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E-LEARNING PLATFORMS AS CORRELATES OF ACADEMIC ACHIEVEMENT OF BUSINESS EDUCATION STUDENTS IN PUBLIC TERTIARY INSTITUTIONS IN ANAMBRA STATE

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Abstract
The study investigated computer-based and web-based learning as correlates of the academic achievement of Business Education students in public tertiary institutions in Anambra State. Two research questions guided the study and two null hypotheses were tested at the 0.05 level of significance. The correlational research design was adopted. The population comprised 255 300-level Business Education degree students in the 2024/2025 academic session from the four public tertiary institutions offering Business Education in Anambra State. A census approach was used because the population was manageable. Data were collected with sampling of a self-structured E-learning Questionnaire and the students' second-semester academic achievement scores. The questionnaire clusters contained 20 items on computer-based learning and web-based learning. Three experts validated the instrument, while a pilot test yielded Cronbach alpha coefficients of 0.86 and 0.82 for the two clusters respectively. Of the 255 copies administered, 220 valid copies were retrieved and analysed. Pearson Product Moment Correlation was used for the analysis. The findings showed that computer-based learning had a high positive and significant relationship with academic achievement (r = 0.712, p = .001), while web-based learning also had a high positive and significant relationship with academic achievement (r = 0.685, p = .002). The study concluded that meaningful engagement with computer-based and web-based learning is associated with improved academic achievement among Business Education students. It was recommended, that public tertiary institutions should provide functional computer facilities, reliable internet access and sustained lecturer support for the effective integration of both learning approaches.

Keywords: E-learning**,** Computer-Based Learning, Web-Based Learning, Academic Achievement, Business Education, Tertiary Institutions

Introduction

Academic achievement remains one of the clearest indicators of whether teaching and learning are producing the expected outcomes in tertiary education. Students enter higher institutions with the hope of acquiring knowledge, competence and qualifications that will prepare them for employment and responsible participation in society. Parents, lecturers, institutional administrators and government agencies also judge the effectiveness of educational programmes partly through students' results. For this reason, the apparent decline in the academic achievement of some undergraduates has continued to attract concern. The issue is particularly important in Business Education, where students are expected to combine theoretical understanding with practical competence in accounting, office technology, management, entrepreneurship and related areas. Owo and Isaac (2021) observed that academic achievement reflects students' academic capabilities and provides useful evidence about the quality of the learning process.

Academic achievement is broader than the score obtained in one examination, although test results, course grades and grade point averages remain common measures. Akinnola and Oredein (2021) described it in relation to the extent to which a learner or institution has attained established educational objectives. Adepoju and Akinwumi (2019) also viewed academic achievement as multidimensional because it may be expressed through knowledge, behaviour, confidence, communication and other outcomes of learning. Within the present study, however, academic achievement was treated in a more specific and measurable way. It referred to the performance of 300-level Business Education students in their second-semester results for the 2024/2025 academic session. These results provided an objective basis for determining whether the students' engagement with digital learning approaches was related to how well they performed academically.

Business Education is designed to prepare individuals for productive roles as employees, entrepreneurs, employers and self-employed persons. It equips learners with business knowledge, occupational skills and pedagogical competence for the classroom and the workplace. At the tertiary level, the programme covers areas such as accounting, office technology and management, marketing, business communication, entrepreneurship and teaching practice. Despite the practical orientation of the programme, evidence from Anambra State suggests that some students still record weak grades and leave school with limited digital competence. Okoye and Anaso (2025) linked effective instructional approaches with improved achievement among Business Education students, while Akudolu and Onyeneke (2024) identified gaps in the digital skills of Business Education graduates in the state. These concerns have strengthened the search for learning approaches

that can make instruction more accessible, engaging and relevant to contemporary business practice.

One response to this need is the growing use of e-learning. E-learning involves the use of electronic technologies to support, extend or deliver instruction. It may take place within the classroom, outside the classroom or through a blend of face-to-face and online activities. Tawafak et al. (2019) noted that e-learning systems can improve access to instructional content and feedback, while Sarker et al. (2019) explained that such systems create opportunities for flexible learning despite challenges of infrastructure and access. E-learning is not a single method. It includes computer-based learning, web-based learning, informal e-learning, interactive online learning and several other forms. This paper concentrates on computer-based learning and web-based learning because they represent the first two specific dimensions of ICT.

Computer-based learning refers to learning activities in which computers and related digital applications serve as major tools for instruction, practice, simulation, assessment or feedback. It can occur through software installed on a computer, multimedia courseware, learning management systems or applications used for academic tasks. Venkatesh et al. (2019) maintained that the acceptance and use of technology depend greatly on how useful and easy learners perceive it to be. In Business Education, computer-based learning is especially relevant because students are expected to develop competence in word processing, spreadsheet applications, presentation software, data management and other office technologies. Nistor (2020) explained that computer-based courseware can support both individual and guided learning, while Ibáñez et al. (2021) showed that interactive digital activities can strengthen learner engagement. Through repeated practice, immediate feedback and access to multimedia resources, computer-based learning may help students understand difficult concepts and perform academic tasks more efficiently.

Web-based learning extends digital instruction through internet-connected platforms. It allows students to obtain course materials, submit assignments, participate in discussions, attend virtual classes and communicate with lecturers or classmates without being restricted to one physical location. Rosenberg (2019) described web-based learning as an internet-mediated approach to the delivery of knowledge, while Almpanis et al. (2019) emphasized its value for flexible curriculum delivery. Web-based tools can also support synchronous interaction, where participants meet in real time, and asynchronous learning, where students study at a convenient time. Light and Pierson (2021) noted that interactive web tools can promote exploration, collaboration and access to varied learning resources. Ajuzie and Ukegbu (2019) similarly reported the usefulness of web-based tools for instructional delivery. Even so, the extent to which computer-based and web-based learning relate to the academic achievement of Business Education

students in public tertiary institutions in Anambra State had not been clearly established. The present study addressed this gap.

Statement of the Problem

Academic achievement among Business Education students in public tertiary institutions is expected to reflect both sound theoretical knowledge and the ability to apply business-related skills. Yet reports of weak grades, poor mastery of practical tasks and inadequate digital competence continue to raise concern in Anambra State. Conventional teaching methods still dominate many classes, while functional computer laboratories, stable electricity, reliable internet connectivity and current digital learning resources are not always available. Where facilities exist, students may not use them consistently for academic purposes, and lecturers may not integrate them fully into instruction. Computer-based and web-based learning have the potential to provide flexible access to course materials, repeated practice, multimedia explanations, immediate feedback and collaborative learning. However, without empirical evidence, it would be difficult to determine whether students who engage more actively with these approaches actually record better academic results. Most earlier studies considered e-learning generally, focused on other disciplines or examined institutions outside Anambra State. Consequently, the relationship between E-learning and the academic achievement of Business Education students in the state remained uncertain. It was this problem that prompted the study.

Purpose of the Study

The main purpose of the study was to investigate E-learning as correlates of the academic achievement of Business Education students in public tertiary institutions in Anambra State. Specifically, the study sought to:

1. Ascertain the relationship between computer-based learning and the academic achievement of Business Education students in public tertiary institutions in Anambra State.
2. Determine the relationship between web-based learning and the academic achievement of Business Education students in public tertiary institutions in Anambra State.

Research Questions

The following research questions guided the study:

1. What is the relationship between computer-based learning and the academic achievement of Business Education students in public tertiary institutions in Anambra State?
2. What is the relationship between web-based learning and the academic achievement of Business Education students in public tertiary institutions in Anambra State?

Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

1. Computer-based learning does not have a significant relationship with the academic achievement of Business Education students in public tertiary institutions in Anambra State.
2. Web-based learning does not have a significant relationship with the academic achievement of Business Education students in public tertiary institutions in Anambra State.

Research Method

The study adopted a correlational research design. The design was appropriate because it enabled the researcher to determine the direction and strength of the relationship between each learning approach and students' academic achievement without manipulating the variables. The population comprised 255 300-level Business Education degree students in the 2024/2025 academic session from Chukwuemeka Odumegwu Ojukwu University, Igbariam Campus; Nnamdi Azikiwe University, Awka; Federal College of Education (Technical), Umunze; and Nwafor Orizu College of Education, Nsugbe. The entire population was used because it was manageable. Thus, the study employed a census sampling approach, in line with the position of Creswell and Creswell (2022) that a complete population may be studied where its size permits adequate coverage.

Data were collected with the E-learning Questionnaire (EQ) and the students' academic achievement scores. The EQ contained 20 items in two clusters. Cluster 1 contained 10 items on computer-based learning, while Cluster 2 contained 10 items on web-based learning. The items were structured on a four-point scale of Strongly Agree, Agree, Disagree and Strongly Disagree. The students' second-semester results for the 2024/2025 academic session were obtained from departmental records and used as the measure of academic achievement. Three experts from the Faculty of Education, Chukwuemeka Odumegwu Ojukwu University validated the instrument. A pilot test involving 20 Business Education students in Enugu State produced Cronbach alpha coefficients of 0.86 for computer-based learning and 0.82 for web-based learning with an overall reliability co-efficient of 0.84, indicating satisfactory internal consistency.

The researcher administered 255 copies of the questionnaire with the assistance of five research assistants. Completed copies were collected immediately where possible, while follow-up visits were made for outstanding copies. After one week, 220 properly completed copies were retrieved, representing a return rate of 86.3 percent. The 220 responses and the corresponding academic achievement scores were used for analysis. Pearson Product Moment Correlation was used to answer the research questions and test the hypotheses at the 0.05 level of significance with SPSS

version 26. Correlation coefficients from 0.60 to 0.80 were interpreted as high. A null hypothesis was rejected where the p-value was less than or equal to 0.05.

Results

Research Question 1: What is the relationship between computer-based learning and the academic achievement of Business Education students in public tertiary institutions in Anambra State?

Table 1: Summary of Pearson Correlation Analysis between Computer-Based Learning and Academic Achievement of Business Education Students in Public Tertiary Institutions in Anambra State

Variables	Statistics	Computer-Based Learning	Academic Achievement	Remark
Computer-Based Learning	Pearson Correlation	1	0.712**	High Positive Relationship
	Sig. (2-tailed)	—	.001	
	N	220	220	
Academic Achievement	Pearson Correlation	0.712**	1	
	Sig. (2-tailed)	.001	—	
	N	220	220	

*** Correlation is significant at the 0.05 level (2-tailed).*

The result in Table 1 shows a Pearson correlation coefficient of r = 0.712 between computer-based learning and academic achievement. The coefficient falls within the high range and is positive. This means that students who reported greater engagement with computer-based learning tended to record higher academic achievement scores. Therefore, a high positive relationship exists between computer-based learning and the academic achievement of Business Education students in public tertiary institutions in Anambra State.

Research Question 2: What is the relationship between web-based learning and the academic achievement of Business Education students in public tertiary institutions in Anambra State?

Table 2: Summary of Pearson Correlation Analysis between Web-Based Learning and Academic Achievement of Business Education Students in Public Tertiary Institutions in Anambra State

Variables	Statistics	Web-Based Learning	Academic Achievement	Remark
Web-Based Learning	Pearson Correlation	1	0.685**	High Positive Relationship
	Sig. (2-tailed)	—	.002	
	N	220	220	
Academic Achievement	Pearson Correlation	0.685**	1	
	Sig. (2-tailed)	.002	—	
	N	220	220	

*** Correlation is significant at the 0.05 level (2-tailed).*

The result in Table 2 indicates a Pearson correlation coefficient of r = 0.685 between web-based learning and academic achievement. The relationship is positive and high. In practical terms, increased use of web-based learning resources was associated with better academic results among the respondents. Thus, there is a high positive relationship between web-based learning and the academic achievement of Business Education students in public tertiary institutions in Anambra State.

Hypothesis One: Computer-based learning does not have a significant relationship with the academic achievement of Business Education students in public tertiary institutions in Anambra State.

Table 3: Test of Significance of Pearson Correlation on the Relationship between Computer-Based Learning and Academic Achievement of Business Education Students in Public Tertiary Institutions in Anambra State

Variables	Statistics	Computer-Based Learning	Academic Achievement	Remark
Computer-Based Learning	Pearson Correlation	1	0.712**	Significant Relationship
	Sig. (2-tailed)	—	.001	
	N	220	220	
Academic Achievement	Pearson Correlation	0.712**	1	
	Sig. (2-tailed)	.001	—	
	N	220	220	

*** Correlation is significant at the 0.05 level (2-tailed).*

Table 3 shows that the correlation between computer-based learning and academic achievement is r = 0.712, with a p-value of .001. Since the p-value is lower than the 0.05 level of significance, the null hypothesis is rejected. This establishes that computer-based learning has a significant positive relationship with the academic achievement of Business Education students in public tertiary institutions in Anambra State.

Hypothesis Two: Web-based learning does not have a significant relationship with the academic achievement of Business Education students in public tertiary institutions in Anambra State.

Table 4: Test of Significance of Pearson Correlation on the Relationship between Web-Based Learning and Academic Achievement of Business Education Students in Public Tertiary Institutions in Anambra State

Variables	Statistics	Web-Based Learning	Academic Achievement	Remark
Web-Based Learning	Pearson Correlation	1	0.685**	Significant Relationship
	Sig. (2-tailed)	—	.002	
	N	220	220	
Academic Achievement	Pearson Correlation	0.685**	1	
	Sig. (2-tailed)	.002	—	
	N	220	220	

*** Correlation is significant at the 0.05 level (2-tailed).*

Table 4 reveals a correlation coefficient of r = 0.685 and a p-value of .002 for the relationship between web-based learning and academic achievement. The p-value is less than 0.05; consequently, the null hypothesis is rejected. Web-based learning therefore has a significant positive relationship with the academic achievement of Business Education students in public tertiary institutions in Anambra State.

Discussion of the Findings

The finding of the study revealed a high positive relationship between computer-based learning and the academic achievement of Business Education students in public tertiary institutions in Anambra State. One reasonable explanation is that computer-based learning gives students repeated access to tutorials, demonstrations, simulations, productivity applications and assessment exercises. A student who does not understand a classroom explanation can revisit digital material, practise at a personal pace and receive feedback without waiting for the next lecture. In Business Education, this matters because many courses require both conceptual understanding and practical performance with office applications. The result agrees with Banda et al. (2021), who found that e-learning approaches improved the academic performance of statistics students at Mukuba University. It is also consistent with Ahmed et al. (2020), who reported a substantial relationship between the use of e-learning platforms and students' achievement in a college of education in Bauchi State. Yousef and Basem (2020) similarly observed improvement in students' academic achievement after e-learning strategies were introduced at Al-Quds Open University.

The test of the first hypothesis further showed that the relationship between computer-based learning and academic achievement was statistically significant. The result suggests that the observed association was unlikely to have occurred by chance within the study sample. Computer-based learning may therefore be an important academic resource when students use it purposefully and when lecturers connect digital tasks to course objectives. This finding supports Suresh et al. (2018), who reported that e-learning contributed to improved performance among undergraduate students. It also reinforces the result of Banda et al. (2021), whose participants exposed to technology-supported instruction performed better than those taught mainly through conventional approaches. The agreement among these studies indicates that computer use becomes educationally valuable when it moves beyond basic access and is directed towards practice, explanation, feedback and the completion of meaningful learning tasks.

The study also found a high positive relationship between web-based learning and the academic achievement of Business Education students. Web-based learning gives students access to course notes, recorded lessons, academic databases, discussion platforms and real-time virtual interaction. Such access can reduce the effect of time and location, especially where students need to revisit difficult topics or obtain additional explanations beyond the classroom. The result is in line with Oguguoi et al. (2021), who found that students' achievement differed positively across synchronous and asynchronous online learning platforms, with real-time interaction offering notable benefits. Zia et al. (2024) also reported that online learning influenced the performance of business students, although the effectiveness of the experience depended on how well the platforms were used. In the same direction, Chikileva et al. (2023) concluded from a review of empirical studies that e-learning generally contributes positively to university students' academic achievement.

The second hypothesis confirmed that web-based learning had a significant positive relationship with academic achievement. This result may be linked to the breadth of resources available online and the opportunity for students to communicate, collaborate and learn independently. A well-organised web-based environment can keep learning active between lectures, allow students to submit tasks promptly and make feedback easier to obtain. The finding agrees with Sanyu (2023), who reported that e-learning improved academic performance, motivation, engagement, critical thinking and problem-solving among students in Uganda. It also supports Oguguoi et al. (2021), whose findings showed that online instructional modes significantly influenced students' achievement. Taken together, the evidence suggests that web-based learning is not merely a convenient channel for distributing notes. When internet access, instructional design and student participation are adequate, it becomes a meaningful part of the learning process and is associated with stronger academic outcomes.

Conclusion

Based on the findings, the researcher concluded that computer-based learning and web-based learning are positively and significantly related to the academic achievement of Business Education students in public tertiary institutions in Anambra State. Students who engaged more actively with computer applications, digital courseware and internet-based learning resources tended to record better academic results. The findings do not imply that technology alone guarantees success. Rather, they show that purposeful access, regular use, appropriate guidance and the integration of digital activities with course objectives can strengthen students' understanding and performance. Public tertiary institutions should therefore treat computer-based and web-based learning as important components of effective Business Education instruction.

Recommendations

Based on the findings of the study, the researcher proffered the following recommendations:

1. Administrators of public tertiary institutions should provide and maintain functional computer laboratories, relevant software, multimedia facilities and stable power supply for Business Education students. Lecturers should also design regular computer-based tasks that require students to practise course concepts, complete assignments and apply office technologies in realistic academic and business situations.
2. Management of public tertiary institutions should expand access to reliable internet connectivity, learning management systems, digital libraries and credible educational websites. Business Education lecturers should be trained and supported to organise web-based lessons, discussions, assessments and feedback in ways that keep students actively engaged and improve their academic achievement.

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