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PERCEIVED INFLUENCE OF ARTIFICIAL INTELLIGENCE ON UNDERGRADUATE STUDENTS' ACADEMIC PERFORMANCE IN NNAMDI AZIKIWE UNIVERSITY, AWKA

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ABSTRACT

The study investigated the perceived influence of Artificial Intelligence on academic performance of undergraduate students in Nnamdi Azikiwe University, Awka. Descriptive research design was used for the study. The population for the study consisted of 43,363 undergraduate students in Nnamdi Azikiwe University Awka. The sample comprised 200 students of Department of Educational Foundations which was obtained through multi-stage sampling method. Three research questions guided the study. An instrument titled "Influence of Artificial Intelligence on Undergraduate Students' Academic Performance (IAIUSAP)" was used to generate data for the study. The instrument was validated by three experts in the Department of Educational Foundations. The reliability of the instrument was determined using Cronbach Alpha, which yielded a reliability coefficient of 0.80, 0.79 and 0.81 for cluster B_1, B_2 and B_3 respectively. The overall reliability coefficient of 0.80 was obtained for the three clusters, which was considered high enough to confirm the instrument as reliable. The instrument was administered to the students through online google form and 200 responses were retrieved and used for the study. Arithmetic mean was used to answer the research questions. From the findings, it was revealed that Artificial Intelligence (AI) influences the academic performance of undergraduate students. Challenges like lack of training and misinformation, hinder their effective use. It was recommended among others that the universities should provide comprehensive training programs and workshops for students and to enhance their understanding and effective use of AI tools in academic settings.

Keywords: Academic performance, Artificial Intelligence, Influence and Undergraduate Students

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Introduction

Artificial intelligence (AI) has emerged as a transformative technology invention of the 21st century, revolutionizing various aspects of our lives. Since its inception in the 1950s, Artificial intelligence has undergone significant advancements, transitioning from a particular research area to a mainstream technology with far-reaching implications. It is a vast branch of computer science concerned with developing intelligent computers capable of doing tasks that typically need human intelligence. Nilsson in Tuomi (2018) defined artificial intelligence as a computer system capable of carrying out tasks typically associated with intelligent beings. Artificial intelligence is a set of technologies that enable machines to perform tasks that typically require human intelligence, such as learning, reasoning, and problem-solving (Ford, 2019).

Artificial intelligence represents a revolutionary advancement in technology that has the potential to transform various aspects of our lives. Artificial intelligence has become increasingly integrated into various aspects of education, offering new opportunities and challenges for students. Turkle (2017), asserts that over-reliance on Artificial Intelligence can lead to a loss of critical thinking skills and deep learning, as students rely on the technology to complete tasks rather than developing their own problem-solving abilities. Therefore, Artificial intelligence has been said to have a substantial impact on undergraduate students' academic performance.

Artificial intelligence has influenced undergraduate academic performance in various ways. According to Nwosu & Okoli (2019), academic performance refers to the quantification of learning outcomes in a systematic and deliberate manner. This includes evaluating students' academic advancement through their grades, test scores, attendance, class participation, study habits, and other crucial indicators of academic success. Scholars have discussed this influence in their research and studies, highlighting both the positive and negative effects of Artificial Intelligence on students' learning outcomes. Li & Liu (2019) found that the use of Artificial Intelligence -based tutoring systems improved students' academic performance by providing personalized feedback and tailored learning experiences. Artificial intelligence technologies can adapt to students' individual needs and learning styles, leading to better comprehension and retention of course material. On the other hand, some scholars have raised concerns about the potential negative effects of Artificial Intelligence on undergraduate academic performance. A study by Selwyn (2019) highlighted the risk of over-reliance on Artificial Intelligence technologies leading to decreased critical thinking skills and independent learning among students. Students may become too dependent on Artificial Intelligence tools for problem-solving, which could hinder their ability to think creatively and analytically and some challenges might surface in the process.

Students encounter various challenges when using artificial intelligence (AI) in their education, primarily revolving around ethical concerns and skill gaps. Additionally, many students face difficulties due to a lack of technical skills required to effectively utilize Artificial Intelligence tool. Students could effectively use Artificial intelligence if the challenges are addressed.

To address the challenges students, face in using artificial intelligence (AI), several strategies can be employed. One key approach is integrating Artificial Intelligence literacy into the curriculum. By doing so, students can develop a foundational understanding of Artificial Intelligence, which helps them better navigate both its technical and ethical dimensions. Luckin, Holmes, Griffiths, & Forcier (2016) advocate for this integration, emphasizing that Artificial intelligence -related competencies should be embedded within educational programs to equip students with the necessary skills. Another strategy is fostering a culture of ethical awareness and responsible Artificial Intelligence use. This involves creating opportunities for students to engage in discussions and projects that explore the ethical implications of Artificial Intelligence, such as data privacy and algorithmic bias. Aoun (2017) suggests that educating students on these issues is essential for developing Artificial Intelligence users who are both knowledgeable and conscientious

There have been several studies on the use of Artificial Intelligence by students. A study was carried out by Smith, Johnson, & Williams (2018), who examined how academic performance of students using artificial intelligence tools differ from that of their counterparts who do not. The study showed that students using artificial intelligence were more engaged, motivated and performed more than the others. The performance was not only felt individually but also as a group. Baker (2016), carried out a study and found out that Artificial intelligence systems used in education, such as intelligent tutoring systems, may provide feedback or suggestions based on incorrect interpretations of student data, leading to errors or misleading guidance. Luckin, Holmes, Griffiths, & Forcier, (2016), report discussed ethical considerations, data privacy, and the need for human oversight as significant challenges. Solutions include establishing clear ethical guidelines for Artificial Intelligence use in education, ensuring data protection through robust privacy policies, and maintaining human oversight to ensure Artificial Intelligence complements rather than replaces human educators.

Literature suggests that different researchers have focused on student's performance on the use of Artificial Intelligence and others on the relationship between the academic performance of students that use Artificial Intelligence and those that do not but to the researchers knowledge, much have not been done on the Perceived Influence of Artificial Intelligence on Undergraduate Students' Academic Performance. There is need to

ascertain the perception of the undergraduate students who utilize it for their studies. It was against this backdrop that the research was conducted to determine the influence of Artificial Intelligence as perceived by the students.

Purpose of the Study

The purpose of the study was to investigate the impact of Artificial Intelligence on undergraduate students' academic performance in Nnamdi Azikiwe University, Awka. Specifically, the study sought to;

1. Find out how the use of Artificial Intelligence has influenced undergraduate students' academic performance in Nnamdi Azikiwe University, Awka.
2. Identify the challenges encountered by the students on the use of Artificial Intelligence.
3. Determine strategies for addressing the challenges encountered by the students on the use of Artificial Intelligence.

Research Questions

The following research questions guided the study;

1. To what extent has the use of Artificial Intelligence influenced undergraduate students' academic performance in Nnamdi Azikiwe University, Awka?
2. What are the challenges encountered by the students on the use of Artificial Intelligence?
3. What are the strategies for addressing the challenges encountered by the students on the use of Artificial Intelligence?

Methods

This study adopted a descriptive survey research design as stated by Nworgu (2015). Descriptive survey enables researchers to cover a large number of respondents and utilize data collected the way it is without any manipulation; hence it is considered most appropriate for the study. The population of this study comprised 43,363 undergraduate students of Nnamdi Azikiwe University, Awka ((Student Affairs, UNIZIK)). The sample comprised 200 undergraduate students from the Department of Educational Foundation obtained through multi- stage sampling method. In the first stage, out of the cluster of 15 faculties, simple random sampling technique was used to select 2 faculties. In the second stage, out of the 2 faculties, two departments were randomly selected and in the final stage, simple random sampling was used to select 100 students from each department. The instrument for data collection was a questionnaire of four point modified Likert rating scale of Strongly Agree (SA) Agree (A) Disagree (D) and Strongly Disagree (SD). The questionnaire was titled "Influence of Artificial Intelligence on Undergraduate Students' Academic Performance (IAIUSAP)". The instrument consists of two sections, A and B.. Section A sought information on the personal data of the respondents while Section B is divided into three clusters B_1, B_2 and B_3 according to the research questions with 7 items addressing each research question

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respectively. The questionnaire was structured on a four-point rating scale of Very Large Extent (VLE) = 4, Large Extent (LE) =3, Low Extent (LE) =2 and Very Low Extent (VLE) =1 for Section B1, while Strongly Agree (SA) =4, Agree (A) =3, Disagree (D) =2 and Strongly Disagree (SD) =1 for Section B2 and B3. The instrument was validated by three experts in the Department of Educational Foundations. The reliability of the instrument was determined using Cronbach Alpha, which yielded a reliability coefficient of 0.80, 0.79 and 0.81 for cluster B_1, B_2 and B_3 respectively. The overall reliability coefficient of 0.80 was obtained for the three clusters, which was considered high enough to confirm the instrument as reliable. The instrument was administered to the students through online google form and 200 responses were retrieved and used for the study. Arithmetic mean was used to answer the research questions. A mean of 2.50 was used as the cutoff point for making decisions. The decision rule was that any item that scored a mean of 2.50 and above would be seen as having attracted positive responses of high extent/agree, while items that scored less than 2.50 would be regarded as having attracted negative responses of low extent/ disagree.

Presentation of Results

Table 1: Mean Response of students on the extent the use of Artificial Intelligent has influenced undergraduate students' academic performance.

S/N	ITEM	N	X	DECISION
1.	Using artificial intelligent tools has improved my overall academic performance.	200	3.13	Agreed
2.	Artificial Intelligence helps me understand complex Subject better	200	3.42	Agreed
3	Artificial Intelligence applications makes it easier	200	3.44	Agreed
4	Artificial Intelligence has increased my motivation to study	200	3.01	Agreed
5	Using Artificial intelligence has improved in exams and tests	200	2.78	Agreed
6.	Artificial Intelligence help me manage my study time More effectively	200	2.97	Agreed
7.	Overall, Artificial Intelligence has a positive impact on My learning experience	200	3.16	Agreed
	GRAND MEAN		**3.13**	

Table 1 shows that the mean scores for item 1-7 were above the cut off mean score of 2.50. This means that the respondents agreed with the statements. However, the cluster

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mean score of 3.13 shows that the students agreed that Artificial Intelligence influences the academic performance of undergraduate students to a great extent.

Table 2: Mean Response of students on the challenges encountered on the use of Artificial Intelligence.

S/N	ITEM	N	X	DECISION
8	I find artificial intelligence tool difficult to understand and use	200	2.09	Disagreed
9.	There is not enough support or training on how to use artificial intelligence tool.	200	2.58	Agreed
10	Artificial Intelligence tools are often not reliable and Malfunction	200	2.89	Agreed
11	Using Artificial intelligence tools is too expensive for Me.	200	2.35	Disagreed
12	Artificial intelligence tools sometimes give incorrect or misleading information.	200	2.57	Agreed
13	There is a lack of Artificial intelligence tools that are Relevant to my course of study	200	2.49	Disagreed
14	I worry about my data privacy when using Artificial Intelligence. `	200	2.49	Disagreed
	GRAND MEAN		**2.49**	

Table 2 shows that the mean scores for item 8, 11, 13, and 14 were below the cut off mean score of 2.50. This means that the respondents disagreed with the statements. However, the mean scores for item 9, 10, and 12 were above the cut off mean which shows that the respondents agreed with the statements.

Table 3: Mean Response of student on the strategies for addressing challenges encountered on the use of Artificial Intelligence

S/N	ITEM	N	X	DECISION
15	More training and workshops on artificial Intelligence tools should be provided	200	3.50	Agreed
16	Artificial Intelligence tools should be made more Affordable for students	200	3.39	Agreed
17	Technical support for artificial intelligence tools Should be readily available.	200	3.41	Agreed

18	University should invest in reliable and up-to-date Artificial intelligence tools	200	3.40	Agreed
19	Student should be educated about data privacy and Security when using artificial intelligence tools	200	3.42	Agreed
20	Artificial Intelligence tools should be integrated into the curriculum in a meaningful way.	200	3.42	Agreed
21	Feedback from students should be used to improved artificial intelligence tools.	200	3.44	Agreed
	Grand Mean		**3.42**	

Table 3 shows that the mean scores for item 15 - 21 were above the cut off mean score of 2.50. This means that the respondents agreed with the statements. However, the cluster mean score of 3.42 shows that the students agreed that the statements are strategies for addressing the challenges encountered by the students on the use of Artificial Intelligence (AI).

Discussion

The findings of this study show that using Artificial Intelligence (AI) tools has improved undergraduate students' academic performance both in tests and exams. It helps to understand complex subjects better and its application makes it easier to complete assignments. The findings are in conformity with the findings of Smith, Johnson, & Williams (2018), that students using artificial intelligence were more engaged, motivated and performed more than the others. It was also revealed that there are challenges encountered by students on the use of Artificial Intelligence (AI). Students encountered challenges such as: no support or training on how to use Artificial intelligence tools (AI) tools, Artificial intelligence (AI) tools not often reliable, malfunction and sometimes gives incorrect or misleading information. This present finding is in consonance with the findings of Baker (2016), who opined that Artificial intelligence systems used in education, such as intelligent tutoring systems, may provide feedback or suggestions based on incorrect interpretations of student data, leading to errors or misleading guidance. The study revealed that some strategies should be provided for addressing the challenges encountered by students on the use of Artificial intelligence. Some of them are provision of more training and workshops on the use of Artificial Intelligence (AI) tools and Artificial intelligence (AI) tools should be made more affordable for students, these align with the study of Luckin, Holmes, Griffiths, & Forcier (2016) who revealed the importance of training both students and educators on the use of Artificial Intelligence tools in education. They also emphasized on the need for educational institutions to invest in up-to-date, reliable Artificial Intelligence technologies to maximize the potential benefits for students while minimizing disruptions caused by outdated systems.

Conclusion

Based on the findings, it was concluded that while Artificial Intelligence tools significantly improve students' academic performance, comprehension, and motivation, challenges like lack of training, unreliability, and misinformation hinder their effective use. To overcome these, institutions must provide more support, ensure affordability, offer technical assistance, and integrate Artificial Intelligence into the curriculum meaningfully. By doing so, the benefits of Artificial Intelligence in education can be maximized for students.

Recommendations

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

1. The universities should provide comprehensive training programs and workshops for both students and faculty to enhance their understanding and effective use of AI tools in academic settings.

2. Technology Developers should collaborate with educational institutions to create affordable and accessible AI tools that meet the diverse needs of students, ensuring equitable access to technology.
3. Dedicated technical support teams should be established in the universities to assist students with any issues related to AI tools, providing prompt solutions to enhance the overall learning experience.

4. Educators should Integrate lessons on data privacy and security into the curriculum, ensuring that students are informed about the implications of using AI tools and how to protect their personal information.

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