

REVOLUTIONALIZING VOCATIONAL BUSINESS EDUCATION: LEVERAGING ARTIFICIAL INTELLIGENCE AND INNOVATION IN TERTIARY INSTITUTIONS IN CROSS RIVER STATE

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Abstract

This paper focused on revolutionalizing vocational business education: Leveraging artificial intelligence, innovation and creativity. The researcher adopted a descriptive survey research design. A questionnaire titled 'Artificial intelligence and innovation in revolutionalizing vocational business education questionnaire' (AII CVBEQ) was developed and administered to the respondents. The instrument was subjected to face and content validation by three experts in the above mentioned institutions. The items of the instrument were structured on a four- point rating scale. The population of the study consisted of (54) vocational business education lecturers. Since the population was of a manageable size the entire population was used therefore there was no sample. The study showed that artificial intelligence revolutionalized vocational business education. The study concludes that revolutionizing vocational business education, through artificial intelligence and innovation is imperative for equipping learners with the skills and competency required in 21st century vocational education. It was recommended that: i. vocational business education should be gamified to enable student acquire critical thinking skills and practical skills that will enable them to be self reliant.. ii. `Curriculum developers and policy makers should continually reviewed and update vocational business education programme to incorporate modern technologies..

Key Words: Artificial intelligence, Innovation, gamification.

Introduction

In an age marked by automation, digital transformation, and shifting workforce demands, vocational training has become more essential than ever. It equips learners with the practical skills required for careers in sectors such as manufacturing, logistics, healthcare, and hospitality. But traditional training models often struggle to keep up with evolving industry expectations. Artificial Intelligence (AI) plays a game-changing role. By integrating AI into vocational training systems, institutions can deliver more personalized, scalable, and job-aligned education, closing the widening skills gap and building a workforce ready for the future.

The rapid advancement of technology in the 21st century has significantly transformed the landscape of education, with vocational business education emerging as a critical area for innovation. Traditionally, vocational business education has focused on hands-on training, technical skills acquisition and practical skills for self reliance. However, with the growing rate of unemployment and global competitiveness, there is an urgent need to revolutionalize its approaches where the contents, methods of teaching and imparting these skills can be acquired by the learners. By leveraging artificial intelligence (AI), innovation and creativity, vocational business education can be reshaped to equip learners with cutting-edge

skills, and foster entrepreneurial mind sets that align with contemporary vocational business education challenges. (Alalwan, 2023).

Artificial intelligence revolutionizes vocational business education. In the words of Nwaogu & Nwankwo, (2023), AI-powered tools such as smart sensors, drone, and automated machinery are increasingly being integrated into teaching and learning processes, thereby enhancing students' exposure to modern techniques. These innovations do not only improve efficiency in practical skills but also provide real time that can be used for practical training and problem solving (Shaikh Sara Nazneen (2024). AI-based learning platforms are making it possible for students to access virtual learning platforms and simulations, which broaden their understanding of Vocational Business Education (VBE) beyond the traditional classroom setting. This indicates that AI is reshaping how VBE knowledge is delivered and acquired, equipping learners with relevant skills for the 21st century business sectors.

Gamification has revolutionized vocational business education in Nigeria by transforming traditional, theory-heavy curricula into interactive, engagement-driven experiences. By incorporating elements like leader boards, badges, and simulations, it has increased student motivation, enhanced retention of complex accounting and entrepreneurial concepts, and bridged the gap between classroom learning and practical workplace skills.

www.africanscholarpublications. According to (Roopaei, 2024), gamification has revolutionized vocational business education in Nigeria in the followings ways:

- Increased Engagement and Motivation: Game elements like leader boards and badges turn routine tasks into exciting challenges, significantly boosting learner interest and reducing boredom in subjects like accounting.
- Improved Skill Acquisition: Gamified platforms (e.g., virtual business games) allow students to manage companies, making mistakes in a safe environment and learning from the outcomes, which fosters critical thinking and decision-making skills.
- Enhanced Retention of Complex Concepts: By breaking complex topics into smaller, gamified segments, learners better retain knowledge of accounting and management concepts.
- Promotion of Collaborative Learning: Gamification encourages teamwork and peer-to-peer learning, where students work together on simulations to solve business problems, a necessary skill for the modern workforce.
- Improved Employability: By engaging in interactive simulations and skill-based challenges, graduates develop practical expertise, making them more productive and ready for the job market, votej.com.ng.
- Personalized Learning Pathways: Gamified systems offer personalized learning paths, allowing learners to advance at their own pace and focus on strengthening specific areas of weakness.
- Increased Access and Inclusion: Gamified platforms allow for flexible, user-centered learning that is accessible even in areas with fewer resources, improving participation in skill-building activities.

In a study by Shaikh Sara Nazneen (2024), it is shown that game mechanics can foster the development of critical thinking, decision-making, and problem-solving skills, particularly among adolescents. The author emphasizes that members of Generation Z process information differently compared to previous generations, making digital and interactive formats a crucial component of contemporary

education (Shaikh et.al). At the intersection of AI and gamification, new approaches to learning are emerging. A study by Roopaei. (2024) introduces the Integrated Gamification-AI Learning Theory (IGALT), a conceptual framework that merges game mechanics with AI technologies. As part of this theory, the authors developed Trans AI, a platform designed to teach children complex AI concepts through interactive, game-based tasks. This method not only increases interest in STEM disciplines but also fosters computational thinking among students. Gamified strategies have also proven particularly effective in language learning. Shahid et al. (2022) confirm that the Sound-bingo method enhances student engagement and facilitates more effective knowledge acquisition. By transforming instruction into a less formal, interactive process, this approach has been shown to improve learning outcomes. Despite the clear advantages, the effectiveness and perception of gamification are significantly influenced by demographic factors.

Koivisto and Hamari (2022) found that attitudes toward game elements vary based on age, gender, and digital literacy levels. For instance, women tend to value the social aspects of gamification more, whereas older learners may face greater difficulty engaging with game-based approaches. These findings underscore the importance of tailoring gamified strategies to diverse learner profiles. Furthermore, Schöbel et al. (2022) emphasize that while gamification fosters problem-solving skills and emotional engagement, it must be combined with other active learning methods to achieve lasting educational impact. Game elements alone are insufficient what is required is a comprehensive pedagogical approach that meaningfully integrates game mechanics into the broader structure of educational programs.

Innovation is a powerful driver in transforming vocational business education by introducing new methods, technologies, and practices that improve both teaching and learning. In traditional settings, Vocational Business Education (VBE) has often been limited to theoretical knowledge, which fails to prepare learners for the realities of modern technologies and equipment. Through innovation, business educators can integrate modern tools such as digital learning platforms, artificial assistance, collaboration tool, personalized learning, virtual field trips, educational apps, adaptive learning, zoom, Educative games, learning analytical tools etc this shift not only enhances students' technical skills but also encourages adaptability and critical thinking which are essential for thriving in today's rapidly changing economy (Adekunle & Adefalu, 2021). Innovation revolutionized vocational business education in view of Aina & Adeyemi, (2022). They opined that innovation has revolutionized vocational business education by enhancing teaching, learning, and skills acquisition, with the introduction of modern technologies such as youtube, google form, collaboration tool, Educational tools, canva, EDpuzzle, communication tools etc which has transformed how students engage in practical training will enable them to be self reliant. These innovations not only improve students' ability but also expose them to the equipment they will meet in the world of work. Kulo, Agbogo, & Okudare (2023). Furthermore, Agim & Kulo (2022) noted that the integration of digital platforms and mobile applications has broadened access to digital knowledge by the students, making it easier for students to learn innovative techniques and apply them in real- world contexts. By embedding innovation into vocational business education curricula, learners' are empowered to become entrepreneurs, innovators, and change makers in the world of work, thus driving national development and sustainability. (Kulo, Gabriel & Moses, 2020).

Revolutionalizing vocational business education through artificial intelligence, innovation, and creativity is vital for producing skilled, self-reliant, future-ready graduates who can thrive in this today harsh economy and bring about sustainable development and economic growth. By leveraging AI tools, modern innovations, and creative approaches, vocational institutions, can enhance teaching and learning, promoting sustainable business practises, and equip students with entrepreneurial competencies that address unemployment problem in the economy.

Statement of the problem

Vocational business education plays a pivotal role in equipping learners with practical knowledge and skills required for sustainable economic development. It is an aspect of the educational programme that prepares the individual to acquire relevant skills that are needed for personal use, employment or for managing personal business. However in many developing nations, including Nigeria, this field relies heavily on traditional teaching methods it emphasizes on theoretical aspect and the use of outdated materials/equipment. Such approaches are inadequate in addressing contemporary challenges such as lack of modern equipment and facilities; a shortage of qualified, well-remunerated teachers; poor infrastructure; inconsistent government policies; and a negative societal attitude that undervalues vocational skills, often relegating them to "second-choice" education for less academically inclined students. It is assumed that there is lack of integration of artificial intelligence, innovative practices, and creative problem solving skills which has left graduates underprepared for the realities of modern technologies and global competitiveness. Despite the global recognition of artificial intelligence, innovation, and creativity as catalyst for transformation across various sectors, their adoption in vocational business education remain limited. This gap result in mismatched between the skills imparted in training institutions and the technological advancement required in today's business world. Consequently, learners often graduate without the ability to leverage AI tools, innovative solutions, or creative strategies for enhancing vocational business education for self reliant. If vocational business education is not revolutionalized through these approaches, the sector risk remains stagnant.

Purpose of the study

The main purpose of this paper is to examine how artificial intelligence can revolutionalized vocational business education leveraging artificial intelligence and innovation in tertiary institutions in Cross River State. This paper focuses on:

1. Finding out ways gamification revolutionalizes vocational business education in tertiary institutions in Cross River State.
2. Examine the role of innovation in revolutionalizing vocational business education in tertiary institutions in Cross River State.

Research Questions

1. To what extent does gamification revolutionalizes vocational business education in tertiary institutions in Cross River State?
2. To what extent does innovation revolutionalize vocational business education in tertiary institutions in Cross River State?

Methodology

The paper adopted the descriptive survey research design. This design was considered appropriate because it enabled the researcher to describe and analyze the extent to which artificial intelligence; innovation can be leveraged to revolutionize vocational business education in tertiary institutions in Cross River State. The study was conducted in two tertiary institutions in Cross River State: University of Calabar, and Federal College of Education Obudu. The population of the study consisted of (54) vocational business education lecturers, made up of twenty seven (27) lecturers from University of Calabar, and twenty seven (27) lecturers from Federal College of Education Obudu. Since the population was manageable, the entire 54 lecturers were used as the sample size, employing the census sampling technique. A questionnaire titled ‘Artificial intelligence, innovation and creativity vocational business education questionnaire’ (AIICVBEQ) was developed and administered to the respondents. The instrument was subjected to face and content validation by three experts in the above mentioned institutions. The items of the instrument were structured on a four- point rating scale of: strongly agreed (SA) = 4, Agree (A), 3, disagreed (D) 2 and strongly disagreed (SD). To establish the reliability of the instrument, Cronbach Alpha method was used, yielding a reliability coefficient of 0.87. The statistical tool used for answering research questions were mean and standard deviation with a bench mark of 2.50 and above as accepted and 2.49 below was rejected.

RESULTS

Research Question one: In what ways does gamification revolutionizes vocational business education in tertiary institutions in Cross River State?

Table 1: Mean and standard deviation responses on the ways gamification revolutionizes vocational business education in tertiary institutions in Cross River State.

S/N	ITEMS	X	S.D	RMKS
1	Game elements like leader boards and badges turn routine tasks into exciting challenges, significantly boosting learner interest.	3.50	0.88	SA
2	Gamified platforms (e.g., virtual business games) allow students to manage companies, making mistakes in a safe environment and learning from the outcomes, which fosters critical thinking and decision-making skills	3.25	0.81	A
3	Enhanced Retention of Complex Concepts: By breaking complex topics into smaller, gamified segments, learners better retain knowledge of accounting and management concepts.	3.14	0.79	A
4	Gamification encourages teamwork and peer-to-peer learning, where students work together on simulations to solve business problems, a necessary skill for the modern workforce.	3.23	0.81	A
5	Improved Employability: By engaging in interactive simulations and skill-based challenges, graduates	3.95	0.99	SA

	develop practical expertise, making them more productive and ready for the job market,			
6	Gamified systems offer personalized learning paths, allowing learners to advance at their own pace and focus on strengthening specific areas of weakness.	3.45	0.86	A
	Grand mean	3.45	0.86	

The table show the responses of respondents on the ways gamification revolutionizes vocational business education in tertiary institutions in Cross River State. Thus, in items 1-5 respondents strongly agreed that gamification revolutionizes vocational business education by encouraging teamwork and peer-to-peer learning, where students work together on simulations to solve problems, a necessary skill for the modern workforce.

Research Question 2: To what extent does innovation revolutionizes vocational business education?

Table 2: Mean and standard deviation on the extent innovation and revolutionise vocational business education?

S/N	Items	X	S.D	Remarks
7	Instead of just job seekers, students are trained to create jobs through their entrepreneurial skills and innovative ideas.	3.76	0.94	SA
8	By applying creativity and new ideas to their chosen occupations, individuals become more self-sufficient and independent	3.83	0.96	SA
9	A focus on innovative thinking develops essential 21st-century skills like collaboration, communication, and autonomy, preparing students for future leadership roles.	3.00	0,75	A
10	Approaches like problem-based learning, experiential learning, and game-based learning make education more engaging and effective.	3.66	0.92	SA
11	Leverages Digital Technology: The integration of cloud computing and other digital tools creates dynamic learning environments and prepares students for tech-driven workplaces.	2.97	0.74	A
12	Experiential learning, where students manage real-world tasks like social media accounts for actual companies, provides practical, job-ready skills.	3.10	0.78	A
13	Innovative education adapts to evolving industry needs, ensuring graduates possess the relevant skills for current and future job markets.	3.22	0.81	A

14	Creativity enables students to "think outside the box," identify new opportunities, and develop innovative solutions to practical business challenges	2.99	0.75	A
15	The development of skilled, creative, and entrepreneurial individuals drives innovation, productivity, and wealth creation at both individual and national levels.	3.32	0.83	A
Grand Mean		3.45		

Data presented in table 2 reveals the extent innovation revolutionises vocational business education. Item 7 – 15 respectively, the respondents strongly agreed that innovative teaching makes vocational business education more practical and engaging, modern technologies can be integrated into vocational training through innovative approaches and the use of innovative digital learning platforms enhance practice skills acquisition among students. Item 14 reveals that Creativity enables students to "think outside the box," identify new opportunities, and develop innovative solutions to practical business challenges.

Discussion of findings

Finding from research question 1 showed the ways gamification as an aspect of artificial intelligence revolutionizes vocational business education in tertiary institutions in Cross River State. Gamification has revolutionized vocational business education in Nigeria by transforming traditional, theory-heavy curricula into interactive, engagement-driven experiences. By incorporating elements like leader boards, badges, and simulations, it has increased student motivation, enhanced retention of complex accounting and entrepreneurial concepts, and bridged the gap between classroom learning and practical workplace skills. By Improving Skill Acquisition, Promotion of Collaborative Learning, Improving Employability skills. This findings is in line with Shaikh Sara Nazneen (2024), who said that game mechanics can foster the development of critical thinking, decision-making, and problem-solving skills, particularly among adolescents. Making digital and interactive formats a crucial component of contemporary education. also Nwaogu & Nwankwo, (2023), postulated that AI-powered tools such as smart sensors, drone, and automated machinery are increasingly being integrated into teaching and learning processes, thereby enhancing students exposure to modern techniques. These innovations not only improve efficiency in practical skills but also provide real time that can be used for practical training and problem solving. And also these innovations not only improve students' ability but also expose them to the equipment they will meet in the world of work.

Finding from research question 2, showed that innovation revolutionize vocational business education, this finding agrees with Kulo, Agbogo, & Okudare (2023). They states that, by leveraging AI tools, modern innovations, and creative approaches, vocational institutions, can enhance teaching and learning, promoting sustainable business practises, and equip students with entrepreneurial competencies that address unemployment problem in the economy.

Conclusion

The study conclude that revolutionizing vocational business education, through artificial intelligence, innovation and creativity is imperative for equipping learners with the skills and competency required in 21st century vocational education. Artificial intelligence introduces advance tools such as smart learning platforms, data analysis, virtual simulations, which enrich teaching and learning processes while promoting efficiency in the application of modern technologies to enable the students to be self reliant. Through practical projects, learners are empowered to apply knowledge unique and sustainable ways. This integration of AI innovation and creativity positions vocational education has transformative force that are not only developed competent business educators but also promote self reliant and economic growth.

Recommendation

The following recommendations were made:

1. Since the study showed that gamification revolutionizes vocational business education, therefore vocational business education should be gamified to enable student acquire critical thinking skills and practical skills that will enable them to be self reliant.
2. Curriculum developers and policy makers should continually reviewed and update vocational business education programme to incorporate modern technologies.

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