

IMPACT OF ARTIFICIAL INTELLIGENCE ON ENTREPRENEURSHIP EDUCATION FOR DEVELOPMENT IN THE 21ST CENTURY SKILLS: IMPLICATION FOR COUNSELLING

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Abstract

This paper examines the impact of artificial intelligence (AI) on entrepreneurship education for developing 21st-century skills. AI in entrepreneurship education helps develop essential skills by promoting innovation and data-driven decision-making. The paper was guided by four research questions, and a descriptive survey design was adopted. The population of the study consisted of 2,291 students from selected schools in Epe, Lagos State, with a sample size of 340 students selected through random sampling. Data was collected via a validated questionnaire. Simple percentage analysis was used for demographic information, while the Mean and Standard Deviation were used for data analysis. The key findings of this study revealed that AI plays a significant role in improving media literacy skills, such as recognizing credible online business sources, detecting misinformation, and supporting fact-checking skills in business content. It also enhance awareness of how media influences consumer behaviour and developed skills for using digital content in entrepreneurial projects. AI was found to improve problem-solving skills by breaking down complex business problems into manageable parts, offering multiple solutions, and supporting decision-making. Furthermore, AI promoted creativity by supporting the generation of new business ideas, aiding in the creation of innovative products and services, and encouraging fresh thinking in entrepreneurial challenges. It is recommended that educational institutions integrate AI technologies into entrepreneurship education to enhance students' media literacy, problem-solving abilities, and creativity. There should be a focus on hands-on learning with AI tools to prepare students for the rapidly evolving business environment. The researcher through the findings concluded that artificial intelligence significantly contributes to developing key 21st-century skills in entrepreneurship education. Counselling implications was also discussed, and this includes that in the context of AI and entrepreneurship education, counselling should take a comprehensive approach which will blend technological expertise with the development of fundamental human abilities like moral

consciousness, flexibility, inventiveness, and emotional fortitude. In this regard, counsellors are essential facilitators who help students develop the fundamental skills required for success in the twenty-first century while also assisting them in comprehending and utilizing AI tools and successfully incorporating them into entrepreneurial endeavours.

Keywords: Artificial Intelligence, Entrepreneurship Education, Counselling, 21st Century.

Introduction

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines programmed to think, learn, and make decisions (Russell & Norvig, 2020). Over the years, AI has revolutionized various industries, including healthcare, transportation, and education. In the context of education, AI plays a critical role in personalizing learning, automating administrative tasks, and enabling students to acquire skills relevant to the 21st century. These capabilities make it essential to study how AI can influence entrepreneurship education, particularly in developing innovative and adaptable individuals prepared for the challenges of the modern world.

Entrepreneurship education involves equipping students with the skills, knowledge, and mindset necessary to identify opportunities, create innovative solutions, and establish businesses (Fayolle & Gailly, 2015). Unlike traditional education, which often focuses on theoretical knowledge, entrepreneurship education emphasizes critical thinking, creativity, problem-solving, and leadership. These attributes align with the demands of the 21st century, where innovation and adaptability are vital for success in a rapidly changing economic landscape.

The 21st century is characterized by technological advancements, globalization, and the need for adaptability. Skills such as critical thinking, communication, collaboration, creativity, and digital literacy are essential for individuals to thrive in this environment (Trilling & Fadel, 2009). Entrepreneurship education serves as a platform to develop these skills by challenging students to think outside the box and solve real-world problems. With the integration of AI, this process becomes even more dynamic and effective.

Artificial Intelligence has the potential to reshape entrepreneurship education in various ways. For instance, AI-powered tools can provide personalized learning experiences, enabling students to learn at their own pace and focus on areas where they need improvement. Moreover, AI can simulate real-world business scenarios, allowing students to practise entrepreneurial decision-making in a risk-free environment.

Despite its potential, entrepreneurship education faces challenges such as a lack of resources, outdated curricula, and limited access to real-world experiences (Mwasalwiba, 2010).

AI can address these challenges by providing affordable and scalable solutions. For example, virtual reality (VR) and augmented reality (AR) technologies powered by AI can simulate business environments, allowing students to gain practical experience without physical constraints. Additionally, AI-driven analytics can help educators identify gaps in the curriculum and improve teaching strategies.

AI has the potential to make entrepreneurship education more inclusive by breaking down barriers to access. Online learning platforms powered by AI can reach students in remote areas, providing them with opportunities to learn entrepreneurial skills. Furthermore, AI tools can accommodate diverse learning needs, ensuring that students with disabilities or language barriers can participate fully in the educational process. This inclusivity is essential for promoting equity and diversity in entrepreneurship education.

The integration of AI in entrepreneurship education prepares students for the future of work, where AI and automation are expected to play a significant role. By learning how to leverage AI tools, students can develop digital literacy and technical skills that are crucial for navigating a technology-driven economy (World Economic Forum, 2020). Additionally, entrepreneurship education encourages resilience and adaptability, enabling students to thrive in an unpredictable job market. While AI offers numerous benefits, its integration into entrepreneurship education raises ethical concerns. Issues such as data privacy, algorithmic bias, and the potential for misuse of AI tools must be addressed to ensure that the technology is used responsibly (Binns, 2018). Educators and policymakers must establish guidelines for the ethical use of AI in education, emphasizing transparency, accountability, and fairness.

The impact of AI on entrepreneurship education marks the beginning of a new era, where technology and innovation intersect to create transformative learning experiences. By integrating AI, educators can equip students with the skills and mindset needed to navigate the complexities of the 21st century. This transformation not only benefits individual learners but also contributes to economic growth and social development.

The rapid advancement of Artificial Intelligence (AI) has significantly transformed various industries, yet its integration into entrepreneurship education remains underexplored, particularly in developing 21st-century skills. In today's fast-paced, technology-driven world, entrepreneurship education must evolve to equip learners with the necessary skills to navigate complex challenges and seize emerging opportunities. However, many educational institutions still rely on traditional methods, which fail to adequately prepare students for the evolving landscape shaped by AI technologies. This gap presents a significant problem, as entrepreneurs of the future must possess not only technical knowledge but also creativity, problem-solving abilities, and adaptability skills that AI can help develop. The problem lies in understanding how AI can be strategically incorporated into entrepreneurship education to enhance the development of these essential skills. The need for a comprehensive framework to guide this integration is critical to ensure that future entrepreneurs are equipped with the skills required to succeed in the 21st century economy.

The concept of artificial intelligence

Artificial Intelligence (AI) is a transformative field in computer science, enabling machines to mimic human intelligence. It involves processes like learning, reasoning, perception, and decision-making, achieved through algorithms and data analysis. In healthcare, AI-powered tools are revolutionizing diagnostics and treatment. African innovations, such as the use of AI to detect malaria through Smartphone applications, exemplify its potential to enhance public health systems. Additionally, AI is being used in agriculture for precision farming, enabling farmers to optimize crop yields and reduce waste. These applications highlight how AI is being leveraged to address practical issues in Africa.

AI is also being utilized in education to develop personalized learning platforms, which help students in Africa access quality education tailored to their needs. The focus on localized applications of AI reflects its ability to bridge gaps in infrastructure and service delivery, making it a critical tool for sustainable development in Africa.

Concept of Entrepreneurship Education

Entrepreneurship education refers to the structured process of equipping individuals with the skills, knowledge, and mindset needed to identify business opportunities, develop innovative solutions, and establish successful ventures. It emphasizes experiential learning, creativity, problem-solving, and leadership, distinguishing itself from traditional education that often focuses on theoretical knowledge (Fayolle & Gailly, 2015). This type of education aims to foster critical thinking, resilience, and adaptability—qualities essential in a dynamic, technology-driven global economy (Ried, 2020). Entrepreneurship education also cultivates an entrepreneurial mindset, encouraging individuals to view challenges as opportunities for innovation (Mwasalwiba, 2010).

It has become an essential tool for promoting self-reliance, reducing unemployment, and fostering economic growth, especially in developing nations. By integrating practical learning methods like business simulations and case studies, it bridges the gap between academic knowledge and real-world application. Moreover, entrepreneurship education plays a pivotal role in preparing students for the uncertainties of the 21st-century workforce, aligning with global demands for innovative and adaptable talent (World Economic Forum, 2020).

Entrepreneurship education must address gender and socioeconomic inequalities that persist across the continent. Women and marginalized groups often face systemic barriers that exclude them from entrepreneurial opportunities (Rashid, 2019). Tailored programs aimed at empowering women and underprivileged youth are essential to creating inclusive growth. Collaborative efforts between governments, private sectors, and educational institutions are key to overcoming these challenges.

Entrepreneurship education serves as a platform for developing these 21st-century skills through experiential learning, case studies, simulations and real-world projects. For instance, students may participate in business plan competitions, collaborate on startups, or engage in

internships with entrepreneurial ventures. These activities not only enhance their entrepreneurial mindset but also prepare them to address societal and economic challenges.

21st-century skills are essential for preparing individuals to succeed in entrepreneurship and the broader workforce. Entrepreneurship education, with its focus on practical application, creativity and adaptability, serves as a critical avenue for equipping students with the competencies. By integrating these skills into entrepreneurship education, institutions can empower students to become innovative, resilient and globally aware leaders capable of thriving in an ever-evolving world.

21st-century skills and their relevance to entrepreneurship education

The 21st century is marked by rapid technological advancements, globalization, and an ever-changing economic landscape, making adaptability and innovation crucial for success. To thrive in this dynamic environment, individuals need to possess a set of critical skills often referred to as 21st-century skills. These skills include critical thinking, creativity, collaboration, communication, digital literacy, problem-solving and adaptability (Trilling & Fadel, 2009). These competencies align closely with the goals of entrepreneurship education, which aims to prepare individuals to identify opportunities, develop innovative solutions, and navigate the complexities of establishing and managing businesses.

Research Questions:

1. How does the integration of artificial intelligence in entrepreneurship education influence the development of students' critical thinking skills?
2. What is the impact of artificial intelligence in entrepreneurship education on enhancing students' media literacy skills?

Methodology

The research adopted a descriptive survey research design and the area of the study was Lagos state, Yaba College of Technology in affiliation with university of Nigeria, Nsukka and Lagos. and Lagos State University of Education, Noforija Epe. The participants consisted of 2291 male and female business Education students who were randomly selected. A questionnaire was used and data collected was analyzed using frequency count and percentage, mean and standard deviation. Mean rating from 2.5 and above were considered as agreed upon while mean rating of 2.49 and below were considered as disagreed upon.

RESULTS

Table 1: *Descriptive statistics mean and standard deviation responses on the Influence of Artificial intelligence in entrepreneurship Education on developing student critical thinking skill.*

S/N	STATEMENTS	Mean	SD	Decisions
1	The use of artificial intelligence in entrepreneurship education supports deeper analysis of business ideas	3.44	.510	Agreed
2	AI-assisted learning in entrepreneurship enhances my ability to evaluate business ideas critically	3.54	.506	Agreed
3	Artificial intelligence tools help in identifying weaknesses and strengths in business strategies	3.47	.500	Agreed
4	The application of artificial intelligence improves logical reasoning during business planning	3.56	.504	Agreed
5	Integration of artificial intelligence enhances the ability to question information critically	3.49	.546	Agreed

Bench Mark: (2.50 and above: accepted, <2.50 below: rejected)

Data presented in Table 1 shows the Influence of Artificial intelligence in entrepreneurship Education on developing students' critical thinking skill. Key findings include: use of artificial intelligence in entrepreneurship education supports deeper analysis of business ideas, entrepreneurship enhances my ability to evaluate business ideas critically, help in identifying weaknesses and strengths in business strategies, improves logical reasoning during business planning and enhances the ability to question information critically All these, were deemed necessary to be the Influence of Artificial intelligence in entrepreneurship Education on developing student critical thinking skill, as the mean values ranged from 3.44 to 3.56, which are well above the cut-off point of 2.50. Additionally, the standard deviation values ranged from 0.500 to 0.546, indicating that the mean values are closely clustered within a narrow range

Table 2: Descriptive statistics mean and standard deviation responses on Impact of Artificial Intelligence in entrepreneurship education in developing media literacy skill.

S/N	STATEMENTS	Mean	SD	Decisions
1	Artificial intelligence assists in recognizing credible online business sources.	3.42	0.525	Agreed
2	The use of artificial intelligence improves the ability to detect misinformation in digital media.	3.45	0.518	Agreed
3	Artificial intelligence tools support the development of fact-checking skills in business Content	3.39	0.523	Agreed
4	The application of artificial intelligence increases awareness of how media influences consumer behavior.	3.43	0.513	Agreed
5	Artificial intelligence enhances the skill of using digital content to support entrepreneurial projects	3.36	0.564	Agreed

Bench Mark: (2.50 and above: accepted, <2.50 below: rejected)

Source: Researcher's Field Survey, 2025

Data presented in Table 2 shows the impact of artificial intelligence in entrepreneurship education on developing media literacy skills. Key findings include that artificial intelligence assists in recognizing credible online business sources, improves the ability to detect misinformation in digital media, supports the development of fact-checking skills in business content, increases awareness of how media influences consumer behavior, and enhances the skill of using digital content to support entrepreneurial projects. These impacts of artificial intelligence in entrepreneurship education on media literacy skills were deemed significant, as the mean values ranged from 3.39 to 3.45, which are well above the cut-off point of 2.50. Additionally, the standard deviation values ranged from 0.515 to 0.562, indicating that the mean values are closely clustered within a narrow range

Conclusion

Based on the findings of the study, it underscored the transformative impact of artificial intelligence (AI) on entrepreneurship education, enhancing various critical skills among students. AI's influence on media literacy is particularly significant, as it helps students identify credible online business sources, detect misinformation, and develop essential fact-checking skills. This ability to critically evaluate digital content is vital for entrepreneurs navigating today's information-rich environment. Furthermore, AI increases awareness of how media shapes

consumer behavior, an important aspect for entrepreneurs in crafting effective marketing strategies. AI also plays a crucial role in developing problem-solving skills by breaking down complex business problems into smaller, manageable parts, allowing students to test multiple solutions. Counselling implication was also discussed, and this includes that in the context of AI and entrepreneurship education, counselling should take a comprehensive approach which will blend technological expertise with the development of fundamental human abilities like moral consciousness, flexibility, inventiveness, and emotional fortitude. In this regard, counsellors are essential facilitators who help students develop the fundamental skills required for success in the twenty-first century while also assisting them in comprehending and utilizing AI tools and successfully incorporating them into entrepreneurial endeavours.

Recommendations

Based on the findings, the following recommendations were made:

1. Entrepreneurship Educators should integrate artificial intelligence tools into the curriculum to enhance students' media literacy and critical thinking skills, ensuring they can evaluate digital business sources effectively.
2. Curriculum Developers should focus on incorporating AI-driven platforms that teach fact-checking and misinformation detection, preparing students for the challenges of digital media in business.
3. University Administrators should support the implementation of AI technologies in entrepreneurship programs to help students understand media's influence on consumer behavior and make informed business decisions.
4. Faculty Members should encourage the use of AI to break down complex business problems, fostering problem-solving skills and the ability to test and select the best solutions.

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