INFLUENCE OF ARTIFICIAL INTELLIGENT CHATBOTS ON BUSINESS EDUCATION STUDENTS' LEARNING ENGAGEMENT AND MOTIVATION IN PUBLIC UNIVERSITIES, EDO STATE, NIGERIA

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Abstract
This study assessed the influence of artificial intelligence chatbots on Business Education students' engagement and motivation. It was carried out using a population of 519 undergraduate Business Education students in public universities in the 2023/2024 session, Edo State. It utilized the descriptive survey research design. A sample size of 150 was selected from the population using a simple random technique. The study utilized a questionnaire, which was validated by 3 experts in Business Education. Reliability of the instrument was determined by administering twenty (20) copies of the instrument to students of Business Education who were part of the population using the split-half method, and the Pearson Product-Moment Correlation Coefficient was used to determine the correlation coefficient, which yielded an r-value of 0.89. Data was analyzed using mean, standard deviation, and t-test. Findings revealed that chatbots adequately engaged Business Education students in learning as well as enhanced their motivation to learn in the period under review. It was recommended, among others, that authorities in Business Education should teach students how to balance the use of chatbots with effective human instruction to continue to maintain meaningful engagement and deeper motivation

Keywords: Artificial Intelligence, Business Education, Chatbots, Engagement, Motivation

Introduction
The rapid advancement of information and communication technology cum artificial intelligence (AI), is significantly transforming various sectors of our economy, with education being no exception. AI tools, like natural language processing, intelligent tutoring systems, and machine learning algorithms, are increasingly being integrated into teaching and learning.to

enhance learning outcomes in various ways by both educators and students worldwide. This has brought so much innovation, which is gradually and steadily sharpening the way teaching and learning activities are carried out, especially in universities. Artificial intelligence tools provide personalized learning experiences, real-time feedback, and interactive learning content. AI tools can act as personal tutors, offering instant feedback, answering queries, and even suggesting supplementary resources based on the student's learning trajectory (Joe & Jian, 2023).

Artificial intelligence technologies' integration into education has transformed traditional learning environments and methods generally without exception to Business Education in public universities in Edo State, allowing for more dynamic and personalized experiences (Henry & Mark, 2024). One of the most innovative technological tools driving this change appears to be the use of AI-powered chatbots. According to Labadze et al. (2023), AI chatbots can provide immediate support by answering questions, offering explanations, and providing additional resources. Chatbots can also act as virtual teaching assistants, supporting educators and students through various means.

Chatbots are artificial intelligence driven tools that engage students in real-time conversations, and those developed by leading technology companies such as OpenAI (ChatGPT), Google (Socratic), IBM (Watson Assistant), Midjourney, and Canva's Magic have become pivotal in enhancing students' learning engagement, motivation and rapidly transforming how people work, learn and communicate irrespective of gender (Bojorquez & Vega, 2023). According to Bojorquez & Vega, these AI chatbots are teaching and learning conversational tools designed to mimic human conversation using text or voice interactions, providing information, personalized learning support, instant feedback, and a motivating environment through gamification, thereby reshaping how students interact with educational content conversationally. Presently, artificial intelligence (AI) chatbots appear to be becoming an integral part of Business Education and reshaping the way Business Educators and students work, teach, learn, and communicate. Chatbots for teaching and learning, which Business Education students are adopting, include ChatGPT and Google Bard, to mention a few. ChatGPT was first announced in November 2022 and is available to the public for free. Google Bard chatbot was announced in May 2023. All these AI chatbot technologies have the potential to provide personalized learning, immediate feedback, and foster collaboration among students (Robert et al., 2024).

Chatbots specialize in personalized tutoring, homework help, concept learning, standardized test preparation, discussion and collaboration, and mental health support (Labadze et al., 2023). Chatbots have emerged as powerful tools for transforming students' learning experiences by promoting engagement, personalized learning pathways, gamification, active learning, and round-the-clock accessibility. According to Neji et al. 2023), with the proliferation of online, students are increasingly relying on ChatGPT for writing essays, assignments, projects, and reports, and this trend appears to be unstoppable. Consequently, Neji and the co-authors advised that rather than attempting to prohibit the use of this technology, it may be more productive to leverage it as a pedagogical resource, engaging students in higher-order thinking tasks that involve critical thinking and analysis.

A timely, personalized feedback significantly enhances emotional engagement and self-efficacy, which are critical for student motivation (Wang 2025). Chatbots offer 24-hour availability and immediate feedback, ensuring that students' learning experiences are continuous and uninterrupted. This helps reinforce understanding of complex concepts in real time and provides a personalized learning experience to engage and motivate students. Jantakun et al.

(2025) in their analysis of personalized learning research found that Chatbot personalized learning improves academic outcomes by catering to individual students' needs, which relates to enhanced motivation. Also, gamified AI chatbots were found to enhance students' motivation, engagement, and flow experience by providing experiential and enjoyable learning environments, making learning more rewarding than the traditional method of learning (Xu et al., 2024). By incorporating these features into educational design, chatbots seem to keep students motivated to complete tasks in real time and engage in learning activities for longer periods of time. Also, the availability of chatbots around the clock helps create a sense of autonomy in students, as they can control when and how they learn.

Student's learning engagement refers to the active involvement and sustained effort a learner shows during the learning process, including behavioral, emotional, and cognitive participation in educational tasks (Anyichie & Butler, 2023). Learning engagement shows the quality of a student's active participation, interest, and investment in learning activities rather than mere attendance or compliance. Motivation could be seen as the internal psychological processes that initiate, direct, and sustain goal-oriented learning behaviours (Gedutis, 2023). Motivation may explain why Business Education students choose to engage in a learning activity, how long they persist, and how much effort they put into the learning tasks.

A study by Yang (2024) on the impact of artificial intelligence software on English learning motivation and achievement provided comprehensive research results that showed that artificial intelligence chatbots can effectively improve students' learning motivation. Through personalized, engaging teaching methods. The results of Yang show that artificial intelligence tools like chatbots enhance students' interest and autonomy in learning, motivation, engagement, and learning outcomes as these technologies enable immediate feedback, personalized and adaptive learning experiences. (Salehb et al. 2020). According to Schmid et al. (2020), personalized learning systems powered by AI adapt to students' skill levels and learning paces, making learning more relevant and engaging. The results of the study by Neji et al. (2023) on exploring new artificial intelligence-based technologies to enhance students' motivation showed that the technique of incorporating chatbots in teaching and learning enhanced students' motivation and engagement in engineering education. AI-powered chatbots can provide round-the-clock support, a key advantage for students who may need assistance outside of regular school hours.

In recent times, the use is becoming pervasive among Business Education students in public universities in Edo State. Many of these students argue that chatbots have the potential to increase their learning engagements and stimulate deep learning motivation. Despite these claims, there are still growing concerns among other stakeholders in university education, especially educators, regarding the ability of chatbots to truly sustain students' cognitive, emotional, and behavioral engagement. Many educators believe that chatbots merely quicken task completion without meaningful learning engagement. Again, many Business Educators assume that the motivation derived from chatbot use may be extrinsic and driven mainly by convenience and quick task completion rather than genuine motivation in learning.

Business Education is an educational programme designed to equip learners with the knowledge, skills, attitudes, and competencies required for effective participation in the world of work, entrepreneurship, and economic development. Emesoba (2018) points out that business education is a specialized appendage and self-reliant of vocational education that prepares students to enter teaching and office occupations as capable and intelligent members of the labour force. The Federal Republic of Nigeria (FRN, 2014) described Business Education as an

educational programme that prepares individuals for office occupations, business enterprises, and teaching roles through the acquisition of practical skills, business knowledge, and technological competencies in various skills such as accounting, marketing, and office technology and management, preparing learners for employment and self-employment. The individual recipients of Business Education could be male or female.

Male students in this paper refer to Business Education students who are biologically identified as men who are registered in public universities in Edo State, while female students are people who are biologically identified as women, also enrolled in the programmes.. Issues of gender differences, such as learning engagement and motivation, have been of concern in education generally. Luitel (2024) examined gender differences in academic motivation and classroom engagement among university students, and the results of the study revealed significant gender differences, with female students exhibiting higher intrinsic motivation and engagement, while males demonstrated slightly higher extrinsic motivation. Also, Li et al (2025) showed how gender stereotypes influence students' engagement in learning tasks by affecting motivational beliefs and emotional factors, highlighting the importance of considering gender in studies of students' engagement.

Concerning using technologies in learning engagement and motivation, male students appear to have a higher interest in exploring, experimenting with and adopting educational technologies such as AI-powered learning tools and digital platforms than their female counterparts. Across many Nigerian universities, male and female students appear to differ in their levels of digital exposure, confidence, and participation in learning activities. Internationally, a study by Mogelvang et al. (2025) shows that men exhibit more frequent engagement with generative AI chatbots across a broader spectrum of applications and express greater interest in their relevance for future careers**,** while women tend to use chatbots more narrowly and express greater caution and critical reflection about their use**.** Male and female considerations are important variables in this study because such helped to explain differences in how these students interact with artificial intelligence learning technologies, collaborative learning, derive learning engagement, and motivation to learn. The findings of this study could help business educators, curriculum planners, and policymakers to design digital learning interventions that promote more and equitable learning engagement cum motivation among Business Education students. There are many studies relating information communication and technology use among educators and students but to the best of the researchers' knowledge, none is specific to the influence of Chatbots on learning engagement and motivation of Business Education students in public universities in Edo State. This created a serious gap for this study.

Statement of the Problem

Students' learning engagement and motivation are two major determinants of academic performance and achievements. In the era of AI, students mostly take advantage of chatbot learning tools with a view to improving their learning outcomes. University students generally and Business Education students particularly appear to be increasingly relying on artificial intelligence chatbots for academic activities. Despite the widespread use of chatbots by these students, there is a growing concern about their actual impact on learning engagement and motivation. Although chatbots offer immediate assistance and quick access to information, it is not clear if they genuinely promote and sustain cognitive engagement, active participation, and intrinsic motivation to learn. This is the worry of this study. This study, therefore, assessed the influence of chatbots on Business Education students' learning engagement and motivation to

provide empirical data and evidence-based guidance for their effective integration into Business Education practice.

Purpose of the Study

The main purpose of this study was to assess the influence of artificial intelligence chatbots on Business Education students' learning engagement and motivation. Specifically, the study:

1. assessed the influence of chatbots on Business Education students' learning engagement.
2. assessed the influence of chatbots on Business Education students' learning motivation

Research Questions

The following research questions guided this study:

1. What is the influence of chatbots on Business Education students' learning engagement?
2. What is the influence of chatbots on Business Education students' learning motivation?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

$H0_1$: There is no significant difference in the mean responses between male and female Business Education students on the influence of chatbots in learning engagement.

$H0_2$: There is no significant difference in the mean responses between male and female Business Education students on the influence of chatbots on learning motivation.

Methods

The study utilized the descriptive survey research design. The population of the study was 519 Business Education students in the University of Benin (286) and Ambrose Ali University (233), Edo State, in the 2023/2024 academic session. The sample size of the study was one hundred and fifty students of Business Education, which was selected from the population using a simple random technique. The sample size comprised 80 males, representing 53%, and 70 females, representing 47%. The study utilized a self-structured questionnaire which had two sections: A and B. Section A contained demographic information while Section B contained 31 item statements relating to the research questions. The items of the instrument were gleaned from literature reviewed and OpenAI (2023) on a four-point rating scale of Strongly Agreed (SA); Agreed (A); Disagreed (D), and Strongly Disagreed (SD), and weighted 4, 3, 2, and 1, respectively. The instrument was validated by three (3) experts in Business Education at the University of Benin. Reliability of the instrument was determined using the split-half method. Twenty (20) copies of the instruments were administered to students of respondents who were part of the population, and the Pearson Product-Moment Correlation coefficient was used to determine the R-values, which yielded 0.90 for learning engagement and 0.87 for motivation, with a grand reliability coefficient of 0.89. The demographic data was analyzed using simple percentages, while Mean and Standard Deviation (SD) were used to analyze the research questions. The hypotheses were tested with a t-test at a 0.05 level of significance. A Mean rating on any item equal to or above 2.50 was taken as "Agreed" while a Mean lower than 2.50 was taken as "Disagreed". The null hypothesis was upheld were the t-calculated was less than the p-value at the 0.05 level of significance; otherwise not accepted.

Presentation of Results

Research Question One: What is the influence of chatbots on Business Education Students' Learning Engagement?

Table 1: Mean and Standard Deviation Responses of the Respondents on Influence of Chatbots on Business Education Students' Learning Engagement

	Influence of Chatbots on Students' Engagement	Mean	SD	Rmks
1	Artificial Intelligence chatbots connect me to course materials	3.46	0.50	Agreed
2	Artificial intelligence chatbots help to speed up my assignments	3.59	0.66	Agreed
3	Artificial intelligence chatbots help me to formulate ideas more clearly	3.35	0.71	Agreed
4	Artificial intelligence chatbots benefit from real-time writing assistance	3.23	0.62	Agreed
5	Personalized learning systems powered by AI chatbots help me adapt to my skill levels and learning paces, making learning more relevant and engaging	3.39	0.49	Agreed
6	With AI chatbots, I can get immediate feedback on any aspect of my academic work	3.65	0.47	Agreed
7	Chatbots help me brainstorm ideas and improve my writing skills	2.85	0.78	Agreed
8	AI chatbots create a richer and more effective learning environment for me as a student.	3.40	0.81	Agreed
9	AI chatbots provide immediate and constructive feedback to me as a student.	3.41	0.73	Agreed
10	Chatbots help me optimize my study time.	3.14	0.58	Agreed
11	Timely feedback from AI chatbots facilitates self-reflection and enables students to make necessary improvements	3.19	0.51	Agreed
12	Intelligent tutoring systems and virtual learning assistants can facilitate group discussions	3.24	0.71	Agreed
13	AI-powered chatbots promote my active participation in learning	3.34	0.73	Agreed
14	AI-powered chatbots improve my critical thinking and problem-solving skills	3.39	0.67	Agreed
15	AI-powered chatbots create a dynamic learning environment that mirrors real-world scenarios for me	3.39	0.59	Agreed
	Grand Total	3.33	**0.67**	**Agreed**

Table 2 revealed an aggregate Mean value of 3.33, implying that the respondents agreed that artificial intelligence chatbots adequately engaged them in learning. The standard deviation ranged from 0.47 to 0.81, with a total of 0.67, showing that the respondents were not wide apart in their responses.

Research Question Two: **What is the Influence of AI Chatbots on Business Education Students' Learning Motivation?**

Table 2: Mean and Standard Deviation Responses of the Respondents on Influence of Chatbots on Business Education Students' Motivation

	Influence of Chatbots on Students' Motivation	Mean	SD	Rmks
16	I enjoy my learning experiences because of AI chatbots.	3.25	0.53	Agreed
17	Following developments in AI chatbots is an interesting activity for me.	3.30	0.72	Agreed
18	Developing my skills in using AI chatbots is a delightful learning process for me.	3.09	0.70	Agreed
19	I take pleasure in learning now because of AI chatbot applications.	3.35	0.66	Agreed
20	AI chatbots provide me with a collaborative approach to learning	2.44	0.65	Disagreed
21	AI chatbots provide me with informative and engaging conversations on a wide range of topics	3.54	0.50	Agreed
22	AI chatbots create in me academic curiosity and mastery of contents	3.05	0.87	Agreed
23	AI chatbots tools make learning more real for me	3.30	0.64	Agreed
24	I feel more motivated to study when using AI chatbots' learning resources	3.20	0.81	Agreed
25	AI chatbot tools make difficult subjects easier for me to understand	2.43	0.75	Disagreed
26	AI chatbots increase my engagement with course materials	3.26	0.62	Agreed
27	I find it easier to stay focused when using AI chatbot learning platforms	3.09	0.77	Agreed
28	AI chatbots increase my confidence in my ability to succeed academically	3.08	0.78	Agreed
29	AI chatbots encourage me to adopt more consistent study habits	2.98	0.78	Agreed
30	AI chatbots create immersive learning experiences that captivate my attention and foster active participation in learning	3.45	0.67	Agreed
31	AI chatbots make my learning more memorable	3.40	0.66	Agreed
	Grand Total	**3.25**	**0.69**	**Agreed**

Table 2 revealed an aggregate Mean value of 3.25, implying that the respondents agreed that chatbots provide enough motivation for them to learn. The respondents, however, disagreed that chatbots provide them with a collaborative approach to learning. The respondents also disagreed that chatbot tools make difficult subjects easier for them to understand. The standard deviation values for all the items ranged from 0.50 to 0.81, with a total of 0.69, showing that the respondents were not widely apart in their responses.

Hypotheses Testing

Hypothesis One: There is no significant difference in the mean responses between male and female Business Education students on the influence of chatbots in learning engagement.

Table 3: **Summary of t-test Table on the Influence of Chatbots on Learning Engagement**

Variable Categories	N	Mean	SD	Df	t-value	p-value	A	Decision
Male	89	3.42	0.29					
				148	3.265	.001	0.05	Significant
Female	70	3.24	0.37					

At 148 degrees of freedom, the result showed a t-value of 3.265 and a p-value of .001 at the 0.05 level of significance. These indicated a statistically significant difference between male and female business education students. This implied that male students with a Mean value of 3.42 had higher learning engagement with Chatbots than female students with a mean value of 3.24. Therefore, the null hypothesis of no significant differences was rejected. There was a significant difference between male and female Business Education students in the influence of chatbots on learning engagement.

Hypothesis Two: There is no significant difference in the mean responses between male and female Business Education students on the influence of chatbots in learning motivation.

Table 5: **Summary of t-test Table on Influence of Chatbots on Motivation**

Variable Categories	N	Mean	SD	Df	t-cal	p-value	α	Decision
Male	89	3.31	0.41					
				148	1.696	.092	0.05	Not Significant
Female	70	3.19	0.47					

Testing null hypothesis two at a degree of freedom of 148, the result on Table 3 showed a t-value of 1.696 and a p-value of .092 at a 0.05 level of significance. Therefore, the null hypothesis was retained. This indicates that there was no statistically significant difference between male and female business education students on learning motivation with chatbots.

Discussion of Findings

Findings showed that artificial intelligence-powered chatbots provided adequate learning engagement to Business Education students in public universities in Edo State in the period under review. The respondents agreed that chatbots connected them to course materials, helped to speed up their assignment completion, and helped to formulate ideas more clearly. The respondents also agreed that AI chatbots help them to benefit from real-time writing assistance. Also, personalized learning systems powered by AI chatbots helped the students adapt to higher skill levels and learning paces, making learning more relevant, to mention a few. The timely feedback of AI chatbots facilitated self-reflection, enabled students to make necessary improvements, promoted active participation in learning, and improved their critical thinking and problem-solving skills. These findings supported the results of the study by Yang (2024) on the impact of artificial intelligence software/chatbots on English learning motivation and achievement, which showed that artificial intelligence chatbots can effectively improve students' learning engagement. Through personalized, engaging teaching methods, the result of Yang (2024) showed that artificial intelligence chatbots enhance students' interest, autonomy in

learning motivation, engagement, and learning outcomes. The result of this study is also in tandem with the findings of Schmid et al. (2020), which showed that personalized learning systems of chatbots adapt to students' skill levels and learning paces, making learning more relevant and engaging. The results revealed a significant difference between male and female Business Education students on the influence of chatbots on learning engagement. This result is in agreement with the findings of the study by Mogelvang et al. (2025), which showed that men exhibit more frequent engagement with generative AI chatbots across a broader spectrum of applications and express greater interest in their relevance for future careers**,** while women tend to use chatbots more narrowly and express greater caution and critical reflection about their use**.** In this study, the male students had higher learning engagement with the use of chatbots than the female students. This implies that while chatbots promote learning engagement, their impact could vary across demographic groups, such as gender. This difference may be due to the level of confidence in technology use, prior exposure to digital tools, and learning preferences. This, therefore, created urgency for Business Education curriculum planners and educators to ensure that chatbot learning activities are gender inclusive so that both male and female students of the programme have equal learning engagement in the use of the technology. The finding on gender differences, however, negated the views of Bojorquez and Vega (2023), which stated that with the advent of chatbots such as ChatGPT, Google Bard, Midjourney, and Canva's magic features, artificial intelligence (AI) is quickly becoming an integral part of our everyday lives, transforming industries and reshaping the way we work, learn, and communicate irrespective of gender.

Furthermore, Business Education students in public universities in Edo State agreed that AI chatbots provided motivation for them to learn in many ways. The results showed that AI chatbots provided enjoyable learning experiences, a delightful learning process, and pleasure in learning. AI chatbots provided for the respondents informative and engaging conversations on a wide range of topics and created in them academic curiosity and mastery of content. These findings supported the result of the study by Neji et al (2023) on exploring new artificial intelligence-based technologies to enhance students' motivation, which showed that the use of chatbots as a learning assistant can have a positive impact on students' learning experiences and motivation. Neji and the coauthors further reiterated that the use of AI chatbots as a tool for motivating students is an exciting and rapidly developing area of research in education with the potential to provide personalized learning experiences that can enhance motivation. Corresponding hypotheses results revealed no significant differences between male and female Business Education students on the influence of chatbots on learning motivation. The results showed that both male and female students of Business Education in public universities in Edo State had equal learning motivation in the use of chatbots. These results supported the findings of Robert et. al. (2024), which showed that AI chatbot technologies have the potential to provide personalized learning, immediate feedback, foster collaboration, and deepen motivation to learn among students. It implied that chatbots act as an equalizing tool, bypassing traditional gender disparities in technology adoption or academic confidence. This equally suggested that AI-powered tools (like ChatGPT) provide a neutral, accessible learning environment where motivation is driven by the tool's utility rather than gendered perceptions of technology. The possible reason for this could be that both male and female students find the same value in chatbots' educational use, such as quick feedback, summarizing information, or idea generation, which made the motivation to use them equal.

Conclusion

Based on the findings of this study, it was concluded that AI learning chatbots significantly influenced Business Education students' learning engagement and motivation to learn. The use of chatbots was found to enhance students' active participation in learning activities. Chatbots features of immediate feedback, personalized support, and easy access to learning resources stimulated Business Education students' interest, sustained their attention, and encouraged greater involvement in academic tasks, thereby promoting meaningful learning engagement. It was also concluded that due to the positive influence of chatbots on students' engagement and motivation, there is a need for proper guidance and policy control by both Business Education curriculum planners and Educators to prevent over-reliance.

Recommendations

Based on the findings of the study, it was recommended that

1. Since Business Education students in public universities in Edo State have a deep level of learning engagement with AI chatbots, business educators should communicate clear guidance on how to use AI acceptably, proper citation of AI materials, and ethical principles consistently and continuously to the students in the process of teaching to avoid abuse in use or over-reliance.
2. Authorities of Business Education programme in public universities in Edo State should, as a matter of urgency, integrate chatbot-based learning tools into teaching and learning activities in business education for continuous motivation to learn.
3. Business Education curriculum planners and educators should ensure that chatbot learning activities are gender inclusive so that both male and female students of the programme have equal learning engagement in the use of the technology.

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