ARTIFICIAL INTELLIGENCE TOOLS AND BUSINESS EDUCATION STUDENTS' LEARNING CAPABILITIES IN TERTIARY INSTITUTIONS IN AKWA IBOM STATE

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Abstract

The main purpose of the study was to determine the influence of artificial intelligence tools on business education students learning capabilities in tertiary institutions in Akwa Ibom State. Specifically, the study determined the influence of Gemini, ChatGPT and Grammarly on business education students learning capabilities in tertiary institutions in Akwa Ibom State. A descriptive survey research design was adopted for the study. The population comprised 502 business education students from two tertiary institutions (University of Uyo and College of Education, Afaha Nsit). A sample of 223 business education students were drawn from the target population using simple random sampling technique. This was determined using Taro Yamane formula. The instrument for data collection was researchers designed instrument titled "Artificial Intelligence tools and Business Education Students Learning Capabilities Questionnaire (AITBESLCQ)". The instrument was validated by experts. Cronbach's alpha was used to determine the reliability coefficient of 0.81. The data collected were analysed using independent t-test to test the null hypothesis at 0.05 significant level. The findings of the study revealed that there was no significant difference in the mean responses of University and College of education business students on the influence of gemini and Grammarly, but there was a significant difference in the mean responses of University and College of education business students on the influence of chatGPT on their learning capabilities. It was recommended among others that business education students should be cautious in the application of Gemini to enhance their learning capabilities.

Keywords: *Artificial Intelligence, Business Education, Learning Capabilities, Students Learning, personalized learning.*

Introduction

In today's knowledge society, application of Artificial Intelligence (AI) in Business Education Programme (BEP) has generated considerable concern due to its potential in improving students' learning capabilities (SLC), particularly in terms of their learning patterns. AI tools offer personalized learning experiences that cater for individual students' needs; providing real-time feedback. AI application helped students to potentially revolutionize BEP by enhancing learning capabilities. Leveraging AI tools in BEP creates a more engaging, efficient, and effective learning environment that prepares students for future challenges and opportunities in the business world, thereby reshaping BEPs.

AI-powered tools have gained prominence in their ability to enhance learning outcomes, particularly, fostering creativity and innovation among business education (BE) students (Shehu, Makinde, Mohammed, AbdulRafiu, 2024). BE students should develop critical thinking, creativity, and innovative skills that enable them thrive in an increasingly dynamic and technology-driven business environment (Aoun, 2022). In this regard, BE students have the responsibility of adopting technology for enhanced learning capabilities. The conventional methods used in the delivery of BEPs focused on lectures, memorization, and theoretical learning, leaving little room for students' creative thinking or innovative problem-solving (Eze, Chinedu-Eze, & Bello, 2023). AI offers new ways to learn which prioritize active engagement, experimentation, and personalized learning experiences, all fostering enhanced learning capabilities.

Shehu et al. (2024) observed that AI has potentials to enhance learning capabilities as it enables personalized learning experiences which caters for the individual needs, learning pace, and students'

interests. Schwab (2023) posit that personalized learning experiences allows students focus more on their areas of interest which could enhance learning capabilities. Chen, Liu, & Li, 2020) emphasized that AI-powered learning systems could lead to more interactive and personalized experiences, thereby increasing students' motivation and engagement. In the same vein, Zawacki-Richter, Marín, Bond, & Gouverneur, (2019) carried out a systematic review of AI applications in higher education, highlighting how AI could shift traditional, passive learning modes into more active and participatory ones, which is key for developing critical thinking and problem-solving skills. These findings prove that AI make learning more enjoyable and meaningful (Pellokila, Andung, & Levis, 2025). AI has the ability to engage students and make learning more interactive and contribute to enhanced learning capabilities.

Donatus (2024) noted that tasks performed by AI include learning, reasoning, problem-solving, perception and natural language understanding. The AI tools used in this study include gemini, chatGPT and grammarly. Gemini AI was formerly called Bard AI (Gond, Upadhyay, Mishra & Bhardwaj, 2024). Gemini AI stands as a cutting-edge tutoring platform driven by artificial intelligence, employing advanced machine learning algorithms to tailor learning experiences uniquely for each student (Gond et al., 2024). Gemini adapts instructional content delivery to meet individual learning needs (Kamalov, Calonge, & Gurrib, 2023). Studies suggests that Gemini can improve students' mastery of complex concepts and foster deeper learning through interactive tutoring sessions and targeted interventions (Salinas-Navarro, Vilalta-Perdomo, Michel-Villarreal, & Montesinos, 2024).

According to Gond, et al. (2024), ChatGPT emerged as a versatile tool for fostering student engagement and interaction. Through natural language processing capabilities, ChatGPT facilitates conversational learning experiences, answering queries, and providing personalized feedback in real-time (Nazir & Wang, 2023)). Research suggests that ChatGPT can enhance students' motivation and cognitive engagement, leading to improved learning outcomes (Alshahrani, 2023). Study by Gond, et al. (2024) showed that Gemini and chatGPT offer significant benefits to users. The authors further posited that they carry significance for leveraging AI advancements to enhance the caliber of learning and educational outcomes within the realm of higher education.

Grammarly is a free-online proofreading website that survey documents for grammatical mistakes. It is integrated with Machine Learning (ML) algorithms which automatically detects errors, plagiarism and suggest appropriate corrections (Balogun, Yahya, Ayeni, & Abudu, 2025). It can be used to minimise errors and improve students' writing quality. Karyuatry, Risqan and Darayani (2018) stated that lecturers admitted that Grammarly is very helpful in minimizing tutor's correction on students' essays and students actively writing process. Business Education (BE) refers to the teaching and learning of skills, knowledge, and practices related to the business world (Amesi & Peterside, 2019). BEPs include management, finance, accounting, marketing, entrepreneurship, economics, and business ethics among others. They are mounted primarily to prepare individuals to operate, manage, or work in various business environments, whether in corporate, entrepreneurial, or non-profit settings.

Business Education (BE) students learning capabilities are the skills, abilities and processes that enable them acquire, process and apply relevant competencies effectively. BE students learning capabilities encompass social, cognitive and emotional abilities that enhance learning and professional development. AI tools offer promising opportunities to enhancing students learning capabilities. Some of these capabilities are critical thinking, communication, problem solving, adaptability, collaboration and resilience. However, with the application of AI, concerns arise regarding the perceived threats it may cause to BE students learning and performance in public tertiary institutions in Akwa Ibom State, Nigeria. Though they are numerous studies on the use of AI in education generally, very few explored students learning capabilities specifically in BE. This study therefore, investigated the influence of AI tools on BE students' learning capabilities in tertiary institutions in Akwa Ibom State. Specifically, the study determined:

1. the influence of gemini on BE students' learning capabilities in tertiary institutions in Akwa Ibom State.
2. the influence of chatGPT on BE students' learning capabilities in tertiary institutions in Akwa Ibom State.

3. the influence of grammarly on BE students' learning capabilities in tertiary institutions in Akwa Ibom State.

Statement of the Problem

The application of AI in education generally has rapidly enhanced students learning capabilities, leading to positive learning outcomes. In the context of BE, AI tools such as gemini, chatGPT and grammarly are increasingly being used, however, the influence of these AI-driven tools on BE students learning capabilities in Tertiary institutions in Akwa Ibom State remains underexplored. There are few studies and perhaps a number of hindrances and problems that must be resolved to guarantee its proper application. Unfortunately, it seems that students lack the AI tools required to enhance their learning capabilities. BEPs aimed at acquiring competencies, it appears the lack of technical skills for AI application and the necessary tools have affected the realization of this objective.

Despite the potentials of AI to enhance students' learning capabilities, there is growing concern about the accessibility, understanding, and effectiveness of AI tools in BE in tertiary institutions in the state. The extent to which AI influences students' learning capabilities is not certain. Furthermore, certain factors such as technical complexity, limited access to AI, lack of AI Literacy among others, might likely limit the application of AI to a few privileged students, thereby impairing BE students' learning capabilities. Given these concerns, it is crucial to investigate the influence of AI tools on BE students' learning capabilities in tertiary institutions in Akwa Ibom State.

Hull Hypotheses

The following null hypotheses were formulated to guide the study:

1. There is no significant difference in the mean responses of University and College of education business students on the influence of gemini on their learning capabilities in tertiary institutions in Akwa Ibom State.
2. There is no significant difference in the mean responses of University and College of education business students on the influence of chatGPT on their learning capabilities in tertiary institutions in Akwa Ibom State.
3. There is no significant difference in the mean responses of University and College of education business students on the influence of grammarly on their learning capabilities in tertiary institutions in Akwa Ibom State.

Method

Descriptive survey research design was adopted for the study. The population comprised 502 BE students from two tertiary institutions in Akwa Ibom State (University of Uyo and College of Education, Afaha Nsit). The two institutions have Departments of Business Education and are awarding B.Sc (Ed). The College mounts affiliate programmes of the University and the contents are the same. A sample of 223 BE students were drawn from the population using simple random sampling technique which was determined using Taro Yamane formula. An instrument titled "Artificial Intelligence tools and Business Education students learning capabilities Questionnaire (AITBESLCQ)" was used for data collection. The instrument was validated by experts in Business Education, and Tests and Measurement Departments. Cronbach's alpha was used to determine the reliability coefficient of 0.81 which was high enough to justify the instrument for use. The data collected was analyzed using independent t-test statistics to test the null hypothesis at 0.05 significant level.

Results

Null Hypothesis 1

There is no significant difference in the mean responses of University and College of Education business students on the influence of gemini on their learning capabilities in tertiary institutions in Akwa Ibom State.

Table 1: t-test analysis of the difference in the mean responses of University and College of Education business education students on the influence of gemini on their learning capabilities in tertiary institutions in Akwa Ibom State

n=223

	Institutions	N	Mean	SD	T	Sig p	Decision
Gemini	University	128	2.14	.92	-1.40	.471	Not Sig
	College of Education	95	2.32	.92			

Significant at P<0.05

Table 1 presents the summary of t-test analysis of University and College of Education business students on the influence of Gemini on their learning capabilities in tertiary institutions in Akwa Ibom State. The result shows t-value of -1.40 and p-value of .471 at 221 degree of freedom at 0.05 alpha level. Since the p-value of .471 is greater than 0.05 alpha level, the null hypothesis was accepted. This implies that the mean responses of University and College of Education business students do not significantly differ on the influence of Gemini on their learning capabilities.

Hypothesis 2

There is no significant difference in the mean responses of University and College of Education business students on the influence of chatGPT on their learning capabilities in tertiary institutions in Akwa Ibom State.

Table 2: t-test analysis of the difference in the mean responses of University and College of Education business students on the influence of chatGPT on their learning capabilities in tertiary institutions in Akwa Ibom State

N=223

	Institutions	N	Mean	SD	t	Sig p	Decision
ChatGPT	University	128	3.63	.51	-7.06	.000	Sig.
	College of Education	95	4.00	.00			

Significant at P<0.05

Table 2 shows the summary of t-test analysis of University and College of Education business education students on the influence of Chatgpt on their learning capabilities in tertiary institutions in Akwa Ibom State. The analysis shows t-value of -7.06 and p-value of 0.000 at 221 degree of freedom at 0.05 alpha level. Since the p-value of 0.000 is less than 0.05 alpha level, the null hypothesis was rejected. This means that the mean responses of University and College of Education business students differ significantly on the influence of chatGPT on their learning capabilities.

Hypothesis 3

There is no significant difference in the mean responses of university and College of education business students on the influence of grammarly on their learning capabilities in tertiary institutions in Akwa Ibom State.

Table 3: t-test analysis of the difference in the mean responses of University and College of Education business education students on the influence of grammarly on their learning capabilities in tertiary institutions in Akwa Ibom State

N=223

	Institutions	N	Mean	SD	t	Sig p	Decision
Grammarly	University	128	2.05	.908	2.5	.230	Not Sig.
	College of Education	95	1.78	.687			

Significant at P<0.05

Table 3 presents the summary of t-test analysis of University and College of Education business students on the influence of grammarly on their learning capabilities in tertiary institutions in Akwa Ibom State. The analysis shows t-value of 2.5 and p-value of 0.230 at 221 degree of freedom at 0.05 alpha level.

Since the p-value of 0.230 is greater than 0.05 alpha level, the null hypothesis was retained. This implies that the mean responses of University and College of Education business students do not significantly differ on the influence of grammarly on their learning capabilities.

Discussion of Findings

The findings of this study were discussed based on hypotheses tested.

The finding for hypothesis one showed that there is no significant difference in the mean responses of University and College of Education business students on the influence of gemini on their learning capabilities in tertiary institutions in Akwa Ibom State. This means that their mean responses did not differ significantly due to similar levels of utilising Gemini and perceptions of its influences. BE students from both institutions agreed on the influence of Gemini on their learning capabilities. This finding was in agreement with the finding of Gond, et al. (2024) who found that Gemini offers significant benefits to higher education leveraging AI advancements to enhance learning.

The finding for hypothesis two shown in Table 2 revealed that there is significant difference in the mean responses of University and College of Education business students on the influence of chatGPT on their learning capabilities in tertiary institutions in Akwa Ibom State. This implies that their mean responses differ significantly because they have varying levels of access and experience to chatGPT. BE students from both institutions disagreed on the influence of chatGPT on their learning capabilities. This finding is in consonance with the findings of Alshahrani (2023) who found that ChatGPT enhances students' motivation and cognitive engagement, leading to improved learning outcomes.

The results presented in Table 3 revealed that there is no significant difference in the mean responses of University and College of Education business students on the influence of grammarly on their learning capabilities in tertiary institutions in Akwa Ibom State. This means that their mean responses did not differ significantly because of their comparable access to grammarly and experience. This means that they agreed to the influence of grammarly. This finding is in line with the findings of Karyuatry, et al. (2018) who stated that grammarly was very helpful to students and they actively participated in the writing process.

Conclusion

Based on the findings of the study, the study concluded that AI tools have influences on BE students' learning capabilities. The findings showed that there was a significant difference in the mean responses of University and College of Education business students on the influence of chatGPT on their learning capabilities. Furthermore, there was a significant difference in the mean responses of University and College of Education business students on the influence of Gemini and grammarly on their learning capabilities. On the whole, it could be said that AI tools influence BE students' learning capabilities in tertiary institutions in Akwa Ibom State.

Recommendations

Based on the findings of the study, the following recommendations are offered:

1. Business Education Students should be cautious in the application of Gemini to enhance their learning capabilities.
2. Business Education Students should consciously apply ChatGPT in their learning to enhance learning capabilities.
3. Business Education Students should be cautious in the application of Grammarly in their learning to enhance learning capabilities.

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