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EXPLORATION OF THE HISTORICAL EVOLUTION AND INFLUENCE OF ARTIFICIAL INTELLIGENCE AMONG EDUCATIONAL FOUNDATIONS STUDENTS OF NNAMDI AZIKIWE UNIVERSITY AWKA

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Abstract

The paper examined A Historical Exploration of the Intersection of Artificial Intelligence and Digital Education: It's Influence on Students' of Nnamdi Azikiwe University, Awka. The study was guided by four research questions. The study adopted descriptive survey research design. The population of this study is comprised of 1,143 undergraduate students of the Department of Educational Foundations, Nnamdi Azikiwe University, Awka. The target population of this study is 567 comprising of 200 and 300 level students. The sample of the study was determined using Taro Yamane's sampling techniques; a sample of 235 undergraduate students was selected from the population. The instrument for data collection was a structured questionnaire titled "Questionnaire on Historical Exploration of Artificial Intelligence and Digital Education (QHEAIDE)." The reliability of the instrument was established using Cronbach alpha coefficient which yielded an index of 0.82. Data collected was and analysed using mean. The findings of the study show that AI in digital education has undergone significant transformation over the past decade among students in the Department of Educational Foundations. This shows that most students of Educational Foundations Department are aware of AI in digital education. Furthermore, AI-powered digital education did not drift students' attention from the traditional teaching method. The

study recommended there is need for more awareness on AI in digital education in students so as to allow self study in students for more understanding of subject matter and develop guidelines and standards for evaluating and implementing AI-powered learning tools in digital education.
Keywords: History, Artificial Intelligence (AI-Powered) and Digital **Education**

Introduction

The field of artificial intelligence (AI) technology as a long history is dynamic and growing. It emphasizes intelligent agents, or machines that can comprehend their prospects of success (Shabbir & Anwer, 2018). The word "artificial Intelligence" evokes ideas of super computers, which are computers with enormous processing power, adaptive behaviour including adding sensors and other components that enable them to have cognitive and functional abilities similar to humans, which enhances the supercomputer's connection with people (Chen, Chen & Lin, 2020). History has often been associated with the inculcation of citizenship values, especially in the forging of national identity (Yusuf, 2017). Furthermore, History according to Alaribe, *et al*., (2023) has helped in instilling a sense of pride in the common past; it has also contributed to the creation and strengthening of nationalism and national identity. Historically, according to Kaplan and Haenlein (2018), the term artificial intelligence was first coined by John McCarthy in 1956 when he held the first academic conference on the Campus of Dartmouth College a private Ivy League research University in Hanover, New Hampshire. According to Chen, *et al*., (2023) Artificial intelligence helps students in various ways in education. It plays an important role in helping students to collect information, take real-life decisions, solve life-related problems and improve their skills in various areas. AI fills gaps in classroom and assists teachers and students in the teaching-learning process (Hooda, *et al*., 2022).

Artificial Intelligence (AI) in order words enhances learner's interest and skills in the field of Education. As a result of Artificial Intelligence students have

the opportunity to be educated and also learn on a daily basis (de Oliveira Fornasier, 2021). Rosak-Szyrocka (2024) found out that it is imperative to acknowledge artificial intelligence (AI) which has a profound impact on modern education by disrupting established teaching and learning approaches. The author further asserted that gaining an understanding of the potential of AI-powered technologies will make it easier to integrate them into the teaching process, improve instructional strategies, and automate administrative duties. Furthermore, as artificial intelligence (AI) is incorporated more and more into the educational system, it is critical to recognize the difficulties it presents. This will help instructors and students make ethical decisions and guarantee that AI is used responsibly to influence education in the future.

Education in recent years has gone from analogue to digital and now artificial intelligence. It is obvious that education has turned out to become a continuous transformation which is transforming different sectors of the world (Pedro *et al*., 2019; Perisic, 2018). In recent times, the intersection of artificial intelligence (AI) and digital education has become a rich and fascinating history that spans centuries (Nguyen *et al*., 2023). AI as a matter of fact has improved education by providing teachers, with practical teaching tools (Nazaretsky *et al*, 2022). Furthermore, AI has increasingly being integrated into educational settings, transforming the way students learn and interact with course materials; which may have influenced students positively or negatively (Salido, 2023). Bojorquez and Vega (2023) found out diverse workforce in AI and related fields leads to more creative problem-solving and innovative solutions. Furthermore, the authors found out that if students are excluded from AI, may on the other hand cause a digital divide; as they may not have the knowledge and skills needed to navigate AI-driven technologies in their daily lives. This can hinder their ability to access information; participate in the digital matters and problem solving.

However, by excluding certain students from AI education, we risk losing the valuable insights and ideas that they could bring to the development of AI technologies. The rapid development of artificial intelligence (AI) is profoundly changing human society and the world. According to Yang (2023), the application of AI technology can also have a negative impact on students' learning skills. For example, students may be more inclined to use online learning resources and self-learning tools, neglecting traditional face-to-face teaching. Additionally, the development of machine translation technology may reduce students' ability in rigorous research and problem solving skills. AI is said to be an easy problem solver which aids students, teachers and researchers in understanding properly a subject matter. It is also seen as that which has the ability to think like human and able to rationalize and solve problem.

Artificial Intelligence (AI) according to Smith (2023) is the simulation of human intelligence in machines that are programmed to think and learn like humans. Artificial Intelligence (AI) is a branch of research in which computer systems are created to execute skills that are often associated with human beings (Rodrigo, 2023). Rodrigo found out that there is need addressing the inequalities in infrastructure as well as the digital gap. The integration of Artificial Intelligence (AI) in digital education has the potential to revolutionize the learning experience (Kaledio, *et al*., 2024). AI-powered adaptive learning systems can analyze individual students' learning styles, strengths, and weaknesses, providing personalized recommendations and real-time feedback; which can lead to improved student outcomes, increased efficiency, and enhanced teacher support (Mavroudi, *et al*., 2016). Digital education is not a replacement for traditional teaching methods but rather a complementary approach to create a more inclusive, effective, and engaging learning environment (Haleem, *et al*., 2022). As digital education continues to evolve, the strategic application of AI can amplify its impact, making learning more

accessible, effective, and engaging for all students and teachers (Haleem, *et al*., 2022). Despite the growing significance of Artificial Intelligence (AI) in transforming the education sector, there is a scarcity of empirical studies examining the historical evolution of AI in Nigerian universities, particularly in Nnamdi Azikiwe University, Awka. The existing literature focuses primarily on the technical aspects of AI, neglecting its historical evolution and influence on students' learning experiences. This research aims to address this knowledge gap by conducting the exploration of Historical Evolution and influence of Artificial Intelligence among Educational Foundations Students of Nnamdi Azikiwe University Awka

Statement of the Problem

The integration of Artificial Intelligence (AI) in digital education has transformed the learning landscape globally precisely in Nigeria, but its historical evolution and influence on students' learning experiences in Nigerian universities, particularly in Nnamdi Azikiwe University, Awka, remain poorly understood. As AI continues to shape the future of education in Nigeria precisely in Nnamdi Azikiwe University, Awka, it is crucial to examine its historical intersection with digital education and its influence on students' academic performance, engagement, and overall learning outcomes. However, there is a lack of empirical research investigating the historical development of AI and its influence on students in Nnamdi Azikiwe University, Awka, creating a significant knowledge gap that this study seeks to address.

Purpose of the Study

The general purpose of the study is to examine the exploration of Historical Evolution and influence of Artificial Intelligence among Educational Foundations Students of Nnamdi Azikiwe University Awka. Specifically, the study seeks to find out;

1. the extent to which the integration of AI has evolved among students of the department of Educational Foundations in Nnamdi Azikiwe University, Awka.
2. the current state of AI adoption among students of the department of Educational Foundations in Nnamdi Azikiwe University, Awka.
3. the perceived challenges of AI-powered learning tools among students of the department of Educational Foundations in Nnamdi Azikiwe University, Awka.
4. the benefits of AI-powered learning tools among students of the department Educational Foundations in Nnamdi Azikiwe University, Awka.

Research Questions

The following Research Questions guided the study:

1. To what extent has the integration of AI evolved among students of the department of Educational Foundations in Nnamdi Azikiwe University, Awka?
2. What is the current state of AI adoption among students of the department of Educational Foundations in Nnamdi Azikiwe University, Awka?
3. What are the challenges of AI-powered learning tools among students of Educational Foundations in Nnamdi Azikiwe University, Awka?
4. What are the benefits of AI-powered learning tools among students of the department Educational Foundations in Nnamdi Azikiwe University, Awka?

Method

The design adopted for this study was descriptive survey design. According to Nworgu (2015) descriptive survey as a research design aim at collecting data and describing in a systematic manner, the characteristics, features or facts about a given population. The population of this study is comprised of 1,143 undergraduate students of the Department of Educational Foundations, Nnamdi Azikiwe

University, Awka in the 2023/2024 academic session. Educational Foundations is a Department in the Faculty of Education. The population comprised of 100, 200, 300 and 400 level students with the population of 273, 332, 235 and 303 respectively. The target population for the study were 200 and 300 level students which were purposely selected as respondents in carrying out this study; because 100 level students are new into the school system and may not give an excellent response while 400 level students are not involved because they were writing projects and preparing for their defense. Hence, the target population of this study is 567. The sample of this study was determined using Taro Yamane's formula.

The instrument for data collection was a structured questionnaire developed by the researchers titled "Questionnaire on Historical Exploration of Artificial Intelligence (QHEAI)" The instrument was based on four-point Likert scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE) for Research Question 1, 2, 3 and 4. To ascertain the reliability of the instrument, a trial test was carried out. The instrument was administered to 30 undergraduate students of Chukwuemeka Odumegwu Ojukwu University, Igbariam in the Faculty of Education. The data collected was tested using Cronbach Alpha coefficients which yielded an index 0.82 which is considered reliable for the study. Data collected for the study was analysed using Mean. Considering the four-point Likert scale instrument adopted, a mean cut-off point of 3.0 was used for decision making on the outcome of the analysis.

Results

Research Question One: To what extent has the integration of AI evolved among students of the department of Educational Foundations in Nnamdi Azikiwe University, Awka?

Table 1: Means score on the extent to which the integration of AI has evolved among students of the department of Educational Foundations in Nnamdi Azikiwe University, Awka

S/N	Items	VHE	HE	LE	VLE	N	x̄	Decision
1.	The integration of AI has undergone significant transformations over the past decade among students	128	98	7	2	235	3.5	Accepted
2.	The university has witnessed a gradual shift from traditional teaching methods to AI-powered	43	57	97	38	235	2.4	Rejected
3.	The adoption of AI education has increased exponentially among students of Nnamdi Azikiwe University, Awka,	102	93	19	21	235	3.2	Accepted
4.	The university's platform has incorporated AI-driven tools and resources, enhancing student engagement and learning outcomes.	36	43	102	54	235	2.1	Rejected
5.	The historical evolution of AI has been influenced by technological advancements and student needs.	98	86	26	25	235	3.1	Accepted
6.	AI is a significant component in my school	12	17	196	10	235	2.1	Rejected
7.	AI has been in existence since the inception of the my school	37	46	93	59	235	2.6	Accepted

The findings in table 1 show that AI has undergone significant transformation over the past decade among students. This shows that most students of Educational Foundations Department are aware of AI. Furthermore, the findings show that AI did not drift students' attention from the traditional teaching method. The mean score of 2.4 on item 2 which is below the decision rule of 3.0 showed that students' still preferred attending classes and improve their knowledge through AI.

Research Question Two: What is the current state of AI adoption among students of the department of Educational Foundations in Nnamdi Azikiwe University, Awka?

Table 2: Means score on the current state of AI adoption among students of the department of Educational Foundations in Nnamdi Azikiwe University, Awka

S/N	Items	VHE	HE	LE	VLE	N	x̄	Decision
1.	I am familiar with the concept of Artificial Intelligence (AI)	103	88	13	31	235	3.1	Accepted
2.	I have heard about AI-powered learning tools and resources.	92	96	43	4	235	3.2	Accepted
3.	I understand the potential benefits of AI	72	69	38	56	235	2.7	Rejected
4.	I currently use AI tools for my academic pursuits.	87	84	37	27	235	3.0	Accepted
5.	I have used AI-driven learning resources in the past semester.	74	67	62	32	235	2.8	Rejected
6.	I regularly utilize AI-based platforms for learning	84	94	33	24	235	3.0	Accepted
7.	I regularly utilize AI-based platforms for assignments	92	103	17	23	235	3.1	Accepted
8.	I have experienced personalized learning through AI-tools.	78	74	64	19	235	2.9	Rejected
9.	I have seen an increase in my academic performance due to AI.	102	98	21	14	235	3.3	Accepted

The findings in table 2 show that students' of Educational Foundations Department are familiar with the AI. More so, the mean score of 3.3 in item 9 shows that students' have increase in their academic performance due to AI. More so, the mean score of 3.1 which is above the decision rule of 3.0 shows that student regularly utilize AI-based platforms for their assignments.

Research Question Three: What are the challenges of AI-powered learning tools among students of Educational Foundations in Nnamdi Azikiwe University, Awka?

Table 3: Means score on the perceived challenges of AI-powered learning tools among students of the department of Educational Foundations in Nnamdi Azikiwe University, Awka.

S/N	Items	VHE	HE	LE	VLE	N	x̄	Decision
1.	I experience frequent technical issues while using AI-powered learning tools.	93	102	23	17	235	3.2	Accepted
2.	The AI-powered learning tools are often slow or unresponsive.	47	58	62	68	235	2.4	Rejected
3.	I have difficulty accessing AI-powered learning resources due to connectivity issues.	56	64	47	68	235	2.5	Rejected
4.	I find AI-powered learning tools difficult to navigate and use.	96	74	45	20	235	3.0	Accepted
5.	The interface of AI-powered learning tools is not user-friendly.	41	32	46	116	235	2.0	Rejected
6.	I need more training or support to effectively use AI-powered learning tools.	102	97	28	8	235	3.2	Accepted
7.	The content provided by AI-powered learning tools is not relevant to my course material.	21	22	0	192	235	1.5	Rejected
8.	The AI-powered learning tools do not provide enough detail in their explanations.	106	98	22	9	235	3.3	Accepted
9.	I find the content of AI-powered learning tools to be inaccurate.	92	87	42	14	235	3.1	Accepted
	AI-powered learning tools do not provide personalized learning experiences tailored to my needs.	48	62	52	73	235	1.7	Rejected

The findings in table 3 show that students frequently have technical issues while using AI-powered learning tools. Mean score of 3.3 in items 8 shows that AI-powered learning tools do not provide enough details in their explanation. More so, the result in table show that students of the Department of Educational Foundations need more training or support to effectively use AI-powered learning tools.

Research Question One: What are the benefits of AI-powered learning tools among students of the department Educational Foundations in Nnamdi Azikiwe University, Awka?

Table 4: Means score on the benefits of AI-powered learning tools among students of the department Educational Foundations in Nnamdi Azikiwe University, Awka.

S/N	Items	VHE	HE	LE	VLE	N	x̄	Decision
1.	AI-powered learning tools have improved my overall learning experience.	81	87	52	15	235	3.0	Accepted
2.	I find AI-powered learning tools to be more engaging than traditional methods.	66	64	33	72	235	2.5	Rejected
3.	I find AI-powered learning tools to be more interactive than traditional methods.	44	61	62	68	235	2.3	Rejected
4.	AI-powered learning tools have helped me develop a deeper understanding of complex concepts.	108	98	17	12	235	3.3	Accepted
5.	AI-powered learning tools provide me with personalized learning experiences tailored to my needs.	97	87	23	28	235	3.1	Accepted
6.	AI-powered learning tools help me identify and focus on areas where I need improvement.	112	78	24	21	235	3.2	Accepted
7.	AI-powered learning tools allow me to learn at my own pace and convenience.	109	107	17	2	235	3.4	Accepted
8.	AI-powered learning tools have helped me improve my academic performance.	99	88	33	15	235	3.2	Accepted
9.	I have seen an increase in my grades and test scores since using AI-powered learning tools.	89	87	28	31	235	3.0	Accepted
10.	AI-powered learning tools have helped me develop better study habits	92	96	27	20	235	3.1	Accepted

The findings in table 4 show that AI has helped improve students' overall learning experience. The mean scores of 2.5 and 2.3 in items 2 and 3 respectively show that student do not find AI learning tools to be interactive and engaging than traditional methods of teaching in class. Finally, the mean score of 3.4 in item 7 shows that AI-powered learning easily allow student to learn easily at their own pace and convenience. Furthermore, the findings in the above table shows an increase in students' of Educational Foundations Department grades and test scores since using AI-powered learning tools.

Summary of Findings

From the analyses of this study, the following major findings were made:

1. The researchers found out that most students of Educational Foundations Department are not aware of AI in digital education.
2. Students preferred using AI for their assignments.
3. Students encountered some technical issues when using AI.
4. Some Students believed that AI has helped improve their academic performance at school.

Discussion

The findings in research question one show that AI has undergone significant transformation over the past decade among students in Nnamdi Azikiwe University, Awka precisely in the Department of Educational Foundations. This shows that most students of Educational Foundations Department are aware of AI. Furthermore, the findings show that AI-powered digital education did not drift students' attention from the traditional teaching method. The mean score of 2.4 on item 2 which is below the decision rule of 3.0 showed that students' still preferred attending classes and improve their knowledge through AI. The finding of Bojorquez and Vega (2023) tried to shape the finding of the present day study. They found out that diverse workforce in AI and related fields leads to more creative problem-solving and innovative solutions. Furthermore, the authors found out that if students are excluded from AI, may on the other hand cause a digital divide; as they may not have the knowledge and skills needed to navigate AI-driven technologies in their daily lives. This can hinder their ability to access information; participate in the digital matters and problem solving. Hence, there is need to incorporate AI into the teaching and learning for students to be well prepared and further do more research on subject matter before attending classes.

The findings in research question two show that students' of Educational Foundations Department are familiar with the AI. More so, the mean score of 3.3 in item 9 shows that students' have increase in their academic performance due to AI-powered digital education. More so, the mean score of 3.1 which is above the decision rule of 3.0 shows that student regularly utilize AI-based platforms for their assignments. The finding of Rosak-Szyrocka (2024) is in line with the present day study. The author found out that it is imperative to acknowledge artificial intelligence (AI) which has a profound impact on modern education by disrupting established teaching and learning approaches. The author further asserted that gaining an understanding of the potential of AI-powered technologies will make it easier to integrate them into the teaching process, improve instructional strategies, and automate administrative duties. Furthermore, as artificial intelligence (AI) is incorporated more and more into the educational system, it is critical to recognize the difficulties it presents. This will help instructors and students make ethical decisions and guarantee that AI is used responsibly to influence education in the future.

The findings in research question three show that students frequently have technical issues while using AI-powered learning tools. Mean score of 3.3 in items 8 shows that AI-powered learning tools do not provide enough details in their explanation. More so, the result in table show that students of the Department of Educational Foundations need more training or support to effectively use AI-powered learning tools. The findings of Rodrigo (2023) corroborates with the present day study. The author found out that there is need addressing the inequalities in infrastructure as well as the digital gap. The author further asserted that this was an issue that was particularly pertinent in regions such as the Philippines. The restricted availability of the essential technology and internet connectivity presented a substantial obstacle to the efficient deployment of AI-powered learning tools.

These findings highlight the need to bridge the digital gap and promote fair access to education that is boosted by artificial intelligence.

The findings in research question four show that AI has helped improve students' overall learning experience. The mean scores of 2.5 and 2.3 in items 2 and 3 respectively show that student do not find AI learning tools to be interactive and engaging than traditional methods of teaching in class. Finally, the mean score of 3.4 in item 7 shows that AI-powered learning easily allow student to learn easily at their own pace and convenience. Furthermore, the findings here shows an increase in students' of Educational Foundations Department grades and test scores since using AI-powered learning tools. The finding of Chen, *et al*., (2023) corroborates the findings of the present day study. The authors found out that Artificial intelligence helps students in various ways in education. More so, Hooda, *et al*. (2022) found out that AI in digital education plays an important role in helping students to collect information, real-life decisions, solve life-related problems, and improve their skills in various subject areas.

Conclusion

The integration of AI has a significant positive impact on students' of the Department of Educational Foundations in learning experiences, academic performance, and development of 21st-century skills. The findings of this study reveal that students who used AI-powered learning tools showed improved engagement, personalized learning, and increased accessibility, leading to better academic outcomes and enhanced digital literacy. However, the study also highlights the need for addressing technical, usability, and content-related challenges to ensure equitable access and effective utilization of AI-powered learning tools in digital education. As AI in digital education continues to evolve, educators and policymakers must prioritize strategic implementation, continuous evaluation, and

student-centered design to harness the full potential of AI-powered learning tools in transforming the educational landscape.

Recommendations

1. There is need for more awareness on AI usage by students so as to allow self study in students for more understanding when studying.
2. Digital experts should develop guidelines and standards for evaluating and implementing AI-powered learning tools.
3. Researchers should conduct more studies to examine long-term effects of AI learning tools on students' study outcomes.
4. Digital experts should develop AI-powered virtual tutors that offer one-on-one support, guidance, and encouragement to students.

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