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INFLUENCE OF ARTIFICIAL INTELLIGENCE CHABOT ON STUDENTS' LEARNING EXPERIENCE IN PUBLIC SECONDARY SCHOOLS IN ABAKALIKI EDUCATION ZONE, EBONYI STATE

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Abstract

This study investigated the influence of Artificial Intelligence (AI) Chabot on students' learning experience in public secondary schools in Abakaliki Education Zone, Ebonyi State. The study sought to determine the influence of AI Chabot on grading and assessment process of students; personalized learning of students; and teacher-students' collaboration learning process in public secondary schools. Descriptive survey research design was adopted for the study and data were collected using questionnaire "Influence of AI Chabot on students' learning experience in public secondary schools Questionnaire (IAICSLE)" structured by the researcher. The population of the study was 88 English Language teachers and the sample was 45 teachers selected using purposive sampling technique. The use of purposive sampling technique enabled the researcher to select schools that have ICT units, constant power supply and digital tools. The reliability of the instrument was determined using Cronbach alpha approach. The analysis yielded the coefficient index of 0.84. Research questions were answered using the arithmetic mean while the standard deviation was used to determine the proximity of the respondents' responses. The hypotheses were tested using t-test at 0.05 level of significance. The findings of the study revealed that AI Charbot has significant influence on grading and assessment process of students in public secondary schools; Artificial Intelligence Chabot has significant influence on personalized learning of students in public secondary schools; and that AI Chabot also has significant influence on teacher-students' collaboration learning process of students. It was recommended that government should equip the schools with AI facilities and ensure constant power supply in order to improve on teaching and learning; the school authorities should constantly organize professional development programme such as seminar, workshop, symposium and conferences to update the teachers on the use of AI in teaching and learning; while the teachers should continuously make

use of AI Chabot in teaching and learning so as to enhance grading and assessment process of students.

Keywords: Influence, Artificial Intelligence Chabot, Students' learning experience, Ebonyi State

Introduction

In recent years, the world is witnessing several rapid changes that are driven by knowledge, digitalization as well as scientific and technological advancement. These developments enhanced the human abilities to generate knowledge, innovate new technological applications, restructure institutions, and apply knowledge in the various spheres of life. One of the major technological advancement driving these changes is Artificial Intelligence which stands out as a game-changer. Artificial intelligence refers to a category of computer systems that are programmed to do tasks normally requiring human intellect (McCarthy, 2017). Sara and Lemos (2022) defined Artificial Intelligence as the simulation of human intelligence which can be done with the help of computer programmes. It is a catalyst that is presently disrupting normal operations in business as well as in private lives. In the recent times, functions that are hitherto performed by individuals are now handled by intelligent machines, more effectively and efficiently. Artificial intelligence enables robots to learn from experience, adapt to new inputs, and execute human-like activities (Sara and Lemos, 2022). Globally, artificial Intelligence is one of the most important technologies at work in our everyday lives. It influences everything from online dating to our shopping habits. It enhances efficiency by automating tasks, streamlining operations, and improving decision-making. It simulates human intelligence which can be easily done by smart observation done by humans and then develops such programmes.

One of the key elements of Artificial Intelligence is the ability to learn. Intelligent systems are designed to learn from data and experiences, identify patterns and trends, and improve their performance over time. Dipanwita (2024) noted that AI can grade multiple-choice questions, fill-in-the-blank answers, and even some forms of essay writing with a high degree of consistency. This reduces human error and bias, ensuring that all students are assessed fairly. In addition, it handles large volumes of grading, making it possible for a teacher to assess thousands of students efficiently. AI Chabot provides almost instant feedback, allowing students to learn from their

mistakes and improve before the next assessment. It is essentially a model of learning based on direct and personal experiences that can be emotional, cognitive, or behavioral. These experiences involve interactions between learners and their surroundings, often modifying student behavior through learning activities (Michael & Modell, 2023). Education can become more personalized and adaptive, catering to the unique requirements of each student. AI-powered educational platforms have the ability to collect and analyze vast amounts of data, enabling them to gain insights into students' strengths, weaknesses, and learning preferences. This data-driven approach allows for the delivery of customized content, recommendations, and feedback, providing students with a tailored learning experience that maximizes their potential for success (Topol, 2019). One of the significant advantages of AI in education according to Russell and Norvig (2019) is its ability to provide immediate and constructive feedback to students.

Moreover, AI has the potential to facilitate collaborative learning environments. Intelligent tutoring systems and virtual learning assistants can support students in group discussions, provide guidance, and encourage collaboration. By leveraging AI technologies, students can engage in interactive activities, simulations, and problem-solving exercises, promoting critical thinking, creativity, and teamwork. These collaborative experiences closely mirror real-world scenarios, preparing students for the challenges they may face in their future careers (Russell and Norvig, 2019). This is achieved through the use of machine learning algorithms and artificial neural networks, which allow machines to process information, identify patterns and make predictions or decisions based on them. Reasoning is another crucial aspect of Artificial Intelligence. Intelligent systems are able to use available information to make logical decisions and solve complex problems. They can use rules and algorithms to analyze data, extract relevant information and generate desired results or solutions (Mircea, 2023). Problem solving is the essential skill of artificial intelligence that uses intelligent systems to approach and solve various problems, be they mathematical, logical or related to information processing. They can use specific algorithms and methods to find optimal solutions or make decisions based on the objectives and constraints involved.

AI was introduced as a pioneer technique that can create a revolution in several domains of human life, including the domain of education. AI has become increasingly present in human lives. It has

a significant impact in various fields, including education. Education has undergone a series of changes and under the impact of artificial intelligence that brings with it the opportunity to transform, to adapt the way the teaching/learning process is carried out. AI in education is the application of AI technologies, such as AI catboats comprising machine learning algorithms, natural language processing, and computer vision to enhance various aspects of the e-commerce experience (Alexander & Alfred 2020). AI chabot, also known as conversional agents, are software frameworks that can respond to natural language inputs and attempt to hold a conversation in a way that imitates a real person (Alexander & Alfred 2020). AI Chabot is defined as a computer programme designed to interact with users through textor voice-based conversations (Adamopoulou & Moussiades, 2020). Modern chatbots use natural language processing (NLP) and machine learning technologies to understand and dynamically respond to user queries (Przegalinska et al., 2019). Chatbots communicate with their human partners through various frame works ranging from a simple text interface to speech recognition features. A chatbot is defined as a computer programme designed to interact with users through textor voice-based conversations (Adamopoulou & Moussiades, 2020). Modern chatbots use natural language processing (NLP) and machine learning technologies to understand and dynamically respond to user queries (Przegalinska et al., 2019).

The development of AI chatbots has progressed through several significant phases. Early versions relied on rule-based systems that could only manage basic conversations by following predefined instructions. However, recent time chatbots, powered by natural language processing (NLP) and deep learning, can understand context and improve the educational process. Moreover, the goal of effective teaching is to facilitate meaningful learning experiences for students. Learning experience refers to any activity or process that contributes to a learner's growth and knowledge acquisition, regardless of whether it is planned or unplanned (Michael & Modell, 2023). Some limitations of teaching and learning English Language using conventional method are its inability to provide immediate and constructive feedback to students, lack of personalized learning and poor teacher-students' collaboration. Traditionally, students had to wait for their assignments to be graded by teachers, which often resulted in delayed feedback. The traditional education system has typically followed a one-size-fits-all approach, where students receive the same content and instruction regardless of their individual needs and learning styles (Kiel, 2019). Furthermore,

conventional teaching strategy do not provide personalized learning experiences by delivering tailored content, resources, and assessments to each student. It hardly allows students to progress at their own pace, focus on areas where they need improvement, and explore advanced concepts when ready. This approach does not enhance student engagement, motivation, and overall learning outcomes.

Similarly, the conventional teaching method does not facilitate collaborative learning environments; it does not provide adequate guidance and collaboration among students. Several studies such as Aniella and Gabriel (2025) who studied the impact of Artificial Intelligence (AI) on Students' Academic Development on Educational science found that AI offers significant benefits, including personalized learning, improved academic outcomes, and enhanced students' engagement. Similarly, Dipanwita (2024) investigated the Impact of Artificial Intelligence in Educational System and found that one of the biggest benefits of AI in education is personalized learning because according to the author, it allows students to learn at their own pace and in a way that best fits their learning preferences. Dipanwita also found that AI can improve student results. Chatbots, automated grading and evaluation, and intelligent tutoring systems can boost productivity, free up teachers' time and deliver more precise and consistent feedback. In addition, Mircea (2023) conducted a study on the impact of Artificial Intelligence on Education. Mircea's finding revealed that Artificial Intelligence can play a crucial role in personalizing learning, enabling content, pace and teaching style to be tailored to individual student's needs and preferences. Through AI systems, personalized learning programme can be created that foster the development of unique human skills by focusing on each student's specific strengths and interests. Mircea added that AI-based technologies can facilitate communication and collaboration between students and teachers. In the course of this study, not only that there was paucity of empirical studies on education, but to the best of the researcher's knowledge, no study has been conducted to investigate influence of Artificial Intelligence Chabot on students' learning experience in public secondary schools in Ebonyi state, Nigeria, hence the need for this study.

Research questions

1. What is the influence of AI Chabot on grading and assessment process of students in public secondary schools in Ebonyi State?
2. What is the influence of AI Chabot on personalized learning of students in public secondary schools?
3. What is the influence of AI Chabot on teacher-students collaborative learning process in public secondary schools?

Hypotheses

H01: There is no significant difference between the mean ratings of male and female teachers on the influence of AI Chabot on grading and assessment process in secondary schools

H02: There is no significant difference between the mean rating of male and female teachers on the influence of AI Chabot on personalized learning of students in public secondary schools

H03: There is no significant difference between the mean rating of male and female teachers on the extent AI Chabot influences teacher-students collaborative learning process in public secondary schools

Methodology

The study adopted descriptive survey research design. Data were collected using questionnaire "Influence of AI Chabot on students' learning experience in public secondary schools Questionnaire" (IAICSLE) structured by the researcher. The instrument was validated by three experts; one from Measurement and Evaluation, Department of Science Education and the other two experts from English Education, Department of Arts and Social Science Education, all from Ebonyi State University, Abakaliki Ebonyi State. A sample of 45 English Language teachers was selected using purposive sampling technique out of the 88 English Language teachers in all the 71 public secondary schools in Abakaliki Education zone, Ebonyi state. The researcher used purposive sampling technique to enable him select schools that have ICT unit, constant power supply and digital tools within the study area. The reliability of the instrument was determined by subjecting it to a trial testing using 20 English Language teachers from public secondary schools in Abia State which was not part of the area of study. The data collected were used to determine

the reliability coefficient using the Cronbach alpha approach in statistical package for social science (SPSS). The analysis generated the coefficient index of 0.84. The instrument was administered to the respondents with the help of three research assistants who were graduates of English Education, considered to have good knowledge of the area of study as well as requisite skills and ideas needed for the administration of the questionnaire. Data collected were analyzed using mean, standard deviation and t-test. Research questions were answered using the arithmetic mean while the standard deviation was used to determine the proximity of the respondents' responses. The hypotheses were tested using t-test at 0.05 level of significance. Real limit of numbers 0.00-1.49 (strongly disagree), 1.50-2.49 (disagree), 2.50-3.49 (agree), 3.50-4.00 (strongly agree) were used to interpret the results of the research questions. Items that scored 2.5 and above represent agreed while those that scored below 2.5 represent disagreed. A null hypothesis was rejected for any test statistic with p-values less than a 0.05 level of significance, which means accepting the alternative hypotheses of significance. On the other hand, a null hypothesis was accepted for any test statistic with P-values greater than a 0.05 level of significance.

RESULTS

Research Question 1

What is the influence of Artificial Intelligence Chabot on grading and assessment process of students in public secondary schools?

The result of the data analysis was presented in Tables 1

Tables 1: Mean ratings and SD of the respondents on influence of AI Chabot on grading and assessment process of students in public secondary schools in Ebonyi State

S/N	Items AI chatbot	$\bar{X}$	SD	Remarks
1.	Enhances automated grading	3.08	0.86	Agreed
2.	Reduces human error and bias, which ensures that all students are fairly assessed	2.75	1.03	Agreed
3.	Handles large volumes of grading, making it possible to assess thousands of students efficiently	3.12	0.87	Agreed

4.	Provides instant feedback, allowing students to learn from their mistakes and improve before the next assessment	3.10	0.90	Agreed
5.	Analyzes students' performance and provides personalized feedback, highlighting strengths and areas for improvement.	3.17	0.83	Agreed
6.	Enhances easy grading	3.11	0.98	Agreed
7.	Facilitates ongoing assessments that adapt to a student's progress, ensuring a more accurate representation of their knowledge and skills	2.92	0.81	Agreed
	Grand mean	**3.03**	**0.89**	**Agreed**

$\underline{X}$ = Mean; SD = Stand Deviation

The results in Table 1 shows that the respondents agreed to all items in the cluster. The grand mean of 3.03 indicates that AI Chabot has influence on grading and assessment process of students in public secondary schools in Abakaliki Ebonyi State.

H01: There is no significant difference between the mean ratings of male and female teachers on the influence of AI Chabot on grading and assessment process of students in public secondary schools in Abakaliki Ebonyi State

The null hypothesis was tested using t-test at 0.05 level of significance and presented in Table 2.

Table 2: T-test Analysis of the Responses on the influence of AI Chatbot on grading and assessment process of students in public secondary schools

Gender	N	X	SD	Df	t-cal.	P-value	Decision
Male	25	77.16	8.30				
				43	5.00	0.23	NS
Female	20	84.60	6.64				

$\overline{x}$ = mean of respondents, ***SD*** = Standard deviation, S = Significant, NS = Not Significant.

The results in Table 2 show that the t-calculated value of 5.00 is not significant at the P-value of 0.23 which is greater than 0.05 level of significance. Since the p- value of 0.23 is greater than the 0.05 level of significance, the null hypothesis which stated there was no significant difference between the mean rating of male and female teachers on the influence of Artificial Intelligence Chatbot on grading and assessment process of students in secondary schools was upheld.

Research Question 2

What is the influence of AI Chatbot on personalized learning of students in public secondary schools in Ebonyi State?

The result of the data analysis was presented in Tables 3

Tables 3: The influence AI Chatbot on personalized learning of students in public secondary schools in Ebonyi State

S/N	Items AI Chatbot	$\bar{X}$	SD	Remarks
8	Makes individualized learning possible	3.03	0.93	Agreed
9	Adjusts lessons to the unique requirements, interests, and strengths of each student	3.21	0.79	Agreed
10	Adjusts lessons to the level and speed of each learner	2.66	0.97	Agreed
11	Creates customized learning programmes that are matched to the individual needs of every learner	3.05	0.89	Agreed
12	Able to suggest relevant learning materials, pointing out areas that need work, and modifying the degree of difficulty in doing assignments	2.91	0.96	Agreed
13	Ensures that every student gets the assistance and direction they require to realize their full potential is	3.15	0.89	Agreed

14	Able to adjust its speed of instruction to match the learning pace of the student	2.80	0.98	Agreed
_	**Grand mean**	**2.97**	**2.97**	**Agreed**

X = Mean; STD = Standard Deviation

The results in Table 2 show that the respondents agreed to all items in the cluster. The grand mean of 2.97 indicate that AI Chatbot has significant influence on personalized learning of students in public secondary schools in Abakaliki Ebonyi State.

H02: There is no significant difference between the mean rating of male and female teachers on the influence of AI Chatbot on personalized learning of students in secondary schools

Table 4: T-test Analysis of the Responses on the influence of Artificial Intelligence Chatbot on personalized learning of students in secondary schools

Gender	N	X	SD	Df	t-cal.	P-value	Decision
Male	25	59.00	11.31				
				43	0.49	0.62	NS
Female	20	57.50	19.55				

$\overline{x}$ = mean of respondents, ***SD*** = Standard deviation, S = Significant, NS = Not Significant.

The results in Table 4 shows that a t-calculated value of 0.49 is not significant at the P-value value of 0.62 which is greater than 0.05 level of significance. Since the p- value of 0.62 is greater than the 0.05 level of significance, the null hypothesis was upheld and conclusion made was that there was no significant difference between the mean rating of male and female teachers on the influence of AI Chatbot on personalized learning of students in secondary schools

Research Question 3

What is the influence of AI Chatbot on teacher-students' collaboration learning process in public secondary schools in Ebonyi State?

The result of the data analysis was presented in Tables 5

Tables 5: The influence Artificial Intelligence Chatbot on teacher-students' collaboration learning process in public secondary schools

S/N	Items	$\bar{X}$	SD	Remarks
	AI Chatbot			
15	Offers real-time analytics and insights, which can assist educators in identifying students' strengths, weaknesses, and learning patterns	2.96	1.24	Agreed
16	Can also be used to notify teachers when and which students are struggling and provide possible remedies	2.85	1.01	Agreed
17	Can act as a brainstorming partner, helping educators come up with creative solutions to support students' learning	3.13	0.97	Agreed
18	Assists educators in responding to a range of queries from students during classes.	2.94	1.02	Agreed
19	Can bridge knowledge gaps and offer superior answers to inquiries from students	2.52	0.93	Agreed
20	Can respond to questions from students and help with peer-to-peer communication, encouraging a cooperative learning atmosphere	2.98	1.05	Agreed
	Grand mean	**2.89**	**1.03**	**Agreed**

The results in Table 5 show that the respondents agreed to all items in the cluster. The grand mean of 2.89 indicate that AI Chabot has significant influence on teacher-students' collaboration learning process in public secondary schools in Abakaliki Ebonyi State.

H03: There is no significant difference between the mean rating of male and female teachers on the influence of AI Chatbot on teacher-students collaboration learning process in secondary schools

Table 6: T-test Analysis of the Responses on the influence of AI Chatbot on teacher-students collaboration learning process in secondary schools

Gender	N	X	Std	Df	t-cal.	P-value	Decision
Male	25	55.60	11.15				
				43	2.97	1.86	NS
Female	20	44.60	13.70				

$\overline{x}$ = mean of respondents, ***SD*** **=** Standard deviation, S = Significant, NS = Not Significant.

The results in Table 6 showed that a t-calculated value of 2.97 is not significant at the P-value value of 1.86 which is greater than 0.05 level of significance. Since the p- value of 1.86 is greater than the 0.05 level of significance, the null hypothesis was upheld and conclusion made was that there was no significant difference between the mean rating of male and female teachers on the influence of AI Chatbot on teacher-students collaboration learning process in secondary schools.

Discussion

The results in Table 1 revealed that in the opinion of the respondents AI Chabot influences grading and assessment process of students in public secondary schools in Abakaliki Ebonyi State. This result agrees with Dipanwita (2024) who noted that AI can grade multiple-choice questions, fill-in-the-blank answers, and even some forms of essay writing with a high degree of consistency. This reduces human error and bias, ensuring that all students are assessed fairly. In addition, it handles large volumes of grading, making it possible to assess thousands of students efficiently; and AI Chabot provide almost instant feedback, allowing students to learn from their mistakes and improve before the next assessment (Dipanwita, 2024). Furthermore, the finding corroborates the

opinion of Russell and Norvig (2019) who stated that AI has the ability to provide immediate and constructive feedback to students.

The test of hypothesis 1 revealed that there was no significant difference between the mean rating of male and female teachers on the influence of AI Chabot on grading and assessment process of students in secondary schools in Abakaliki Ebonyi State. This suggest both the male and female English Language teachers in the area of study unanimously agreed that AI Chabot influences grading and assessment process of students in secondary schools.

The results in table 3 revealed that the respondents agreed that AI Chabot influence personalized learning of students in public secondary schools in Abakaliki Ebonyi State. This finding is in line with Dipanwita (2024) who found in his study that one of the biggest benefits of AI in education is personalized learning, which allows students to learn at their own pace and in a fashion that best fits their learning preferences. It also agrees with Mircea. (2023) whose finding revealed that AI can play a crucial role in personalizing learning, enabling content, pace and teaching style to be tailored to individual students' needs and preferences. Through AI systems, personalized learning programmes can be created that foster the development of unique human skills by focusing on each student's specific strengths and interests (Mircea, 2023).

The test of hypothesis 4 revealed that there was no significant difference between the mean rating of male and female teachers on the influence of AI Chatbot on personalized learning of students in secondary schools in Abakaliki Ebonyi State. This implies that both the male and female English Language teachers in the area of study were of the opinion that AI Chabot influences personalized learning of students in secondary schools

The results in table 5 revealed that AI Chatbot teacher-students collaboration learning process in public secondary schools in Abakaliki Ebonyi State. This result is in consonance Mircea. (2023) whose finding revealed that AI-based technologies facilitate communication and collaboration between students and between students and teachers. Similarly, this result is also inconsonance with Russell and Norvig 2019) who declared that by leveraging AI technologies, students can engage in interactive activities, simulations, and problem-solving exercises, promoting critical thinking, creativity, and teamwork. These collaborative experiences closely mirror real-world scenarios, preparing students for the challenges they may face in their future careers. Table 6 revealed that there was no significant difference between the mean rating of male and female

teachers on the influence of AI Chatbot on teacher-students collaboration learning process in secondary schools. This implies allt the respondent including male and female teachers maintained that AI Chatbot influences teacher-students collaboration learning process in the area studied.

Conclusions

The conclusion drawn from the foregoing is that AI Chatbot promotes grading and assessment process of students in public secondary schools. AI Chatbots facilitates personalized learning of students in public secondary schools; in addition, AI Chabot enhances teacher-students collaboration in learning process of students in schools.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The government should equip the schools with AI facilities and ensure constant power supply in order to improve on teaching and learning.
2. The school authorities should organize professional development programmes such as seminar, workshop, symposium and conferences to update teachers on the use of AI in teaching and learning.
3. Teachers should continuously make use of AI Chabot in teaching and learning in order to enhance improved grading and assessment process of students, personalized learning of students and teacher-students collaboration in learning process of students in schools.

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