

ARTIFICIAL INTELLIGENCE (AI) USE IN ENTREPRENEURSHIP EDUCATION: ETHICAL, SOCIAL AND POLICY IMPLICATIONS AMONG UNIVERSITY STUDENTS AT THE UNIVERSITY OF NIGERIA, NSUKKA

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Abstract

This study examined the influence of artificial intelligence usage on entrepreneurship learning effectiveness among university students in the University of Nigeria, Nsukka, with emphasis on ethical implications, social implications, and policy awareness. The study adopted a descriptive survey research design. The population comprised 109 third- and final-year students in Entrepreneurship Education and Business Education programmes, while 101 properly completed questionnaires were used for analysis. Data were collected using a structured questionnaire and analyzed using mean, standard deviation, and regression analysis at 0.05 level of significance. Findings revealed that artificial intelligence usage, ethical implications, and policy awareness significantly influenced entrepreneurship learning effectiveness, while social implications had no significant influence. The study concluded that artificial intelligence enhances entrepreneurship learning effectiveness when supported by ethical practices and institutional policy guidance. The study recommended the development of clear institutional AI policies and ethical training programmes for students.

Keywords: artificial intelligence, entrepreneurship education, learning effectiveness, ethical implications, social implications, policy awareness.

Introduction

Artificial Intelligence (AI) refers to computational systems capable of performing tasks that typically require human intelligence such as learning, reasoning, pattern recognition, and decision-making (Wei et al., 2025). In recent years, advancements in big data, machine learning, and computational technologies have accelerated the integration of AI across different sectors of society, particularly education. Within educational settings, AI technologies now support personalized learning, intelligent tutoring systems, automated feedback mechanisms, and data-driven instructional practices.

The increasing adoption of AI-powered tools such as ChatGPT and Google Gemini has significantly transformed how students engage in academic activities. Students now use AI systems for research, writing, idea generation, problem-solving, and information retrieval. These developments have enhanced access to knowledge and improved learning efficiency. In entrepreneurship education, AI tools further support creativity, business idea development, market analysis, and entrepreneurial decision-making.

Despite these benefits, the growing use of AI in education has generated ethical, social, and policy concerns. Ethical concerns include academic dishonesty, plagiarism, data privacy, and algorithmic bias. Social concerns relate to overdependence on AI, reduced critical thinking, and declining student collaboration. In addition, many institutions in developing countries such as Nigeria lack clear policies regulating the acceptable use of AI technologies in education. Entrepreneurship education focuses on developing students' entrepreneurial competencies such as creativity, innovation, opportunity recognition, and problem-solving. Existing studies suggest that AI technologies can strengthen entrepreneurship learning by improving access to information, supporting innovation, and enhancing learning experiences. However, there remains limited empirical evidence on how AI usage, ethical implications, social implications, and policy awareness collectively influence entrepreneurship learning effectiveness among university students in Nigeria. This study therefore examined the influence of artificial intelligence usage, ethical implications, social implications, and policy awareness on entrepreneurship learning effectiveness among university students in the University of Nigeria, Nsukka.

Literature Review

Artificial Intelligence in Education

Artificial intelligence has increasingly transformed educational systems through the integration of intelligent technologies that support teaching and learning processes. AI-assisted learning involves the use of intelligent systems to personalize instruction, automate feedback, and improve access to educational resources. Holmes and Luckin (2016) explain that AI systems simulate aspects of human intelligence, thereby enabling adaptive learning experiences.

AI learning tools include intelligent tutoring systems, adaptive learning platforms, and natural language processing systems. These technologies improve learning efficiency by analyzing learner data and providing personalized support. Holmes et al. (2021) further observe that AI systems can support educators through automated instructional processes and data-driven teaching practices.

However, the integration of AI into education also presents several concerns, including overdependence on technology, uncertainty about learning outcomes, and reduced learner autonomy. Holmes (2025) argues that the rapid adoption of AI technologies in education requires careful evaluation to ensure responsible implementation.

Artificial Intelligence and Entrepreneurship Education

Artificial intelligence plays an important role in entrepreneurship education by supporting innovation, market analysis, creativity, and entrepreneurial decision-making. AI systems can analyze large datasets to identify business opportunities, forecast market trends, and improve business modelling processes. Maheswari (2025) emphasizes that AI technologies promote entrepreneurial competencies such as creativity, adaptability, and problem-solving. Similarly, Holmes et al. (2021) maintain that AI tools augment human intelligence and support innovative thinking. These capabilities make AI an important tool for entrepreneurship learning among university students.

Ethical Implications of Artificial Intelligence in Education

The increasing use of AI in education raises several ethical concerns. One major issue is academic integrity, as students may misuse AI-generated content in assignments and examinations. Holmes, Porayska-Pomsta, and Nemorin (2024) highlight concerns relating to plagiarism, transparency, and ethical accountability in AI-assisted learning. Another concern involves data privacy and algorithmic bias. AI systems are trained using datasets that may contain social or cultural biases, thereby producing unfair outcomes. OECD (2023) further notes that ethical AI implementation requires transparency, accountability, and fairness in educational practices.

Social Implications of Artificial Intelligence in Education

AI technologies have important social implications for students and learning environments. While AI improves access to information and supports flexible learning, excessive reliance on AI may reduce critical thinking, collaboration, and independent learning skills. Mohammed and Shehu (2023) further explain that unequal access to digital technologies may widen educational inequalities among students. These social concerns highlight the need for balanced AI usage within educational environments.

Policy Awareness and Artificial Intelligence in Education

Policy awareness is essential for the responsible integration of AI into education. UNESCO (2021) emphasizes the importance of institutional policies and ethical guidelines in regulating AI usage in educational settings. Similarly, the Beijing Consensus on Artificial Intelligence and Education (UNESCO, 2019) advocates for human-centered AI systems that promote transparency, accountability, and the protection of learners' rights. Effective policy

frameworks therefore play an important role in guiding responsible AI adoption among students.

Theoretically, this study is anchored on the Technology Acceptance Model (TAM) developed by Davis (1989), which explains how individuals adopt and use technology. The model states that perceived usefulness and perceived ease of use influence technology acceptance. In this study, students' use of AI tools is influenced by the perceived benefits of AI in supporting entrepreneurship learning activities. The study is also anchored on the Social Constructivist Theory proposed by Lev Vygotsky, which explains that learning occurs through interaction, collaboration, and active engagement. In the context of this study, AI technologies influence how students interact with learning resources and construct entrepreneurial knowledge. The theory further explains how ethical and social dimensions of AI affect learning experiences. Collectively, the two theories explain how technological, ethical, social, and institutional factors influence entrepreneurship learning effectiveness among students in the University of Nigeria, Nsukka.

Methodology

Research Design

The study adopted a descriptive survey research design.

Area of the Study

The study was conducted at the University of Nigeria, Nsukka.

Population of the Study

The population of the study consisted of 109 third- and final-year students enrolled in Entrepreneurship Education and Business Education programmes at the University of Nigeria, Nsukka.

Sample and Sampling Technique

A census sampling technique was adopted because the population size was manageable and the entire population was therefore used for the study. However, only 101 properly completed questionnaires were returned and used for analysis.

Instrument for Data Collection

Data were collected using a structured questionnaire developed by the researcher. The questionnaire was divided into five sections covering AI usage, ethical implications, social implications, policy awareness, and entrepreneurship learning effectiveness.

The questionnaire items were grouped into four major constructs:

- Artificial Intelligence Usage (Items 1–10)

- Ethical Implications (Items 11–20)
- Social Implications (Items 21–30)
- Policy Awareness (Items 31–40)

Validity of the Instrument

The instrument was validated by three experts in Entrepreneurship Education and Business Education to ensure face and content validity.

Reliability of the Instrument

A pilot study was conducted, and the reliability of the instrument was determined using Cronbach's Alpha coefficient. The reliability values ranged from 0.72 to 0.89, indicating acceptable internal consistency.

Method of Data Collection

The questionnaire was administered directly to respondents by the researcher.

Method of Data Analysis

Data collected were analyzed using mean and standard deviation to answer the research questions, while regression analysis was used to test the hypotheses at 0.05 level of significance.

Objectives of the Study

The main objective of this study was to examine the influence of artificial intelligence on entrepreneurship learning effectiveness among university students.

Specifically, the study sought to determine the influence of:

1. Artificial intelligence usage on entrepreneurship learning effectiveness among university students.
2. Ethical implications of artificial intelligence on entrepreneurship learning effectiveness among university students.
3. Social implications of artificial intelligence on entrepreneurship learning effectiveness among university students.
4. Policy awareness of artificial intelligence on entrepreneurship learning effectiveness among university students.

Research Questions

1. What is the influence of artificial intelligence usage on entrepreneurship learning effectiveness among university students?
 2. What is the influence of ethical implications of artificial intelligence on entrepreneurship learning effectiveness among university students?
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3. What is the influence of social implications of artificial intelligence on entrepreneurship learning effectiveness among university students?
4. What is the influence of policy awareness of artificial intelligence on entrepreneurship learning effectiveness among university students?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

H01: Artificial intelligence usage has no significant influence on entrepreneurship learning effectiveness among university students.

H02: Ethical implications of artificial intelligence have no significant influence on entrepreneurship learning effectiveness among university students.

H03: Social implications of artificial intelligence have no significant influence on entrepreneurship learning effectiveness among university students.

H04: Policy awareness has no significant influence on entrepreneurship learning effectiveness among university students.

Results

Descriptive Statistics

The descriptive statistics in Table 1 show that respondents generally agreed that artificial intelligence significantly influences entrepreneurship learning effectiveness. The mean score for AI usage indicates that students actively use AI tools such as ChatGPT and Google Gemini for entrepreneurship-related learning activities. Ethical implications also recorded a high mean score, showing that students are conscious of ethical concerns such as plagiarism, academic dishonesty, and responsible AI usage.

The findings further reveal moderate to high perceptions regarding social implications and policy awareness. This suggests that students recognize the social effects of AI on collaboration and critical thinking, while also acknowledging the importance of institutional policies regulating AI usage.

Table 1: Descriptive Statistics

Variable	Mean	Standard Deviation	Decision
Artificial Intelligence Usage	3.33	0.76	High
Ethical Implications	3.25	0.77	High
Social Implications	3.01	0.50	Moderate/High
Policy Awareness	3.07	0.74	Moderate/High

Research Question One

What is the influence of artificial intelligence usage on entrepreneurship learning effectiveness among university students?

Table 2: Regression Analysis for AI Usage

Variable	Beta (β)	R ²	p-value	Decision
Artificial Intelligence Usage	0.611	0.373	0.000	Significant

The regression result indicates that artificial intelligence usage has a significant positive influence on entrepreneurship learning effectiveness among university students. This suggests that students who frequently use AI tools tend to experience improved entrepreneurial learning outcomes.

Research Question Two

What is the influence of ethical implications of artificial intelligence on entrepreneurship learning effectiveness among university students?

Table 3: Regression Analysis for Ethical Implications

Variable	Beta (β)	R ²	p-value	Decision
Ethical Implications	0.352	0.128	0.000	Significant

Ethical implications significantly influence entrepreneurship learning effectiveness among university students. This implies that students who are aware of ethical issues such as plagiarism, academic integrity, and responsible AI usage tend to achieve better learning outcomes.

Research Question Three

What is the influence of social implications of artificial intelligence on entrepreneurship learning effectiveness among university students?

Table 4: Regression Analysis for Social Implications

Variable	Beta (β)	R ²	p-value	Decision
Social Implications	0.057	0.001	0.715	Not Significant

The result shows that social implications of artificial intelligence do not significantly influence entrepreneurship learning effectiveness among university students.

Research Question Four

What is the influence of policy awareness of artificial intelligence on entrepreneurship learning effectiveness among university students?

Table 5: Regression Analysis for Policy Awareness

Variable	Beta (β)	R ²	p-value	Decision
Policy Awareness	0.259	0.062	0.013	Significant

The regression result indicates that policy awareness significantly influences entrepreneurship learning effectiveness among university students.

Hypotheses Testing

Table 6: Hypotheses Testing

Hypotheses	p-value	Decision
H01: Artificial intelligence usage has no significant influence on entrepreneurship learning effectiveness	0.000	Rejected
H02: Ethical implications have no significant influence on entrepreneurship learning effectiveness	0.000	Rejected
H03: Social implications have no significant influence on entrepreneurship learning effectiveness	0.715	Accepted
H04: Policy awareness has no significant influence on entrepreneurship learning effectiveness	0.013	Rejected

Summary of Findings

The findings revealed that artificial intelligence usage, ethical implications, and policy awareness significantly influenced entrepreneurship learning effectiveness among university students, while social implications had no significant influence.

Discussion of Findings

The findings revealed that artificial intelligence usage significantly improves entrepreneurship learning effectiveness among university students. This finding agrees with Holmes et al. (2021), who observed that AI technologies support creativity, innovation, and

problem-solving in educational environments. The study also found that ethical implications significantly influence entrepreneurship learning effectiveness. This suggests that students who demonstrate awareness of ethical concerns such as plagiarism, academic integrity, and responsible AI usage are more likely to experience effective learning outcomes.

The findings further revealed that social implications did not significantly influence entrepreneurship learning effectiveness. This implies that although students recognize the social effects of AI usage, these concerns do not substantially determine entrepreneurship learning outcomes. Finally, policy awareness significantly influenced entrepreneurship learning effectiveness among university students. This finding supports UNESCO (2021), which emphasized the importance of institutional policies in guiding responsible AI integration in education.

Conclusion

The study concluded that artificial intelligence has become an important tool in entrepreneurship education. AI usage significantly improves entrepreneurship learning effectiveness, while ethical awareness and policy awareness positively shape students' responsible use of AI technologies. Although social implications were recognized by respondents, they did not significantly affect entrepreneurship learning effectiveness. Therefore, educational institutions should focus more on responsible AI integration, ethical training, and policy development to maximize the benefits of AI in entrepreneurship education.

Recommendations

1. Universities should develop comprehensive AI usage policies to guide students on responsible use of AI technologies.
2. Entrepreneurship education programmes should integrate AI ethics training into their curriculum.
3. Students should be trained on proper citation and responsible use of AI-generated content.
4. Institutions should organize workshops and seminars to improve awareness of AI policies and regulations.
5. Lecturers should encourage balanced AI usage that supports creativity and critical thinking without overdependence.

References

- Beheshti, A., & Kerridge, I. (2025). Understanding the artificial intelligence revolution and its ethical implications. *Bioethical Inquiry*, 22, 497–505. <https://doi.org/10.1007/s11673-025-10427-6>
- Eshov, M., & Kamilova, M. (2024). The ethical implications of artificial intelligence (AI) on the economy of G7 countries. In *Proceedings of the 8th International Conference on Future Networks & Distributed Systems (ICFNDS '24)*.
- Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.
- Holmes, W., Luckin, R., & Tuomi, I. (2021). *State of the art and practice in AI in education*. UNESCO.
- Holmes, W., Porayska-Pomsta, K., & Nemorin, S. (2024). Ethics of artificial intelligence in education: Practices, challenges, and debates. *Computers and Education: Artificial Intelligence*, 5, 100169. <https://doi.org/10.1016/j.caeai.2023.100169>
- Katah, F., & Ozturk, I. (2024). Artificial intelligence, ethics, and economic implications: A global perspective. *Economies*, 12(9), 298. <https://doi.org/10.3390/economies12090298>
- Maheswari, A. U. (2025). Artificial intelligence and its ethical implications in global society: A conceptual exploration. *International Journal of Research and Innovation in Applied Science*, 10(6), 1226–1239. <https://doi.org/10.51584/IJRIAS.2025.1006009>
- Maphosa, V. (2024). The rise of artificial intelligence and emerging ethical and social concerns. *AI, Computer Science and Robotics Technology*, 3(1), 1–20. <https://doi.org/10.5772/acrt.20240020>
- Mohammed, A., & Shehu, U. (2023). Artificial intelligence and students' academic performance in Nigerian tertiary institutions. *International Journal of Education and Development*, 7(2), 45–58.
- Nigerian Communications Commission. (2020). *Ethical and societal impact of artificial intelligence (AI)*.
- OECD. (2023). *OECD digital education outlook 2023: Towards an effective digital education ecosystem*. OECD Publishing. <https://doi.org/10.1787/c827b81a-en>
- Okoro, C. V. (2019). Entrepreneurship education and sustainable development in Nigeria.
- Sethi, R. K., & Dhankher, D. (2025). Entrepreneurship education in schools: The need of the hour.
- Shiebee, I. S. (2025). Entrepreneurship education: A catalyst for the growth of SMEs in Gboko Metropolis, Benue State, Nigeria.
- UNESCO. (2019). *Beijing consensus on artificial intelligence and education*. UNESCO. <https://unesdoc.unesco.org/>
- UNESCO. (2021). *Artificial intelligence and education: Guidance for policy-makers*. UNESCO. <https://unesdoc.unesco.org/>
- Vieriu, R. L., & Petrea, G. (2025). The impact of artificial intelligence (AI) on students' academic development. *Education Sciences*, 15(3), 343. <https://doi.org/10.3390/education15030343>
- Wei, X., Liu, X., & Sha, J. (2019). How does entrepreneurship education influence entrepreneurial intention? Evidence from college students in China. *Education + Training*, 61(7/8), 984–999. <https://doi.org/10.1108/ET-04-2018-0106>
- Welsh, D. H. B. (2016). Entrepreneurship education and social impact: A global perspective.