INTEGRATING ARTIFICIAL INTELLIGENCE POWERED TOOLS FOR STUDENTS' ASSESSMENT IN BUSINESS EDUCATION PROGRAMMES IN TERTIARY INSTITUTIONS

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Abstract
This study investigated ways of integrating artificial intelligence powered tools for students' assessment in business education programmes in tertiary institutions. Three purposes of the study with their corresponding research questions guided the study. The hypotheses were tested using t-test statistical tool at 0.05 level of significance. Descriptive survey design was adopted for the study. Population of the study comprised of all the 49 business education lecturers from all the tertiary institutions in Ebonyi State. There was no sampling as the researchers found the population to be manageable. Instrument for data collection was a structured questionnaire constructed by the researchers. Reliability of the instrument was ensured by trial-testing it at Enugu State University, Enugu. Cronbach Alpha was used to test responses from the trial-test and it yielded coefficient values of 0.91, 0.74 and 0.68 for clusters one, two and three respectively. The trial-test yielded a total coefficient index of 0.78 for all the clusters. The mean value was used in answering the research questions, standard deviation was used to test the homogeneity or otherwise of the mean ratings. T-test statistical tool was used to test the null hypotheses at 0.05 level of significance. The findings revealed that that Automated grading systems, Multiple-choice and short-answer question grading systems, Essay grading systems, Feedback systems among others are AI-powered tools that could be used for students' assessment in business education programmes in tertiary institutions. The findings also revealed that ai-powered tools could be integrated for students' assessment by using them to: Conduct online quizzes and tests, Assess students' presentations, Assess students' knowledge through automated questioning, Evaluate students' written assignments. Based on findings of the study, it was recommended among others that tertiary institutions should implement training and retraining initiatives for business education lecturers in order to encourage them to always use AI-powered tools in students' assessments.

Introduction

In the recent time, adoption of Artificial Intelligence (AI) in human activities has gained moment as its integration in all sectors is on the increase. In education, efforts to be using AI in all educational programmes are continually intensified as researchers have severally reported adoption of AI in teaching and learning (Chen et al, 2017; Almusaed et al 2023; Lodge et al, 2023; Adewale, 2024). This has encouraged the use of AI by teachers and students in carrying out teaching and learning activities. One of the impressing aspects of adopting AI in education is their use for assessment and students grading. Agbarakwe and Chibueze (2024) reported that utilization of AI can help in improving assessment processes in different educational programmes.

Artificial intelligence is one of the emerging technologies that are shaping not only the educational sector but most human activities. With good understanding of AI in education, one can appreciate its application in curriculum development and implementation and assessment of educational

programmes. In this regards, different scholars have explained that AI is a collection of machines that were produced to execute tasks just like humans (Tuomi, 2018; Adamopoulou and Moussiades, 2020; Mutascu, 2021). Vincent (2016) noted that it is tricky to define artificial intelligence as it means different things to different users. Marwan (2020) defined artificial intelligence as products from a sub-field of computer sciences that is designed to imitate human intelligence in handling different tasks. In this line, AI could be defined as the use of computer systems and other machines in thinking and executing tasks in the way humans do. AI is not just a machine but a term used in describing computers and other machines that have the ability to think, make decisions and as well execute tasks like humans. Strelkova and Paschnyk (2017) explained that AI were built to match or surpass human intelligence in the areas of planning, solving problems and carrying out abstract thoughts in different fields. This however gives credence to why AI has become a trending controversy in different sectors as its adoption as a replacement of human efforts is on the increase in different fields. From the above, it is evident that artificial intelligence usage involves adoption of different tools in accordance with the needs of users.

Artificial intelligence powered (AI-powered) tools are software, applications and systems that uses AI based technologies in performing tasks that requires human intelligence such as problem solving, critical thinking and decision making (Harry and Sayudin, 2023). These AI-powered tools usually employ different techniques like machine learning, computer vision, natural language processing among others in generating insights, analyzing data and automating tasks (Strelkova and Paschnyk, 2017). According to Davenport and Dyche (2013), AI-powered tools have assisted individuals and organizations in achieving increased efficiency, cost reduction and improved productivity. The impact of AI-powered tools in different sectors including education cannot be overemphasized. In the field of education, several studies have shown that AI-powered tools are used in curriculum development and implementation and assessment of educational programmes among others. Integration of AI-powered tools in education no doubt has led to improvement in students' learning outcomes, improved students attitudes towards learning, improved teachers' capacity to manage challenging teaching environment among others (Molenaar, 2022; Shahzad et al, 2024; Haung, 2018; Kabudi et al, 2021). With these impacts, integration of these tools into business education for students assessment can come with different benefits.

Business Education as an aspect of vocational education prepares individuals with competencies required for effective participation in the world of business. These individuals can participate in the world of business as producers and/or intelligent consumers of business products. According to Ikeanyionwu and Nzegwu (2024), business education is designed to equip individuals with skills and knowledge that are needed for survival in the global business environment. Olushola et al (2022) explained that business education is an educational programme that focuses on equipping individuals with skills, attitudes and knowledge that are necessary for a successful career in teaching, office and business world. From the foregoing, business education prepares its recipients for career in teaching, office work and participation in the world of business as producers or consumers of business products. Recipients of the programme after graduation are expected to be abreast with the operations of the business world and as well be competent in teaching business subjects (Onajite, 2016; Dambo and Nwauzor 2023; Deena et al, 2018). It is pertinent therefore to assert that business education comprises of Vocational Business Education (VBE) and Business Teacher Education (BTE).

Vocational Business Education (VBE) is an aspect of business education that equips learners with skills for effective functioning in the office and business world. Ogunleye (2021) posited that VBE is concerned with equipping learners with skills for successful careers in accounting, office management, entrepreneurship, marketing, insurance among others. Another aspect of business education is Business Teacher Education (BTE). This aspect aims at producing quality teachers for effective teaching and learning of business subjects at all levels of the nation's educational system. Okifo and Ayo (2015) posited that BTE programmes are offered in collages of education and universities in Nigeria. Okifo and Ayo explained that certificates issued in these institutions are Nigeria Certificate in Education (NCE) and Bachelor of Science education (B.Sc,ed) respectively. Graduates of BTE progrogrammes are expected to possess competencies for preparation and implementation of business subjects' curricula. With rising adoption of artificial

intelligence powered tools in the educational sector, all these business education programmes are expected to embrace them in the assessment of their students.

The use of artificial intelligence powered tools in education is obviously revolutionalizing the system across the globe making its adoption in assessment of students in business education programmes to be imperative. Ofem and Chukwujama (2024) noted that emergence and integration of AI-powered tools in teaching and learning has assisted in reducing the difficulties in assessment and feedbacks processes. Integrating AI-powered assessment tools in business education can give the lecturers vistas of opportunities to explore different ways of improving assessment of learning outcomes. To the students, AI-powered assessment tools can expose them to varying educational resources that will equip them with knowledge necessary for improved performance. These varying educational resources can cause disharmony in instructional content which can pose challenges on unifying assessments but lecturers' use of AI-powered tools can help in ameliorating these challenges. Ranjan and Mishra (2021) opined that provision of solutions to diverse assessment challenges was integration of AI-powered assessment tools in educational programmes. They explained that integration of such tools leads to automitization and streamlining of contents thereby helping to improve the assessment process.

Statement of the Problem

Artificial Intelligence (AI) has emerged as a transformative force in education as it is providing new possibilities for effective teaching, learning and assessing the students. Tertiary institutions across the globe are increasingly adopting artificial intelligence tools for students' assessment as they are believed to have the potential of enhancing accuracy, efficiency and personalization. Despite this seemingly global adoption of Ai-powered tools for assessment in the recent time, in many tertiary institutions in Nigeria, these tools are either not available or underutilized. This has given room for continual use of traditional assessment methods that are usually affected by human biasness. This makes it difficult for effective assessment of critical business skills that are necessary for performance of graduates of business education in the 21st-century workplace. In some institutions where Ai-powered tools were introduced for students' assessment, it is bedeviled by so many challenges and this hinders effective use of the available tools. These issues raise concerns about how AI-powered tools could be effectively integrated into Business Education without underutilizing them and as well avoid compromising educational standards as specified in the national policy on education. This problem is further compounded by scarcity of studies on integration of AI-powered tools for assessment of Business Education students in tertiary institutions in Nigeria. Undoubtedly, without clear understanding of Ai-powered tools that could be used in assessing business education students and challenges for their integration, training the students in line with the needs of contemporary work environment would be negatively affected. Difficulties in positioning business education students for modern workplace that is filled with AI-powered tools poses the risk of making uninformed decisions that could stall students possession of innovative competencies especially in the use of AI-powered tools. Therefore, it is imperative to identify AI-powered tools that could be used in the assessment of business education students, how to integrate them and challenges affecting their integration in tertiary institutions.

Research Questions

The following research questions guided the study:

1. What are the AI-powered tools that could be used for students assessment in business education programmes in tertiary institutions in Ebonyi State?
2. What are the ways of integrating AI-powered tools for students assessment in business education programmes in tertiary institutions in Ebonyi State?
3. What are the challenges affecting integration of AI-powered tools for students assessment in business education programmes in tertiary institutions in Ebonyi State?

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

Ho1: There is no significant difference in the mean responses of male and female lecturers on the AI-powered tools that could be used for students' assessment in business education programmes in tertiary institutions in Ebonyi State.

Ho2: There is no significant difference in the mean responses of the respondents on the ways of integrating AI-powered tools for students' assessment in business education programmes in tertiary institutions in Ebonyi State based on their years of experience.

Ho3: There is no significant difference in the mean responses of respondents from federal and State-owned institutions on the challenges affecting integration of AI-powered tools for students assessment in business education programmes in tertiary institutions in Ebonyi State.

Method

This study adopted descriptive survey design. Population of the study comprised of all the 49 business education lecturers from all the tertiary institutions in Ebonyi State. There was no sampling as the researchers found the population to be manageable. Instrument for data collection was a structured questionnaire constructed by the researchers. The instrument was structured on a four-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The instrument had two sections, sections A and B. Section A was on the demographics of the respondents while section B contained 37 items in three clusters that are in line with the research questions. The first cluster contained items used in answering research question one, the second cluster contained items used in answering research question two and the third cluster contained items used in answering research question three. The instrument was validated by two experts from business education department and one other expert from measurement and evaluation, all in Ebonyi State University, Abakaliki. Reliability of the instrument was ensured by trial-testing it at Enugu State University, Enugu. Cronbach Alpha was used to test responses from the trial-test and it yielded coefficient values of 0.91, 0.74 and 0.68 for clusters one, two and three respectively. The trial-test yielded a total coefficient index of 0.78 for all the clusters. This means that the instrument was reliable for the study. A total of 49 copies of the instrument were administered to the respondents and they were all correctly filled and returned. Data collected were analyzed using mean and standard deviation. The mean value was used in answering the research questions, standard deviation was used to test the homogeneity or otherwise of the mean ratings. T-test statistical tool was used to test the null hypotheses at 0.05 level of significance. Mean scores from 3.5 and above were deemed to be Strongly Agree (SA), 2.5-3.49 were deemed to be Agree (A), 1.5-2.49 were deemed to be Disagree (D) and 1.49 and below were deemed to be Strongly Disagree (SD). For the hypotheses, where the t-calculated (t-cal) is less than the critical t-value (t-crit), at 0.05 level of significance, the null hypothesis was accepted. On the other hand, where the t-calculated (t-cal) is greater than the critical t-value (t-crit), at 0.05 level of significance, the null hypothesis was rejected.

Results

Research Question One

What are the AI-powered tools that could be used for students assessment in business education programmes in tertiary institutions in Ebonyi State?

Table 1: Mean ratings of the responses on AI-powered tools that could be used for students assessment in business education programmes in tertiary institutions

S/N	Business education students could be assessed using AI-powered:	Mean	SD	Remarks
1	Automated grading systems	3.71	0.64	Strongly Agreed
2	Multiple-choice and short-answer question grading systems	3.05	0.73	Agreed
3	Essay grading systems	3.10	0.69	Agreed

4	Feedback systems	3.58	0.79	Strongly Agreed
5	Plagiarism detection tools	2.90	0.54	Agreed
6	Proctoring systems	2.53	0.81	Agreed
7	Adaptive testing platforms	2.38	0.77	Disagreed
8	Gamification tools	3.82	0.59	Strongly Agreed
9	Analytics dashboards	3.01	0.82	Agreed
10	Learning management systems	3.57	0.47	Strongly Agreed
11	Speech recognition tools	3.00	0.55	Agreed
12	Video analysis tools	3.94	0.61	Strongly Agreed
13	Business simulation software	2.77	0.91	Agreed
14	Spreadsheet evaluation tools	3.69	1.26	Strongly Agreed
	Grand	3.22	0.73	Agree

Table 1 shows AI-powered tools that could be used for students assessment in business education programmes in tertiary institutions. The result shows that respondents strongly agreed with items 1,4,8,10,12 and 14 as they were rated from 3.5 and above while items 2, 3, 5, 6, 9, 11 and 13 were rated between 2.5 to 3.49 indicating that the respondents agreed with the items. Only item 7 had a mean rating that is below 2.5 which indicates that the respondents disagreed with the item. A grand mean of 3.22 indicates that the respondents agreed that the items are AI-powered tools that could be used for students assessment in business education programmes in tertiary institutions.

Research Question Two

What are the ways of integrating AI-powered tools for students assessment in business education programmes in tertiary institutions in Ebonyi State?

Table 2: Mean ratings of the responses on ways of integrating AI-powered tools students assessment in business education programmes in tertiary institutions.

S/N	AI-powered assessment tools could be integrated into business education by using them to:	Mean	SD	Remarks
1	Conduct online quizzes and tests	3.54	0.81	Strongly Agreed
2	Assess students' presentations	3.19	0.73	Agreed
3	Assess students' knowledge through automated questioning	3.33	0.53	Agreed
4	Evaluate students' written assignments	3.61	0.69	Strongly Agreed
5	Detect and prevent academic dishonesty during assessments	3.80	0.51	Strongly Agreed
6	Assess students verbal responses in oral exams.	2.99	0.70	Agreed
7	Track and assess students' skill development over time.	3.82	0.891	Strongly Agreed
8	Assess students' practical business problem-solving skills.	3.90	0.76	Strongly Agreed
9	Assess learning outcomes while keeping students engaged.	3.61	0.90	Strongly Agreed
10	Adjust question difficulty based on students abilities	3.75	0.88	Strongly

				Agreed
11	Assess and give feedback on students' learning progress	3.64	0.75	Strongly Agreed
	Grand	3.56	0.74	Strongly Agreed

Table 2 shows results on ways of integrating AI-powered tools for students assessment in business education programmes in tertiary institutions. Detailed analysis of the result shows that respondents strongly agreed with items 1, 4,5,7,8,9,10 and 11 were rated from 3.5 and above while items 2, 3 and 6. With a grand mean of 3.56, the respondents strongly agreed that the items are ways of integrating AI-powered tools for students assessment in business education programmes in tertiary institutions

Research Question Three

What are the challenges affecting integration of AI-powered tools for students assessment in business education programmes in tertiary institutions in Ebonyi State?

Table 3: mean ratings of the responses on challenges affecting integration of AI-powered tools students assessment in business education programmes in tertiary institutions

S/N	Challenges affecting integration of AI-powered tools for assessment of business education students	Mean	SD	Remarks
1	Poor internet connectivity	4.22	0.59	Strongly agreed
2	Unreliable power supply	3.96	0.71	Strongly Agreed
3	unavailability of AI tools tailored to local curriculum	3.76	0.88	Strongly Agreed
4	Poor digital infrastructure	3.52	0.51	Strongly Agreed
5	Lack of adequate funding	4.58	0.79	Strongly Agreed
6	High cost of AI-powered assessment tools	3.28	0.66	Agreed
7	Lack of collaboration between tertiary institutions and tech companies	2.66	0.83	Agreed
8	Limited technical skills among lecturers	3.61	0.92	Strongly Agreed
9	Lack of training opportunities for business educators	3.52	0.61	Strongly Agreed
10	Lack of awareness about available AI tools	2.48	0.97	Disagreed
11	Concerns about data privacy and security	3.04	0.60	Agreed
12	Inadequate research on AI's effectiveness in student assessment	3.28	0.74	Agreed
	Grand	3.49	0.73	Agreed

Table 3 shows results on the challenges affecting integration of AI-powered tools for students assessment in business education programmes in tertiary institutions. Detailed analysis shows that strongly agreed with items 1- 5, 8 and 9 as they were rated from 3.5 and above while items 6,7, 11 and 12 were rated from 2.5 to 3.49 implying that the respondents agreed with the items. The respondents disagreed with item 10 as it was rated from 2.49 and below. With a grand mean of 3.49, the respondents agreed that the items are the challenges affecting integration of AI-powered tools for students assessment in business education programmes in tertiary institutions.

Hypotheses

Ho1: There is no significant difference in the mean responses of male and female lecturers on the AI-powered tools that could be used for students assessment in business education programmes in tertiary institutions in Ebonyi State.

Table 4: T-test analysis of male and female respondents mean ratings on the AI-powered tools that could be used for students assessment in business education programmes in tertiary institutions.

Gender	N	X	SD	Df	A	t-cal	t-crit	Decision
Male	24	3.70	0.87					
				47	0.05	2.59	2.02	Reject
Female	25	2.99	1.04					

Table 4 shows that calculated t-value of 2.59 is greater than critical t-value of 2.02 at 0.05 level of significance. By this, the null hypothesis is rejected. This implies that there is significant difference in the mean responses of male and female lecturers on the AI-powered tools that could be used for students assessment in business education programmes in tertiary institutions.

Ho2: There is no significant difference in the mean responses of the respondents on the ways of integrating AI-powered tools for students assessment in business education programmes in tertiary institutions in Ebonyi State based on their years of experience.

Table 5: T-test analysis of mean responses of the respondents on the ways of integrating AI-powered tools for students assessment in business education programmes in tertiary institutions in Ebonyi State based on their years.

Years of experience	N	X	SD	Df	A	t-cal	t-crit	Decision
9 years and below	21	3.61	0.94					
				47	0.05	0.11	2.02	Accept
10 years and above	28	3.58	0.91					

Table 5 shows that calculated t-value of 0.11 is less than critical t-value of 2.02 at 0.05 level of significance. By this, the null hypothesis is accepted. This implies that there is no significant difference in the mean responses of the respondents on the ways of integrating AI-powered tools for students' assessment in business education programmes in tertiary institutions in Ebonyi State based on their years of experience.

Ho3: There is no significant difference in the mean responses of respondents from federal and state-owned institutions on the challenges affecting integration of AI-powered tools for students' assessment in business education programmes in tertiary institutions in Ebonyi State.

Table 6: T-test analysis of mean responses of respondents from federal and state owned institutions on the challenges affecting integration of AI-powered tools for students assessment in business education programmes in tertiary institutions.

Institution ownership	N	X	SD	Df	A	t-cal	t-crit	Decision
Federal	20	3.44	0.73					
				47	0.05	0.66	2.02	Not significant
State	29	3.57	0.59					

Table 6 shows that calculated t-value of 0.66 is less than critical t-value of 2.02 at 0.05 level of significance. By this, the null hypothesis is accepted. This implies that there is no significant difference in the mean responses of respondents from federal and state owned institutions on the challenges affecting integration of

AI-powered tools for students assessment in business education programmes in tertiary institutions in Ebonyi State.

Discussion of findings

Data analysis with respect to research question one shows that the respondents agreed that the items are AI-powered tools that could be used for students assessment in business education programmes in tertiary institutions. These tools include Automated grading systems, Multiple-choice and short-answer question grading systems, Essay grading systems, Feedback systems, Plagiarism detection tools, Proctoring systems, Gamification tools, Analytics dashboards, Learning management systems, Speech recognition tools, among others. This finding is in line with Bai and Staed (2022) when they posited that there are different ai-powered tools that teachers can adopt in assessing the students. There are applications in form of tutoring tools and automated assessment tools that offers accurate assessment and consistent feedbacks which saves teachers time and increase efficiency of the assessment processes (Bong and Chatterjee,2021; Baidoo-Anu & Ansah, 2023; Krishna, 2024). These applications when integrated into business education will help in improving objectivity, consistency, efficiency and scalability of students assessment. Analysis of the hypothesis showed that there is significant difference in the mean responses of male and female lecturers on the AI-powered tools that could be used for students assessment in business education programmes in tertiary institutions.

Result of data analysis in table 2 shows that the respondents strongly agreed that the items are ways of integrating AI-powered tools for students assessment in business education programmes in tertiary institutions. Detailed analysis of the findings showed that ai-powered tools could be integrated for students assessment by using them to: Conduct online quizzes and tests, Assess students' presentations, Assess students' knowledge through automated questioning, Evaluate students' written assignments, Detect and prevent academic dishonesty during assessments, Assess students verbal responses in oral exams among others. This finding is supported by Xiaofan and Annamalai (2025) when they opined that institutions can adopt Ai-powered tool in teaching and learning by consistently making use of them. When lecturers make use of AI-powered tools in assessing the students, they can easily provide instant grading and get feedbacks. Integration of AI-powered tools in assessing business education students can help in evaluating students' written assignments, detect and prevent academic dishonesty during assessments, track students' performance and so on. The hypothesis showed that there is no significant difference in the mean responses of the respondents on the ways of integrating AI-powered tools for students assessment in business education programmes in tertiary institutions in Ebonyi State based on their years of experience.

Table 3 shows that respondents agreed that the items are challenges affecting integration of AI-powered tools for students assessment in business education programmes in tertiary institutions. Detailed analysis showed these challenges to include Poor internet connectivity, Unreliable power supply, unavailability of AI tools tailored to local curriculum, Poor digital infrastructure, Lack of adequate funding, High cost of AI-powered assessment tools among others. This finding aligns with previous research by Idika et al (2025) when they found that there are many challenges affecting the use of AI in education and opined that efforts should be made to encourage comprehensive adoption of AI-powered tools in teaching and learning. The hypothesis showed that there is no significant difference in the mean responses of respondents from federal and state owned institutions on the challenges affecting integration of AI-powered tools for students assessment in business education programmes in tertiary institutions in Ebonyi State.

Conclusion

Integration of artificial intelligence powered tools for assessment of students in business education programmes can only be achieved using different application in assement processes. When this is done, both students and lecturers will experience tha benefits of integrating artificial intelligence powered tools in assessment as this will ensure objectivity, consistency, efficiency and scalability of students assessment.

Despite so many benefits embedded in AI-powered tools, their integration into business education programmes for students assessment is bedeviled with so many challenges.

Recommendations

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

1. Governments and tertiary institution's management should support integration of AI-powered tools by procuring and installing them for lecturers and students usage.
2. Tertiary institutions should implement training and retraining initiatives for business education lecturers in order to encourage them to always use AI-powered tools in students assessments.
3. Tertiary institutions managers should provide adequate funding for AI integration and as well provide alternative source power to foster use of available AI-powered tools for students assessment.

References

Adamopoulou, E. and Moussiades, L. (2020). An overview of chatbot technology. *IJIP International Conference on Artificial Intelligence Application and Innovations, 5(3), 373-383.*

Adewale, A. (2024). Ethical Issues in Artificial Intelligence Adoption in African Higher Education Instructions in Nigeria. *African Journal of Information and Knowledge Management* 3 (2) 22-33. https://www.researchgate.net>

Agbarakwe, H. A. and Chibueze, O. O (2024) Leveraging Artificial Intelligence for Enhanced Assessment and Feedback Mechanisms in Nigeria Higher Education System. *International journal of research and innovation in social science.* DOI: https://dx.doi.org/10.47772/IJRISS.2024.809012

Almusaed, A., Almssad, A., Yitmen, I., & Homod, R. Z. (2023). Enhancing Student Engagement: Harnessing "AIED"'s Power in Hybrid Education—A Review Analysis. *Education Sciences,* 13(7), 632.

Bai, X. and Stede, M. (2022). A survey of current machine learning approaches to student free- text evaluation for intelligent tutoring. *International Journal of Artificial Intelligence in Education,* 33(4), 992-1030. https://doi.org/10.1007/s40593-022-00323-0

Baidoo-Anu, D., & Ansah, L. O. (2023). Education in the era of Generative Artificial Intelligence (AI): Understanding the Potential Benefits of ChatGPT in Promoting Teaching and Learning in the Social Science Research Network. https://doi.org/10.2139/ssrn.4337484

Bong, E.Y., & Chatterjee, C., "The use of a ClassPoint tool for student engagement during online lesson", The Asian Conference on Education 2021 Official Conference Proceedings, 2021. https://papers.iafor.org/wp-content/uploads/papers/ace2021/ACE2021_61372.pdf

Chen, C. M., Wang, J. Y., & Yu, C. Y. (2017). Assessing the online reading strategies of students with a hierarchical model across multiple text types. *Computers & Education*, 104, 49-66

Dambo B.I & Nwauzor O (2023). Business Education Skills and Employment Generation Among Graduates Students in Rivers State Universities. *International Journal of Business & Law Research* 11(4):35-46.

Davenport t. h. and dyche j 2013. Big data in big companies. *International Journal of Business Intelligence Research* 4(1) 1-12

Deena, Z., Kim, W-Y & Jeffrey S. H. (2018). Entrepreneurial Universities: Characteristics and Challenges of Accelerating Entrepreneurial Capacity and Economic Growth. *International Journal of Innovation and Technology Management,* 2(1), 40-52

Harry, A., & Sayudin, S. (2023). Role of AI in Education. *Interdisciplinary Journal and Humanity* , 2(3), 260-268.

Huang, S.-P. (2018). Effects of using artificial intelligence teaching system for environmental education on environmental knowledge and attitude. *EURASIA Journal of Mathematics, Science and Technology Education,* 14(7), 3277-3284. https://doi.org/10. 29333/ejmste/91248

Idika, D.O., Arikpo, E. B., Ekpo, E. E., Idika, C. I. and Okeke, S. U (2025). Assessment of lecturers' awareness and utilization of AI tools for effective teaching of research

methods in the university of calabar. *Nigeria Global Journal of Pure And Applied Sciences Special Issue* (31). PP 323- 341

Ikeanyionwu C.L. & Nzegwu R.C (2024). The Role Of Business Education In Promoting Innovation And Entrepreneurship In Anambra State. *International Journal of Innovative Education Research* 12(2):177-182

Kabudi, T., Pappas, I., & Olsen, D. H. (2021). AI-enabled adaptive learning systems: A systematic mapping of the literature. *Computers and Education: Artificial Intelligence*. https://doi.org/10.1016/j.caeai.2021.100017

Krishna K. Y. (2024). AI-powered assessment tools for E-learning: Enhancing feedback and grading systems. *World Journal Of Advanced Engineering Technology And Sciences* DOI: https://doi.org/10.30574/wjaets.2024.13.1.0497

Lodge, J. M., de Barba, P., & Broadbent, J. (2023). Learning with Generative Artificial Intelligence Within a Network of Co-Regulation. *Journal of University Teaching & Learning Practice, 20(7).* https://doi.org/ 10.53761/1.20.7.02

Marwan, A. (2020).Impact of artificial intelligence on education for employment: (learning and employability Framework) A Master's Thesis submitted to the American University in Cairo. https://fount.aucegypt.edu/etds/840

Molenaar, I. (2022). Towards hybrid human-AI learning technologies. *European Journal of Education*, 57(4), 632– 645. https://doi.org/10.1111/ejed.12527

Mutascu, M. (2021). Artificial intelligence and unemployment: New insights. *Economic Analysis and Policy*, 69, 653-667. https://doi.org/10.1016/j.eap.2021.01.012.

Ofem, U. J., & Chukwujama, G. (2024). Sustainable artificial intelligence-driven classroom assessment in higher institutions: Lessons from Estonia, China, the USA, and Australia for Nigeria. *European Journal of Interactive Multimedia and Education, 5(2).* https://doi.org/10.30935/ejimed/15265

Ogunleye F.M. (2021). Entreprenuership education: an indispensable tool for achieving sustainable development in Ekiti State. *Al-Hikmah journal of education management and counseling* 3(1) 125-131

Okifo J and Ayo A.O (2015). Business teacher education as a panacea for human capital development in Nigeria. *Journal of education and practice 6*(16) 63-70

Olushola, T., Haruna, U., Mohammed, S. A. & Salisu, M. (2022). Emerging innovations in teaching business education for sustainable development. *European Journal of Business and Innovation Research*, 10(6), 10-17.

Onajite, G. O. (2016). Challenges of utilizing information and communication technology (ICT) in teaching and learning of business education in Delta State. *International Journal of Educational Foundations and Management,* 10(1), 246-258.

Ranjan, S., & Mishra, S. (2021). Perceiving university students' opinions from Google app reviews. *Concurrency and Computation Practice and Experience*, 34(10).

Shahzad, M. F., Xu, S., & Zahid, H. (2024). Exploring the impact of generative AI-based technologies on learning performance through self-efficacy, fairness & ethics, creativity, and trust in higher education. *Education and Information Technologies*, 30, pp 3691– 3716. https://doi.org/10.1007/s10639-024-12949-9

Tuomi, I. (2018). *The impact of artificial intelligence on learning, teaching, and education: Policies for the future*. Publications Office of the European Union. https://doi.org/10.2760/12297

Vincent, J. (2016, February 29). *What counts as artificially intelligent? AI and deep learning, explained*. The Verge.

Xiaofan, W., & Annamalai, N. (2025). Investigating the use of AI tools in English language learning: A phenomenological approach. *Contemporary Educational Technology,* 17(2), ep578. https://doi.org/10.30935/cedtech/16188