there is the need to henceforth view AI as the backbone of innovation in this dispensation, particularly in the areas of modern computing, unlocking value for individuals and businesses. For example, Optical Character Recognition (OCR) uses AI to extract text and data from images and

¹¹ Wikipedia. <https://cloud.google.com>

¹² Kurtianyk, O. (2022). <https://www.forbes.com>

¹³ Gofman, M. & Jin, Z. (2019). Artificial Intelligence, Education and Entrepreneurship. <https://doi.org/10.1111/jofi.13302>

¹⁴ Kurtianyk, O. (2022). *Op. cit.*

documents, turn unstructured content into business-ready structured data, and unlocks valuable insights in the process.

Furthermore, Kurtianyk¹⁵ observed that AI-powered data-driven insights and predictive capabilities can be a game changer for entrepreneurs in many respects. Possibly in mitigating financial, operational and compliance risks to identifying market trends and opportunities, assessing competitive threats, forecasting demand and making predictions. Conversely, Ratten *et al.*¹⁶ pondered on the possibility of AI viewed as a destructive innovative technology, which provides new paths to solve practical and theoretical problems existing in entrepreneurial learning and teaching, as hybrid learning becomes increasingly prevalent in the field of education. Thus, all educational stakeholders, particularly seasoned educators, while being responsible for instructing on venture creation, should be mindful of being replaced and/or relegated to the background by Robots as products of AI. However, Forx, Pittaway and Uzuegbunam,¹⁷ stated that, AI in Entrepreneurship Education (AIEE) framework is meant to outline the roles and relationships that instructors and policy makers tend to advance in order to facilitate the investigation of the integration of AI and Entrepreneurship Education into the curricular of Nigeria's tertiary institutions, motivated by the imperative to prepare students for the evolving demands of the digital age in relation to guaranteeing functional skills acquisition and entrepreneurial prowess in Nigerian tertiary education graduates.

The potential of AI to transform entrepreneurship education in Nigeria's tertiary institutions of learning cannot be overemphasized. That is why, the teaching and learning of entrepreneurship education becomes imperative for the effective preparation of Nigerian graduates of tertiary institutions for an increasing complex and inter-connected world. Thus, AI-powered tools and resources could undoubtedly enhance the teaching and learning of entrepreneurship education in Nigeria's tertiary institutions of learning, thereby, the deployment of AI in Nigeria's tertiary institutions of learning is apt and should be enhanced for the effective implementation of Entrepreneurship Education for economic and educational empowerment of the Nigerian citizenry, particularly, the graduates of Nigeria's tertiary education. Therefore, the Nigerian government should to this effect ensure more investment in infrastructure, facilities, professional manpower in both AI and Entrepreneurship Education in all Nigeria's tertiary institutions. The question to ask at this point, however, is if the Nigeria government could not effectively fund a sustainable Entrepreneurship Education at the tertiary level and implement it judiciously with optimal resources and quality control, would it be feasible for her to deploy AI to be integrated in entrepreneurship education at this level, bearing in mind that AI infrastructural facilities, equipment and manpower may be more expensive in terms of procurement, installation, running, management and maintenance in all respect?

¹⁵ *Ibid.*

¹⁶ Ratten, L., Ifenthaler, D., Yin-Kim, Y. J. & Sun, W. (2023). Artificial Intelligence in Entrepreneurship Education. <https://www.emerald.com/insight/content/doi/10.1108/ET-05-2023-016a/full/html#>

¹⁷ Fox, J. D., Pittaway, L. & Uzuegbunam, S. (2024). Artificial Intelligence as a Dynamic Co-Pilot in Entrepreneurship Education. <https://journals.sagepub.com/doi/10.1177/2515127424/2563.7>

Entrepreneurship

According to Kruger,¹⁸ entrepreneurship begins with action, the creation of a new venture and/or organization, including all the antecedents to its creation inter alia, scanning the environment for opportunity, the identification of the opportunities to be pursued and the eventual evaluation of the feasibility of the new venture. He stressed that, although there are several theories of entrepreneurship, there are very few mathematical models, which formally analyze entrepreneurial behavior within a closed economic system. It is often argued that entrepreneurship is by nature spontaneous and therefore, entrepreneurial behavior cannot be predicted using deterministic models. However, experience has shown that adequate entrepreneurship behavior viewed as a skill to be acquired could be actually nurtured and harnessed in order to generate an optimal and exceptional performance of same in an individual.

Similarly, Potabatti and Boob¹⁹ see entrepreneurship as the professional application of knowledge, skills and competencies and/or monetizing a new idea by an individual or a set of people by launching an enterprise, thus to pursue growth while generating wealth, employment and social good. In this instance, entrepreneurship as an enterprise is related to the society; as both the social and business entrepreneurship. The main difference between the two terms however, is that social entrepreneurship focuses beyond simply generating a profit (which is the main target of business entrepreneurship) and measures its performance on the positive impact the business makes on society – whether social, cultural or environmental. This focus on generating positive social returns makes social enterprise an important alternative to conventional and outdated “corporate social responsibility” model which tends to only occur once healthy profits have been achieved. Despite this fact, though, an entrepreneurship venture can only remain viable and/or sustained if and when a reasonable quantum of profit is realized as part of the turnover.

According to UNIDO in Louis,²⁰ entrepreneurship is the process of using initiative to transform business concepts to new ventures, diversify existing venture or enterprise to high growing venture potentials. In other words, an entrepreneur is someone who practice or sense opportunity where others fear rejection. This confidence and potential should start earlier in life in the classroom and should be adequately harnessed as the individual child grows, so as to aid in the diversification of the economy and reduction of unemployment in Nigeria. Thus, for entrepreneurship to adequately develop, it has to undergo a process of enhancing entrepreneurial skills and knowledge through structured training and institution building programmes, such as Artificial Intelligence. This in turn ensures that entrepreneurship education development concentrates more on growth, potential and innovation. As postulated

¹⁸ Kruger, M. E. (2004). *Entrepreneurship Theory and Creativity*.
<https://www.repository.up.ac.za/bitstream/handle/2263/2749/02.pdf>

¹⁹ Potabatti, P. S. & Boob, N. D. (2015). *Youth Entrepreneurship: Opportunities and Challenges in India*.
<https://www.iorsjournals.org.citeseeerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1016---ref.pdf>.

²⁰ Louis, P. (2015). *An Analysis of the Relevance of Curriculum Content of Entrepreneurship Development in Higher Educational System in Nigeria*. <https://www.babcock.edu.ng>.

by McClelland in Egwu *et al.*,²¹ an achieving society becomes the first to apply the theory of entrepreneurship to the promotion of public good aimed at fostering the economic and social development. The point to be grasped here is that the entrepreneurial spirit is in the person to be identified, nurtured and developed. This could be harnessed to the optimal level when appropriately integrated with AI.

Furthermore, Claxton²² is of the view that the learning environment plays an important role in developing reasonable, adventurous and knowledge harvesters. Particularly so, when AI is deployed in this respect, it may even give room for learning that takes place outside of the classroom to be brought into play too. Thus, understanding personal creativity and the periods in which the word is best placed come up with new and innovative insights, should also inform the curriculum content and its development, particularly in Nigeria's tertiary institutions of learning. This clearly impacts not only on the learners, but also on the teachers. Therefore, one of the most justifiable charges that could be leveled against the Nigerian education system, particularly the higher education level, is that it had neglected and most at times suppressed the natural ability and creativity of the young and the youths alike. As identified by Dweck,²³ it is generally acknowledged that creativity requires classroom environment and education behaviors where the educator is a facilitator as opposed to a knowledge provider. Therefore, the deployment of AI and integrating it with entrepreneurship education at the Nigeria's tertiary institutions of learning should have an affinity to understanding how young people think and how the brain evolves, this in this dispensation is extremely useful to know.

Education

Umar²⁴ sees education as a veritable tool for societal transformation. He proffered that one of the major aim of education in all societies throughout the ages had been the preparation of the youths for a productive working life. Thus, education is regarded as a tool for acquiring skills, relevant knowledge and habits for surviving in the ever-changing world, and it is for this reason that societies placed maximum premium on education and thus, the need to always keep abreast with the technological advancements and entrepreneurial developments in relation to the evolving education. So, education on the basis of pragmatism and existentialism makes the child a worthy and independent citizen of the society; as education, to these schools of thought, contain those important practical self-dependent, pro-active initiatives and useful activities which make man a successful and a useful member of the society.

However, it is necessary to employ the use of effective strategies that clearly show the significant learning, and that are focused on experiential learning, on knowledge building in

²¹ Egwu, U. E., Ogbi, O., Ogunji, J., Oselebe, H. & Udu, A. A. (2011). *Entrepreneurship and Intrapreneurship Principle and Practice: A Book of Reading*. Ebonyi: Ebonyi State University Press.

²² Claxton, G. Cultivating Positive Learning Disposition for ... Henry Daniels *et al.*, 2008. <https://www.seas.upenn.edu/eas285/Reading/Claxton.learning%20disposition.pdf>.

²³ Dweck, C. (2006). *Mindset: The Psychology of Success*. <https://www.unicef.org>.

²⁴ Umar, H. (2015). Implementing Entrepreneurship Education for Self-Reliance in Nigerian Universities: Issues and Processes. In Madawaki and Inuwa (eds.). *Nigeria Educational System and Contents: Paradoxes of Development, Productivity and Self-Reliance*. Sokoto: Usmanu Danfodiyo University Press.

real contexts, on the development of reflective and critical capacities on the high level thinking (such as AI), as well as, on the participation in authentic social practices of the community. According to Diaz, in Sanchez *et al.*²⁵ that can be related to the strengthening of competencies of an entrepreneurial person. Thus, education policies in Nigeria should be focused on stimulating entrepreneurial attitudes through new ways of teaching and learning from the earliest stages of education, while particular attention should be paid in tertiary education where AI would be deployed in integration to Entrepreneurship Education.

Etymologically, however, according to Bagudo,²⁶ the term education is a derivation of two Latin words, namely; “*educere*” and “*educare*”. To the first school of thought, *educere* means to ‘lead out’ or to ‘draw out’. Therefore, education is a drawing out process. In other words, education means to lead out or draw out the best in human beings and it is considered as a process of the development of what is innate in the child. It is also seen as an agency of, or an instrument of the transformation of the potential into actual. This presumes that all knowledge (including AI and entrepreneurship) is inherent in each and every living soul. Thus, education consists of leading out innate knowledge, capabilities, virtues and powers of an individual, in order to make the inherent potential actual. This school of thought shares the same views that entrepreneurs “are born not made” and thereby have the capacity to deploy AI-powered tools in all respects, particularly in areas of entrepreneurship education. It is a child-centered form of education that is meant to be given early in life as to identify, develop and harness the in-built potentials of would-be entrepreneurs that will in all respect become successful entrepreneurs in life that would inevitably be well equipped and ready to employ AI at the tertiary level to foster their mastery and potentiality in entrepreneurship and entrepreneurial ventures.

On the other hand, “*educare*” means to ‘bring up’ or ‘to raise’. According to this school of thought, education is a process of imparting to an individual certain information and knowledge which society deems necessary. It implies modification of the society upon an individual. Thus, to them, education is viewed as a process of external imposition rather than growth from within. This is teacher-centered rather than child-centered education. In other words, education consists of the modification of natural development in human beings which provides room for the deployment of AI in all facets of entrepreneurship education at the tertiary level. This school of thought follows the tradition of John Locke and other realists who held that the child’s or learner’s mind is a ‘*tabularasa*’ (a blank sheet or a clean slate) on which to imprint or write upon. In other words, external objects or ideas are expected to make impressions on the mind while simultaneously feeding it with information and knowledge. What this simply means is that entrepreneurs are made not born. That is to say, the training a child receives and the facilities employed (including AI-powered tools) informally or formally determines whether or not he can become a successful entrepreneur.

²⁵ Sanchez, J. C., Ward, A., Hernandez, B. & Frorez, J. (2017). Entrepreneurship Education, State of the Art Proposition. *Y Representaviones*, 5(2):401-473. doi. <http://www.files.eric.ed.gov/fulltext/EJ1159405.pdf>.

²⁶ Bagudo, A. A. (2006). *Op. cit.*

However, as far as education, AI and entrepreneurship are concerned, the two view points, 'educere' and 'educare' cannot be treated in isolation to each other. For one, the view that education just like AI and entrepreneurship is a drawing out process can be accepted with some weight because some important aspects of education are missed; for instance, can it be possible that everything which formed part of education, AI and/or entrepreneurship was already inherent in the child's mind? Is it possible to draw out everything from the innate capacity of the child? Can it be established that everything, such as ideas, beliefs, opinions, skills, attitudes, AI and entrepreneurship were potentials in the mind of the child? It is true that, certain inherent capacities do form part of the natural endowment of an individual learner, but the factual knowledge acquired, skills learnt or the habits and sentiments developed during lifetime, were not innate in the child's mind. Thus, education just like AI and entrepreneurship is not only a drawing out, but also a bringing up process, whereby the educand (entrepreneur) is trained to deploy all manner of resources available to him (including AI-powered tools) to become a worthy citizen by all standards. Therefore, true education, says Dhinam,²⁷ is that which draws out and stimulates the spiritual, intellectual and physical faculties of the child, while Kueller²⁸ on the other hand states that education is the conscious moulding of man by men. That is why philosophically, education involves understanding the nature of man, society and knowledge desired to be produced; and it is equally seen as a philosophical concept concerned with man and the dissemination of all manner of knowledge (including AI and entrepreneurship education) to an individual.

Entrepreneurship Education

According to Umar,²⁹ entrepreneurship education is the type of education designed to equip the young learners with basic skills and knowledge as a pre-requisite to establish and manage a business successfully which in turn will enable them to be self-reliant and contribute meaningfully to the economic development of their country; and the skills so acquired would help the learners to be responsive to emerging technological and societal changes. Thus, in Nigeria, entrepreneurship education should be concerned with the acquisition of skills in local crafts and proper technological training (possibly in AI) for self-reliance. Therefore, entrepreneurship education is vocational and technical in nature and thereby deeply rooted in practical work. It focuses on the starting of new business ventures while utilizing and harnessing all the available resources at one's disposal, virtually making use of the latest technologies for optimal results. It equally focuses on the starting of new business ventures and bridging the gap of unemployment in the society. In a nutshell, a high profile entrepreneurship education that is integrated with AI is meant to eradicate poverty and unemployment while enhancing self-determination, capacity building, motivational skills and greater business opportunities for members of the community/society and/or citizens of a particular nation such as Nigeria.

²⁷ Dhinam, O. P. (2007). *Foundations of Education*. New Delhi: A.P.H Publishing Corporation.

²⁸ Kueller, G. F. (1971). *Introduction to the Philosophy of Education, second edition*. New York: John Wiley and Sons Inc.

²⁹ Umar, H. (2015). *Op. cit.*

Furthermore, the most well-developed innovative enterprise and entrepreneurship education opportunities for tertiary education students/learners are created when these institutions provide a central environment that supports collaborative working in different areas. Thus, poor experienced network and learning can actually empower the Nigerian tertiary education students/learners to develop a range of enterprising, practical, social and conceptual abilities, which can help develop opportunities, especially in the domain of AI. That is to say, entrepreneurial capability can be specific to a particular discipline, vocational requirement or context and as such would vary. This might be demonstrated when a student/learner designs/deployes a new service or product (e.g. AI) to meet an identified need. This in turn may lead to one identifying an opportunity or visualizes potential actions together with their prospects for success. This is why Izedonmi and Okafor³⁰ stated that entrepreneurship education is focused on developing youths with the passion and multiple skills aimed at reducing the risks associated with entrepreneurship thought and guide the form successfully via its initial stage to the majority. Thus, entrepreneurship education as identified by Garavan and Costine³¹ is the process of, or series of activities which aim at enabling an individual to assimilate and develop knowledge, skills, abilities, values and understanding that are not simply related to a narrow field of activity, but which allow for a broad range of problems to be defined, analysed and solved, even if it requires the deployment of AI. By implication, therefore, entrepreneurship education is both an art and a science of undertaking tasks with attendant risks and gains. That is why the entrepreneur is always viewed as the organizer, innovator and risk bearer in any business undertaking or venture creation, with the essential target of making profit in each instance and not to incur losses in any way.

Therefore, entrepreneurship education as observed by Akpan, Effiong and Ele,³² is viewed as a formidable vehicle that could be utilized to ride off the endemic problems of poverty, hunger and youth unemployment. It rather makes room for youth empowerment, particularly when received at the tertiary education level. This is because when the majority of the youth populace at the higher education level are provided with the right kind of training in practice in entrepreneurship education, they are bound to explore available opportunities (including AI) open to them via an enabling environment, this in turn will help them to be gainfully engaged and equally become productive and useful members of the society.

Artificial Intelligence (AI) and Entrepreneurship Education in Nigeria's Tertiary Institutions

According to Somia and Vecchiarin,³³ as entrepreneurship education evolves alongside AI advancements, AI technologies can play a transformative role in various

³⁰ Izedonmi, P. F. & Okafor, C. (2010). The effect of entrepreneurship education on students entrepreneurship intention. *Global Journal of Management and Business Research*, 10(6), 49-50.

³¹ Garavan, T. & Costine, P. (1995). *Training and Development in Ireland Context, Policy and Practice*. Dublin: Oak Tree Press.

³² Akpan, E. I., Effiong, S. A. & Ele, A. A. (2012). Entrepreneurship Education Policy: An Intervention Strategy for Economic Development in Nigeria. <https://www.academia.edu>.

³³ Somia, T. & Vecchiarin, M. (2023). <https://www.researchgate.net>.

activities from entrepreneurial idea generation, to crafting a business model, writing a business plan or conducting customer interviews. This buttresses the fact that AI has gained significant attention in the education field due to recent advancements and growing popularity. It is imminent that the potential uses of AI in higher education, specifically within entrepreneurship courses is bound to provide the requisite tools for investigating the benefits and challenges associated with its implementation. That is to say, AI has the potential to structure and streamline processes, increase students' efficiency and support certain types of creativity. It equally has the capacity to address concerns regarding accuracy and reliability, emphasizing the importance of using it critically.

As postulated by Haeniein and Kaplan,³⁴ AI refers to a wide range of digital technologies that can efficiently process knowledge to assist humans in completing different tasks. To this end, as observed by Chalmers *et al.*, in Somia and Vecchiarin,³⁵ AI is changing the entrepreneurial landscape by indubitably transforming how businesses were created, grown and operated. Thus, recent advancements in AI, such as automation, data analytics and Natural Language Processing (NLP) have simplified operations for many types of companies across industries. That is why it needs to be deployed in Nigeria's tertiary institutions hand-in-hand with entrepreneurship education. Furthermore, Chalmer *et al.*, in Somia and Vecchiarin,³⁶ asserted that AI not only contributes to the development of established companies but also facilitates and supports new venture creation as it might influence individuals' entrepreneurial intentions, opportunities, recognition and the way new business ideas are found and exploited. Thus, with the exponential growth of digital technologies across industries, there is an increased demand for AI fluency in the business environment. This in turn showcased the need for more AI compliant capable hands to be produced in all Nigerian tertiary institutions of learning.

Additionally, as observed by Colson,³⁷ AI can assist entrepreneurs in making strategic decisions, supporting the sales functions and reducing costs for new ventures through the implementation of AI-powered tools to manage accounts and operations. Thus, the deployment of AI and its subsequent integration with entrepreneurship education if adequately implemented specifically in Nigeria's higher institutions of learning can ultimately offer numerous advantages. On the one hand, educators can leverage AI to design new courses, develop teaching materials, grade assessments, answer student questions or conduct research among other applications. On the other hand, according to Cribben and Zeinali,³⁸ students can benefit from using AI to receive feedback on continuous assessments, create project outlines, prepare for examinations and gather information more quickly.

Therefore, given the growing relevance of AI in the contemporary business environment and the limited research on its roles in higher education, there is a clear need to

³⁴ Haeniein, P. & Kaplan, C. (2019). Artificial Intelligence: A Digital Technology. <https://www.researchgate.net>.

³⁵ Somia, T. & Vecchiarin, M. (2023). *Op. Cit.*

³⁶ *Ibid.*

³⁷ Colson, G. (2019). <https://www.researchgate.net>.

³⁸ Cribben, S. & Zeinali, E. (2003). <https://www.google scholar.org/pdf>.

explore and comprehend how AI technologies courses could be effectively used in teaching entrepreneurship education in Nigeria's tertiary institutions of learning. However, it is pertinent to note that AI has the potential to completely transform the way certain activities are traditionally done in teaching and learning of entrepreneurship courses, that is, from the idea generation process to crafting a business model, refining elevator pitch, etc. Thus, AI has direct and indirect impacts on entrepreneurship education. For instance, in entrepreneurial context, big data analytics analyses entrepreneurial projects with low costs and high effectiveness to facilitate the success of venture creation, while machine learning releases educators' burdens and improves the accuracy of the assessment. However, AI applied in entrepreneurship education needs more sophisticated designs in diagnosis prediction, intervention, prevention and recommendation, combined with specific entrepreneurial learning content and entrepreneurial procedure, obeying entrepreneurial pedagogy.

Conclusion

The deployment of AI and its subsequent integration with entrepreneurship education is a prerequisite to transforming the Nigerian entrepreneurial landscape to another level. That is to say, if adequately implemented particularly in Nigeria's higher institutions of learning, entrepreneurship education supported by AI-powered tools can ultimately offer numerous advantages to the individual citizenry and the society at large. In this regard, educators can leverage AI to designing new entrepreneurship courses, develop teaching materials, grade assignments, answer students questions among many other provisions. Similarly, students can equally benefit from using AI to receive feedback on continuous assessments, create project outlines, prepare for exams, etc. This ultimately showcased a clear evidence of providing contemporary entrepreneurs from Nigeria's higher institutions of learning empowered by AI power-driven-knowledge that would compete favourably with their counterparts in other parts of the developed clime. Therefore, Artificial Intelligence (AI) as a digital technology has the potential and capacity to transform the economic and educational attainment of Nigeria's tertiary education graduates. This is because AI has direct and indirect impacts on entrepreneurship education. Thus, as a trend of educational technologies it is mainly applied to the realm of higher education, AI equally releases the burden of educators via automation and therefore saves time, waste of human resources and reduces error to the barest minimum.

Recommendations

The paper recommends that:

1. The deployment of Artificial Intelligence (AI) in Nigeria's tertiary institutions in the teaching and learning contemporary entrepreneurship education is not only apt but tenable. Therefore, the Nigerian government at all tiers should as a matter of urgency pursue this matter vigorously and work towards executing same to logical conclusion. This is necessary for the advancement and actualization of the Nigeria's entrepreneurial dream in competing favourably with the developed world in this respect.
2. All educational stakeholders in Nigeria should put their hands on deck in order to tirelessly pursue and vigorously exhaust all available avenues to partner with the

Nigerian Government in providing quality education to Nigerian graduates by all standards. This singular move could undoubtedly ensure their involvement in education delivery particularly by convincing the government through diplomacy and ardent determination to do the right thing. That is to say, the watch-dog move could inevitably galvanize the Nigerian government to be more committed in providing adequate funding to the envisaged enterprise. If possible the government should even surpass the expectations of many a Nigerian in educational matters.

3. Education in Nigeria should henceforth be prioritized by the Government and all educational stakeholders alike. However, the Nigerian government at the centre should provide pragmatic educational policies with workable pedagogies with particular reference to the development of entrepreneurship education and the possibility of deployment of AI in all public tertiary institutions in the country.
4. Furthermore, researches should be conducted in diverse areas and disciplines in which AI could be applied to enhance the deployment, advancement and utilization of entrepreneurship education at other levels of education in Nigeria's schools.

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