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ENHANCING INCLUSIVE EDUCATION AND INDIVIDUALIZED LEARNING THROUGH ARTIFICIAL INTELLIGENCE: PERSPECTIVE OF ECONOMICS EDUCATION UNDERGRADUATE STUDENTS IN UNIVERSITIES OF NIGERIA, NSUKKA.

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Abstract
The study investigated the perspective of Economics Undergraduate students on the role of Artificial intelligence in enhancing inclusive education and individualized learning in University of Nigeria, Nsukka. The investigation was guided by 5 research questions. The study adopted descriptive survey design. The population of the study comprised of 354 Economics undergraduate students form faculty of Social Sciences and Education. 187 respondents were sampled using proportionate stratified sampling technique. A researcher developed questionnaire was used for data collection. Mean and standard deviation were used for data collection. Findings revealed that Economics Undergraduate students utilize AI Personal Assistant, Chat GPT, Grammarly, Duolingo, Otter AI, Quizlet, Google board, Quillbot, Chat PDF and Tutor AI for learning. Also, the result revealed that AI opens up new ways of interacting for students with learning disabilities, helps in learning management system, helps in bringing industry and academia together, among others. The findings showed that AI provide interactive support to individual students, helps individual learner adapt to learning easily, helps to analyze students' performance of task, helps in production of smart content such as digital lesson, among others. Challenges of using Artificial intelligence to support inclusive education and individualized learning includes creation of biasness in learning, trust deficit, no data security with using AI, quality of data on most AI is poor, bias in Algorithms, overreliance on technology, lack of teachers training, among others. It was recommended among other things that university administration should provide training opportunities for students and lecturers on the use of AI in learning for the purpose of enhancing inclusive and individualized learning. Such training may help to educate the students with the ethical consideration that are vital in the use of AI in academics.

Keyword: Artificial intelligence, inclusive education, individualized learning

Introduction

Students may face significant challenges in achieving academic success due to the one-size-fit-all approach to teaching and learning, resulting in limited understanding and engagement, inequality learning opportunities, inefficient use of instructional time lecturing and administering task, leaving limited time for personalized instruction and support. Artificial intelligence has potentials to address these challenges by providing personalized learning experiences, real-time feedback and adaptive assessment. Hence, the effective implementation of AI in Economics Education requires a deeper understanding of its role in enhancing inclusive and personalized learning. Artificial intelligence represents the efforts towards computerized systems to imitate the human mind and actions (Wartman & Combs, 2018). In this respect, the basic definition of artificial intelligence can be expressed as the skillful imitation of human behaviour or mind by tools or programs (Mohammed & Watson, 2019). Artificial Intelligence (AI) can also be defined as the ability of machines and systems to acquire and apply knowledge and to

carry out intelligent behaviour (Organization for Economic Cooperation and Development, 2016; United Nations Conference on Trade and Development, 2017). Contextually, Artificial intelligence can be defined as the branch of computer science that focuses on the development of machines that can perform tasks that require human intelligence. These include tasks like understanding natural language, learning from experience, and recognizing patterns. According to United Nations Education, Scientific and Cultural Organization (2019), AI has four dimensions; which are thinking humanly, reasoning, acting humanly, and acting rationally.

Artificial intelligence is known for various features, which includes deep learning and adaptation, problem solving, natural language and processing, perception, automation, human machine interaction and many more (Paez-Fernandez & Pardo-Gomez, 2019). However, these above-mentioned characteristics are demonstrated in Ai powered tools, applications and technology. Such AI tools can be given as; AI- powered virtual tutors like Carnegie learning's MATHia platform which provides individualized instructions and feedback to students (Schaeter, Baker & Crusto, 2020). It can also be Ai-powered assessment tools like knewton, that can adapt assessment to the Individual needs of student. There is also Ai platforms known as Wolfram alpha, a computational knowledge engine that can answer complex question and generate reports for students in different field. Other examples of AI- powered platform include Duolingo, Cousera, Chabot, audio pen and many more. However, these technologies help to create a more personalized and engaging learning environment and are making education more accessible and effective for all students. Hence, AI may be used to support Education thus making education more inclusive and individualized.

Since Education is the process of developing the mind, body, and spirit. AI is a tool that can assist in this process by providing inclusive and personalized learning experiences, real-time feedback, and adaptive assessments. Inclusive education refers to a model of education that strives to include all students, regardless of their abilities or backgrounds. Inclusive education has been internationally recognized as a means of attaining equity, justice and quality education for all learners, especially those who have been traditionally excluded from mainstream education for reasons of disability, ethnicity, gender, giftedness or other characteristics (National Policy on inclusive Education in Nigeria, 2023). Inclusive education can also be seen as a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures, and communities, and reducing exclusion within and from education (United Nations Educational, Scientific and Cultural Organization, UNESCO, 2023). UNESCO emphasizes that inclusive education is not just about including students with disabilities but also about ensuring that students from all backgrounds and abilities have equal opportunities to learn and participate in their school communities. Thus, inclusive education requires that schools must not only provide support to individual students with disabilities but also create a welcoming and inclusive environment for all students. Therefore, all students can be full participants in their classrooms, in the local school community and in the society they live in. Much of the movement is related to legislation that students receive their education in the least restrictive environment (LRE). Successful inclusive education happens primarily through accepting, understanding, and attending to student differences and diversity, which can include physical, cognitive, academic, social, and emotional. The importance of inclusive education can be seen in its numerous benefits for students, educators, schools, and society as a whole. According to the United Nations (2016), inclusive education promotes equity and social justice. It promotes equality of

opportunity and helps break down barriers and discrimination based on disability, race, gender or socioeconomic status. It aims to enable both teachers and learners to feel comfortable with diversity and to see it as a challenge and enrichment in the learning environment, rather than a problem. Achieving inclusive and equitable quality education is recognised as crucial to global sustainable development (United Nations, 2016). Thus, the process of inclusive education might be shaped with future technology such as Artificial intelligence.

AI in inclusive learning assists teachers to identify the right method of teaching and the right channel of communication to interact with a student from a different background. The introduction of AI into education marks a significant departure from conventional teaching methods, offering personalized learning and support for diverse educational requirements, including students with special needs (Walter, 2024). Artificial intelligence has the potential to greatly enhance inclusive education by providing personalized, accessible and engaging learning experiences for all students. Luckin (2018) argued that AI can help address the diverse learning needs of students by adapting the learning content and pace to their individual abilities thus fostering inclusive practices and reducing learning disparities. Hustedt and Ramanathan (2020) recognizes the importance of considering the perspectives and needs of diverse learners in the development and implementation of AI-based educational tools. AI may enhance inclusive education by personalizing learning tailored towards individual students' needs, abilities and learning style; increasing accessibility through AI powered tools that support different abilities of students; providing real-time support through immediate feedback, guidance and encouragement (World Economic Forum, 2022). AI helps to create a more inclusive, effective and engaging learning environment for all students. However, Nigerian education system is facing challenges of implementation of successful inclusivity in education due to several factors. Such factors include, lack of teachers training programmes in newer educational approaches, poor teacher attitude to embrace change, unavailability of teaching materials and equipment provision as well as financial sources, unfriendly learning environments among others (Attah, 2024). In the face of these challenges, the integration of Artificial intelligence may help to bridge some of the gap due to its flexible environments and immediate feedback that are suitable for both teachers and students of different needs especially in the higher institutions. The question is whether teachers and students are aware of the role of AI in addressing these challenges of inclusivity and how it can be integrated in teaching and learning to serve such purpose.

In addition to inclusive education, AI may have significant right in enhancing personalized Learning. AI can be used to create individualized learning pathways for students by recommending specific learning activities that are tailored to their needs. Note that most times, personalization and individualization of learning are often used interchangeably. As we move into an increasingly interconnected and technology-driven world, it is essential that education systems adapt to meet the unique needs of each student. Individualized learning offers a personalized approach that recognizes the unique strengths, interests, and needs of each learner, allowing them to progress at their own pace and in their own way (Organization for Economic Co-operation and Development, 2017). According to Highland (2015) in the Individualized learning model, the teachers play the role of a facilitator of learning not the main focus as learners are the people who make all decision related to their learning. Individualized learning refers to a personalized approach to education that considers the unique strengths, learning styles, and interests of each

student. Horn and Staker (2015) emphasizes the use of technology to tailor instruction to the specific needs of learners.

Operationally, Individualized learning refers to where instruction is paced to the learning needs of different learners. Learning goals are the same for all learners, but they can progress through the material at different speeds according to their learning needs. In an environment that is fully personalized, the learning objectives and content as well as the method and pace may all vary. Meanwhile, Frunză and Petre (2015) stated that individualization of education is one of the key factors that are able to stabilize high quality of education. The individualized learning presupposes creating conditions for educational process that is paced to the learning needs of different learners. Individual learner can progress through the material at different speed according to their individual learning needs and aptitudes. Thus, a learner may take longer to cover a given topic, skip a topic that includes information that he/she already knows or repeat a topic that needed repeating to enhance engaged learning. One primary key to effective individualized learning is sparking the innate curiosity of students through active engagement with their environment. This may be possible through the use of digital technology soft-wares, tools and application like (Artificial intelligence) in the learning environment. Technology has provided greater opportunities and mediums for meeting learner needs. The ability to personalize learning with flexible environments has been a game changer for education. Individualized learning is a key area where AI can have a big impact. AI-powered adaptive learning systems can use data about a student's performance to create an individualized learning path, adjusting the difficulty level of the material as needed to ensure that the student is challenged and engaged. This type of individualized learning can be tailored to each student's specific strengths and weaknesses, allowing them to make faster progress and develop a deeper understanding of the material. The use of artificial intelligence (AI) in education has gained increasing attention in recent years, as educators and students seek new ways to enhance their learning experiences (Fernández-Baizán et al., 2020). AI-based systems can analyze students' learning patterns and provide customized feedback, enabling them to progress at their own pace and address areas of weakness (Zawacki-Richter, Deimann & Schmid, 2019). It is hope that the integration of AI in education will take of the traditional one-size-fits-all teaching methods that has long been a prevalent approach in Nigerian classrooms. Hence, this study focuses of finding out the perspective of Economics undergraduate students on the role of AI in enhancing inclusive and individualized learning among them.

Economics is an essential subject in the life of every citizen in any society. Economics is defined as how individuals make choices to maximize the use of limited resources to satisfy unlimited wants (Eneogu, Ugwuanyi, Ogbonna, & Oghenerode, 2020). Economics is the study of scarcity and its implications for the use of resources, production of goods and services, growth of production and welfare over time, and a great variety of other complex issues of vital concern to society. (University of Buffalo, 2024). Contextually, Economics is the study of study of choice making among alternatives to maximize limited resources in the face of unlimited want. The study of Economics has many roles it plays in our society today. They include shaping the overall well-being of a society; provide insight into how resources are distributed, the factors influencing economic growth, and the impact of policies on the allocation of resources. By studying economics, individuals, businesses, and governments can make better-informed choices that lead to a more efficient and equitable allocation of resources (Stiglitz, 2012).

In the realm of inclusive education and individualized learning among undergraduate Economic students, the situation is evolving. While progress is being made, there are still challenges to address in fully realizing the potential of inclusive education and individualized learning for undergraduate Economic students. These challenges include the need for more widespread adoption of personalized learning tools, greater faculty training on inclusive teaching practices, and continued efforts to foster a culture of diversity and equity within academic settings (Coll & Stockdale, 2017). Other challenges include, inadequate knowledge of the scope and capability of AI to address individualized and inclusive learning. As institutions continue to embrace this shift and invest in innovative educational strategies, there is an opportunity to create a more inclusive, engaging, and effective learning environment for all students pursuing studies in Economics due to it graphical, theoretical, quantitative and abstract nature. Students in Economics need practical and engaging learning experiences to be able to relate the content of Economics to real life scenarios to enhance every learners' comprehension through personalized enhanced instructional tool like AI.

The justification for this study is that there is evidence of exclusion in learning in Nigeria among some vulnerable group (Center for the Study of the Economics of Africa (CSEA) (2024). There are factors responsible for this which include among others socio cultural and economic background of students, school environment, lack of teacher experience of educational technology, unequal learning facilities (Mokaleng, in Alabi, 2024). The challenges of inclusivity and individualized learning demands an effort to be put in place to ameliorate these ills. Hence, the need for a learning medium that can enhances inclusive education and boost individualized learning in a way that will make learning continuous even after the classroom which will break the walls of exclusion in learning. Such medium maybe Artificial intelligence (AI) which is the focus of this study it is against this background that this study is interested in investigating the perspectives of Economics Undergraduate students on the role of AI in enhancing inclusive education and personalized learning in their learning experiences.

Research Question

The following research questions guided this study;

1. what are the various artificial intelligence available for use in learning as an undergraduate?
2. what is the Economics Students perception on the role of artificial intelligence in enhancing inclusiveness education?
3. what is the Economics Students perception on the role of artificial intelligent (AI) in enhancing individualized?
4. what are the challenges of using Artificial intelligence to support inclusive education?
5. what are the challenges of using artificial intelligence (AI) to support individualized learning?

Methods

This study adopted descriptive survey research design. This study was carried out University of Nigeria, Nsukka. UNN was used because it harbors undergraduate students who make use of AI tools. The population of the study comprises of three hundred and fifty-four (354) undergraduate Economics and Education Economics students in University of Nigeria, Nsukka 2022 and 2023 academic session from 200 and 300 level (Department of Economics and Department of social science Education, 2024). Specifically, the population consist of 310 and 44 Economics major and Economics

Education students respectively. The sample size of 187 students was determined using Taro Yamene formula for determining sample size from finite population. Proportionate stratified sampling technique was used to sample the respondents from each group. total of thirty-two (32) Economics Education students were sampled while a total of one and fifty-five (155) Economics major students were sampled, making a total number of one hundred and eighty-seven (187) respondents that will be used for the study. The study was conducted with a researcher developed questionnaire titled "Questionnaire on the roles of artificial intelligence in enhancing inclusive education and individualized learning among undergraduate Economics and Economics education students". The research instrument was validated by three experts, two from department of Social Science education and one from Measurement and Evaluation all from the faculty of Education, University of Nigeria, Nsukka. The reliability of the "Questionnaire was ascertained through trial testing of the instrument to determine the internal consistency of the item. This was done by administering 15 questionnaires to students from Political Science Education unit in UNN who are not the study population but possess the same characteristics with them. The reliability coefficient was determined using Cronbach Alpha which yielded, 0.737 for cluster A, 0.769 for cluster B, 0.869 for cluster C, 0.791 for cluster D, 0.739 for cluster E respectively. The instrument has an overall reliability index of 0.915 which indicates that the instrument is reliable and therefore considered appropriate for use. For the study proper, the questionnaire was administered to the respondents directly by the researcher and was collected back immediate to ensure 100 percent return of the instrument. Data gotten was analyzed using mean and standard deviation. A mean bench mark of 2.50 guided the decision-making process. Thus, items with a mean score less than 2.50 was rejected while items with a mean score of 2.5 and above were accepted as they fall within the mean criteria of acceptance.

Results

The result was presented according to the research questions that guided the study.

Research Question One: What are the various artificial intelligence available for use in learning as an undergraduate?

Table 1: Mean rating and standard deviation on the various artificial intelligence available for use in learning as an undergraduate

S/N	Item Statements	Mean	SD	Decision
1	AI Personal Assistant	3.36	0.65	Accepted
2	Chat Gpt	3.24	0.77	Accepted
3	Grammarly	2.86	0.94	Accepted
4.	Duolingo	2.71	0.89	Accepted
5	Otter AI	2.61	0.94	Accepted
6.	Quizlet	2.62	0.89	Accepted
7.	Google board	3.14	0.65	Accepted
8.	Quillbot	2.72	0.85	Accepted
9.	Chat pdf	3.05	0.74	Accepted
10.	Tutor AI	2.98	0.85	Accepted
	Cluster Mean	**2.93**	**0.82**	**Accepted**

Table 1 shows the various artificial intelligence available for use in learning as an undergraduate in the University of Nigeria, Nsukka. Analysis on table 1 shows that the mean scores of items 1-10 which are 3.36, 3.24, 2.86, 2.71, 2.61, 2.62, 3.14, 2.72, 3.05 and 2.98 respectively with standard deviation of 0.65, 0.77, 0.94, 0.89, 0.94, 0.89, 0.65, 0.85,

0.74 and 0.85 respectively. These mean scores are above the 2.50 acceptance benchmark which implies that they are accepted. In terms of the standard deviation values, Low SD (≤ 0.70) – indicates low variability around the mean hence, the mean of 3.36 and 3.14 with the SD 0.65 for items 1 and 7, imply low variability. These values are more consistent; the individual data points are likely close to their respective means. Moderate SD (0.71 – 0.85) – indicates moderate variability hence, mean 3.24,3.05,2.72 and 2.98 with SD, 0.77, 0.74, 0.85 and 0.85 respectively from items 2,9 and 10 imply that there is some variation but the data is still reasonably close to the mean. High SD (> 0.85) – indicates high variability hence, mean of 2.86, 2.71, 2.61 and 2.62 with SD 0.94, 0.89, 0.94 and 0.89 from items 3, 4, 5 and 6 respectively means greater spread, meaning that individual data points are more dispersed implying less consistent responses. This implies that Economics Education undergraduates utilize AI Personal Assistant, Chat GPT, Grammarly, Duolingo, Otter AI, Quizlet, Google board, Quillbot, Chat PDF and Tutor AI. The grand mean of 2.93 which is also above the 2.50 acceptance benchmark implies that Economics Education undergraduates in university of Nigeria Nsukka agree with the items on table one above as the various artificial intelligence available for use in learning.

Research Question Two: What is the role of artificial intelligence in enhancing inclusive education among undergraduate Economics students?

Table 2: Mean rating and standard deviation on the role of artificial intelligence in enhancing inclusive education among undergraduate Economics students

S/N	Item Statements	Mean	SD	Decision
11	It helps to opens up new ways of interacting for students with learning disabilities	3.45	0.53	Agree
12.	It helps in Learning management system	3.41	0.50	Agree
13.	It provides accessibility	3.37	0.53	Agree
14.	It helps in bringing industry and academia together	3.34	0.54	Agree
15.	It is affordable	3.29	0.66	Agree
16.	It helps in Individualized learning	3.38	0.53	Agree
17.	It helps in problem solving	3.31	0.58	Agree
18	Helps students develop confidence in their ability to interact with one another and the world around them	3.29	0.48	Agree
19.	Helps in providing instant feedback and improving efficiency in the assessment process	3.30	0.53	Agree
	Cluster Mean	**3.35**	**0.54**	**Agree**

Table 2 shows the role of artificial intelligence in enhancing inclusive education among undergraduate Economics students. Mean analysis from table 2 shows that the mean scores of items 11-19 which are 3.45, 3.41, 3.37, 3.29, 3.38, 3.31, 3.29 and 3.30 respectively with standard deviation of 0.53, 0.50, 0.53, 0.66, 0.53, 0.58, 0.48 and 0.53. These mean scores are above the 2.50 acceptance benchmark which implies that they are accepted. All the SD score are within (≤ 0.70) which indicate low variability around the mean hence, there is more consistency since the individual data points are likely close to their respective means. This implies that artificial intelligence helps to opens up new ways of interacting for students with learning disabilities, helps in learning management system, provides accessibility, helps in bringing industry and academia together, affordable, helps in Individualized learning, helps in problem solving, helps students develop confidence in

their ability to interact with one another and the world around them and helps in providing instant feedback and improving efficiency in the assessment process. The grand mean of 3.35 which is also above the 2.50 acceptance benchmark also implies that respondents agree to the items on table two above as the role of artificial intelligence in enhancing inclusive education among undergraduate Economics students in university of Nigeria Nsukka.

Research Question Three: What is the role of artificial intelligent (AI) in enhancing individualized learning among undergraduate Economics students?

Table 3: Mean rating and standard deviation on the role of artificial intelligent (AI) in enhancing individualized learning among undergraduate Economics students

S/N	Item Statements	Mean	SD	Decision
20.	Artificial intelligence provide interactive support to students	3.48	0.50	Agree
21.	It helps individual learner adapt to learning easily	3.40	0.50	Agree
22.	It helps to analyze students' performance of task	3.31	0.54	Agree
23.	Artificial intelligence helps in production of smart content such as digital lesson	3.30	0.53	Agree
24.	It helps to attend to learners personal learning needs	3.29	0.58	Agree
25.	It helps learners learn at their own pace	3.42	0.51	Agree
26	It helps to customize learning experiences to each learners preference	3.32	0.50	Agree
27.	It helps to create personalized learning paths	3.37	0.52	Agree
	Cluster Mean	**3.36**	**0.52**	**Agree**

Table 3 shows the role of artificial intelligent (AI) in enhancing individualized learning among undergraduate Economics students. Mean analysis from table 3 shows that the mean scores of items 20-27 which are 3.48, 3.40, 3.31, 3.30, 3.29, 3.42, 3.32 and 3.37 respectively with corresponding standard deviation of 0.50, 0.50, 0.54, 0.53, 0.58, 0.51, 0.50 and 0.52. These mean scores are above the 2.50 acceptance benchmark which implies that they are accepted. All the SD score are within (≤ 0.70) which indicate low variability around the mean hence, there is more consistency since the individual data points are likely close to their respective means This implies that artificial intelligent (AI) provide interactive support to students, helps individual learner adapt to learning easily, helps to analyze students' performance of task, helps in production of smart content such as digital lesson, helps to attend to learners personal learning needs, helps learners learn at their own pace, helps to customize learning experiences to each learners preference and helps to create personalized learning paths. The grand mean of 3.36 which is also above the 2.50 acceptance benchmark implies that respondents agree to the items on table three above as the role of artificial intelligent (AI) in enhancing individualized learning among undergraduate Economics students in university of Nigeria Nsukka.

Research Question Four: What are the challenges of using Artificial intelligence to support inclusive education?

Table 4: Mean rating and standard deviation on the challenges of using Artificial intelligence to support inclusive education

S/N	Item Statements	Mean	SD	Decision
28.	The use of AI can create biasness in learning	3.06	0.46	Agree
29.	Most AI has trust deficit	2.98	0.53	Agree
30.	There is no data security with using AI	2.93	0.58	Agree
31.	The quality of data on most AI is poor	2.87	0.61	Agree
32	There is no creativity with using AI	2.63	0.80	Agree
33	There is skill loss when using AI	2.66	0.77	Agree
34.	It leads to job displacement	2.63	0.71	Agree
	Cluster Mean	**2.82**	**0.64**	**Agree**

Table 4 shows the challenges of using Artificial intelligence to support inclusive education. Mean analysis from table 4 shows that the mean scores of items 28-34 which are 3.06, 2.98, 2.93, 2.87, 2.63, 2.66 and 2.63 with corresponding standard deviation of 0.46, 0.53, 0.58, 0.61, 0.80, 0.77 and 0.71. These mean scores are above the 2.50 acceptance benchmark which implies that they are accepted. Also, SD 0.46, 0.53, 0.58, and 0.61 has low variability around the mean while SD 0.80, 0.77 and 0.71 imply moderate variability since the data set is still close to their corresponding means. This implies that the challenges of using Artificial intelligence to support inclusive education includes creation of biasness in learning, trust deficit, no data security with using AI, quality of data on most AI is poor, no creativity with using AI, skill loss when using AI and job displacement. The grand mean of 2.82 which is also above the 2.50 acceptance benchmark also implies that respondents agree to the items on table four above as challenges of using Artificial intelligence to support inclusive education in university of Nigeria Nsukka.

Research Question Five: What are the challenges of using Artificial intelligence to support individualized learning?

Table 5: Mean rating and standard deviation on the challenges of using Artificial intelligence to support individualized learning

S/N	Item Statements	Mean	SD	Decision
35.	Bias in Algorithms	2.85	0.66	Agree
36.	It can lead to overreliance on technology	2.81	0.68	Agree
37.	It can lead to lack of teachers training	2.73	0.81	Agree
38.	It results to lack of standardization	2.67	0.81	Agree
39	Artificial intelligence can be unreliable	2.80	0.69	Agree
40	It can lead to fear of job loss for teachers	2.64	0.77	Agree
41.	It results in difficult in analyzing data	2.83	0.71	Agree
	Cluster Mean	**2.76**	**0.73**	**Agree**

Table 5 shows the challenges of using Artificial intelligence to support individualized learning. Mean analysis from table 5 shows that the mean scores of items 35-41 which are 2.85, 2.81, 2.73, 2.67, 2.80, 2.64 and 2.83 respectively with corresponding standard deviation of 0.66, 0.68, 0.81, 0.81, 0.69, 0.77 and 0.71. These mean scores are above the 2.50 acceptance benchmark which implies that they are accepted. Also, SD 0.66, 0.68 and 0.69 imply low variability around the mean while SD 0.71, 0.77, 0.81 and 0.81 imply

moderate variability around the mean scores. This implies that the challenges of using Artificial intelligence to support individualized learning includes bias in Algorithms, overreliance on technology, lack of teachers training, lack of standardization, fear of job loss for teachers and difficulty in analyzing data. The grand mean of 2.76 which is also above the 2.50 acceptance benchmark also implies that respondents agree to the items on table five above as challenges of using Artificial intelligence to support individualized learning in university of Nigeria Nsukka.

Discussions

Results show that Economics Education undergraduates utilize AI Personal Assistant, Chat GPT, Grammarly, Duolingo, Otter AI, Quizlet, Google board, Quillbot, Chat PDF and Tutor AI for learning in the University of Nigeria Nsukka. This finding is in alignment with the findings of Parker, Carter, Karakas, Loper and Sokkar (2023) who reported that undergraduate students utilize ChatGPT. However, in contrast, Alimi, Buraimoh, Aladesusi1 and Babalola (2021) reported that majority of the university students are not aware of Artificial intelligence for learning. This finding suggests that Economics Education undergraduates at the University of Nigeria, Nsukka, are leveraging various AI-powered tools to enhance their learning experience. This may be because these tools are readily available online, making them easily accessible to students with internet connectivity. The study found that artificial intelligence helps to opens up new ways of interacting for students with learning disabilities, helps in learning management system, helps in bringing industry and academia together, affordable, helps in Individualized learning, helps in problem solving, helps students develop confidence in their ability to interact with one another and the world around them and helps in providing instant feedback and improving efficiency in the assessment process. In agreement to this finding, Farah (2023) found AI as a tool to achieve equity and accessibility. Also in agreement, Lierwuy (2022) found that AI helps to create personalized learning experiences, develop smart content, expand the range of education, and facilitate the management & administration of education by integrating information and disseminating data as per the needs of the target group. The finding is also in consonance with the finding of Shalini (2020) who reported that artificial Intelligence has enabled automation and increased efficiency in manufacturing processes. Artificial Intelligence powered robots and machines can perform repetitive tasks with precision and speed, reducing human error and production costs. This study's findings highlight the transformative impact of artificial intelligence (AI) in education, particularly for students with learning disabilities. The results appear this way probably because AI enables tailored learning experiences, accommodating individual needs and learning styles, making education more inclusive for students with disabilities.

The study found that artificial intelligent (AI) provide interactive support to students, helps individual learner adapt to learning easily, helps to analyze students' performance of task, helps in production of smart content such as digital lesson, helps to attend to learners personal learning needs, helps learners learn at their own pace, helps to customize learning experiences to each learners preference and helps to create personalized learning paths. The findings is in consonance with the findings of Senobeida (2022) who reported that artificial intelligence can improve student performance, encouraged student interest in STEM/STEAM, promoted student engagement, and showed other advantages. Also in alignment, Nakhon (2023) revealed that artificial intelligence based systems had a positive impact on student engagement and motivation, as well as

providing personalized learning experiences. The study's findings highlight the role of Artificial Intelligence (AI) in education, which appear this way probably because AI-powered systems adjust to individual learners' needs, abilities, and learning styles, providing tailored support and scaffolding. Also, AI rapidly processes large amounts of data, enabling immediate feedback and assessment of student performance, identifying areas for improvement. AI also generates interactive, engaging, and relevant digital lessons, making learning more enjoyable and effective. The study found that the challenges of using Artificial intelligence to support inclusive education includes creation of biasness in learning, trust deficit, no data security with using AI, quality of data on most AI is poor, no creativity with using AI, skill loss when using AI and job displacement. In contrast to this finding, Mohammed (2017) revealed that learners have cultural backgrounds and preferences that may not align with most mainstream educational systems.

The study's findings highlight the challenges of using Artificial Intelligence (AI) to support inclusive education, which may be due to concerns about AI's decision-making processes, lack of transparency, and potential for errors can erode trust in AI-supported education. Also, AI's effectiveness relies on high-quality data, but often, the data used to train AI systems is incomplete, inaccurate, or outdated. Also, over-reliance on AI can stifle creative thinking and problem-solving skills in students, as AI takes over tasks that previously required human ingenuity. The study found that the challenges of using Artificial intelligence to support individualized learning includes bias in Algorithms, overreliance on technology, lack of teachers training, lack of standardization, fear of job loss for teachers and difficulty in analyzing data. In alignment with this findings, Nakhon (2023) reported challenges such as technical issues and the potential for bias in the AI algorithms used in these systems.The study's findings highlight the challenges of using Artificial Intelligence (AI) to support individualized learning because excessive dependence on AI can lead to a lack of human interaction, socialization, and critical thinking skills in students.

Conclusion

Based on the findings, the study concludes that Economics undergraduates utilize AI Personal Assistant, Chat GPT, Grammarly, Duolingo, Otter AI, Quizlet, Google board, Quillbot, Chat PDF and Tutor AI for learning in the University of Nigeria Nsukka. The study also conclude that Ai enhances inclusive education and individualized learning. The challenges of using Artificial intelligence to support inclusive education and individualized learning includes creation of biasness in learning, trust deficit, no data security with using AI, quality of data on most AI is poor, bias in Algorithms, overreliance on technology, lack of teachers training, among others.

Recommendations

Based on the findings and educational implications, the following recommendations are made:

1. University administration should provide opportunities for professional development for educators to enable them learn about effective integration of AI in teaching and learning.
2. University administration should provide ethical considerations and guidelines for AI-driven education, addressing concerns like bias, privacy, and accountability.
3. Department heads should train students on digital literacy programs to prepare them for effective use of AI-powered tools.

4. University community should develop AI-powered tools that complement and support human teaching, rather than replacing it.

Reference

Alabi, M. (2024). The Impact of Cultural and Socioeconomic Factors on Learning Styles. Researchgate. https://www.researchgate.net/publication/385177945

Attah, J. (n.d) Inclusive Education in Nigeria: An Appraisal on the Roles and Challenges Facing History Teachers. African journal online https//www.ajol.infor

Centre for the study of the Economics of Africa (2024). Achieving Inclusive Education in Nigeria. cseaafrica.org.

Coll, M., & Stockdale, L. (2017). Inclusive teaching practices: Tools for the classroom. *The Journal of Higher Education*, 88(4), 483-510.

Detlor, B. J., Booker, M., Serenko, A., & Julien, L. (2012). Overcoming the barriers of distance: eLearning applications for military training in the 21st century.

Fernández-Baizán, M. A., Pérez-Abril, J., & Martin-Mateo, J. M. (2020). The use of Artificial Intelligence (AI) for personalized learning in higher education: A systematic review. *British Journal of Educational Technology*, 51(6), 1292-1306.

Frunză, M. G., & Petre, D. L. (2015). Determinants of quality of education: A case study of th Romanian educational system. Procedia Social and Behavioral Sciences, 187, 24–33.

Highland, M. (2015). Individualized learning: Facilitating success through self directed learning IGI Global.

Hustedt, N. G., & Ramanathan, N. R. (2020). Learning analytics in higher education: A critical literature review.

Jantakun, B., Limpahan, W., Palita, P., Leelapanu, K., & Kewpit, N. (2021). Artificial intelligence and its impact on higher education. *International Journal of Sciences: Basic and Applied Research* (IJSBAR), 44(1), 106-115.

Luckin, R. (2018). Artificial intelligence and the future of education: Opportunities and challenges. Learning, Media, and Technology, 46(1), 16-33.

Mohammed P.S., &Watson E. N. (n.d). Towards inclusive education in the age of artificial intelligence: perspectives, challenges, and opportunities. In: Knox J., Wang Y., Gallagher M. (eds) Artificial Intelligence and Inclusive Education. Perspectives on Rethinking and Reforming Education. Singapore: Springer.https://doi.org/10.1007/978-981-13-8161-4_2

National policy on Inclusive Education in Nigeria (2023). Revised national Policy on inclusive education in Nigeria

Organization for Economic Cooperation and Development. (2017). "Individualised Learning in Schools: It's Not 'One Size Fits All'." Retrieved from http://www.oecd.org/education/skills-beyond-school/individualised-learning-in-schools-it-s-not-one-size-fits-all.htm

Organization for Economic Cooperation and Development. OECD(2016). OECD science, Technology and innovation outlook Paris. OECD.

Páez-Fernández, R., & Pardo-Gómez, J. A. (2019). Education and artificial intelligence: Fears, prospects, and social issues. Technology, Pedagogy and Education, 28(3), 199-213.

Schacter, J. M., Baker, E. L., & Crusto, E. (2020). A randomized experiment of the impact of adaptive learning in high school math. *Journal of Research on Educational Effectiveness*, 13(4), 511-531.

Selwyn, N. (2011). Education and technology: key issues and debates. Routledge.

UNESCO. (2020). Towards universal access to higher education: international trends. United Nations Educational, Scientific and Cultural Organization.

UNESCO. (2023). Inclusive education in action. Inclusiveeducation-in-action.org

United Nations Conference on Trade and Development. UNCTAD (2017). Information Economy Report. http://unctd.org/en/pages/publicationwebflyer. aspx?publicationid=1872

United Nations. (2016). Transforming our world: The 2030 Agenda for Sustainable Development. Retrieved from https://sustainabledevelopment.un.org/post2015/transformingourworld

University of Buffalo (2024). What is Economics. Art.science.buffalo.edu

Walter, Y. Embracing the future of Artificial Intelligence in the classroom: the relevance of AI literacy, prompt engineering, and critical thinking in modern education. Int J Educ Technol High Educ 21, 15 (2024). https://doi.org/10.1186/s41239-024-00448-3

Wartman, S. J., & Combs, J. G. (2018). Artificial intelligence in the field of education: Applying a conceptual framework to a novel phenomenon. Educational Technology & Society, 21(1), 53-66.

World Economic Forum (2022). The future of education: How AI can support inclusive learning.

Zawacki-Richter, O., Deimann, S., & Schmid, A. B. (2019). How does Artificial Intelligence affect learning? Trends in Educational Technology, 3(1), 66-74.