

**INFLUENCE OF COMPUTER-BASED LEARNING AND WEB-BASED
LEARNING ON ACADEMIC ACHIEVEMENT OF BUSINESS EDUCATION
STUDENTS IN TERTIARY INSTITUTIONS IN ANAMBRA STATE**

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ABSTRACT

This study investigated the influence of computer-based learning and web-based learning on the academic achievement of business education students in tertiary institutions in Anambra State. Two research questions and two null hypotheses guided the study. Descriptive survey research design was adopted for the study. The population of the study consisted of six hundred and seventy seven (677) Business Education students in four public tertiary institutions in Anambra State. The entire population of the study was adopted as the sample size because it is small and can easily be handled. Data were collected using researcher developed “Computer-Based Learning and Web-Based Learning Questionnaire” (CBWBLQ) while academic achievement was measured using the student’s scores in two courses. The instrument was subjected to face and content validation. Internal consistency reliability index of .72 was obtained using Cronbach alpha method. Data were collected by the researcher with the help of two research assistants who were properly briefed on how to administer the instrument. The completed copies of questionnaire were collected on the spot. Research questions were analyzed using mean and standard deviation while the null hypotheses were tested using t-test at .05 level of significance. The analysis was done with the use of SPSS version 21.0. The study found among others that computer-based learning and web-based learning influence the academic achievement of business education undergraduate students. The study also found that computer-based learning significantly influences the academic achievement of male and female business education undergraduate students. Web-based learning was found to significantly influence the academic achievement of urban and rural based business education undergraduate students. Based on the findings, the study concludes that computer-based learning and web-based learning has significant influence on the academic achievement of business education students in tertiary institutions in Anambra State. The study recommends amongst others that conferences, seminars and workshops and relevant programmes should be organized by professionals of ICT to teach teachers and students on modern e-learning technologies and its uses to facilitate effective instructional delivery and enhance students academic achievement.

Key Words: E-learning, Academic Achievement, Business Education

INTRODUCTION

The trends of computer-based and web-based educational learning system is receiving more attention in this era of information and communication technology, due to explosive expansion of the World Wide Web and internet. The internet’s magnitude is thousands of times what it was only two decades ago. It is estimated that about 60 million

host computers are on the internet today while it serves about 200 million users in over 200 countries and territories. Furthermore, 21st century has witnessed the advancement of learning technologies especially that of electronic learning (Omoni & Ifeanyichukwu, 2015). They further affirmed that in developed countries, learning are made easier as a result of easy accessibility to computers, internet service and other electronic devices. Students are, therefore, enthusiastic about the usage of these devices in the learning process. Observations have shown that students seem to have open access to information on a wide variety of subjects.

Computer-based learning (CBL) is any course of instruction whose primary means of delivery is through computer. A CBL courseware may be delivered via a software product installed on a single computer, through a corporate or educational intranet, in this case, the teacher does not need internet or website. All that is needed is a computer, a projector, scanner and multimedia objects such as audio, video and speakers for the transmission of learning contents or it could be delivered over the Internet as Web-based training. CBL can be used to teach business education because it is especially good for keyboarding, word-processing, information management, business mathematics amongst other subjects. Students can also take advantage of CBL to learn how to run computer applications, such as Microsoft Excel, MS-word, Power point and other Office packages that are related to their field of study (Nistor, 2020). Web-based learning (WBL) on the other hand is an innovative approach to distance learning in which computer-based learning (CBL) is transformed by the technologies and methodologies of the World Wide Web, the Internet, and intranets (Kilby, 2009). Web-based learning could be used to present business education contents live and in structure promoting self-directed and self-paced instruction on any topic at any distance. WBL could also be used in the provision of remedial lessons to students. The teacher can also use it for evaluation and assessment of the students objectively.

Nowadays, computer-based learning and web-based learning has gained competitive advantage and many tertiary institutions have implemented it and this has impacted on students' academic performance or grade point average (GPA) (Wedemeyer, 2015). It has been observed however, that some tertiary institutions and academic institutions use low interactive e-learning which is not enough to contribute to the performance of the students. In contrary to this, other higher educational institutions use highly interactive e-learning which directly improves students academic performance in general (Rodgers, 2016). Butressing further, computer-based learning and web-based learning device and medium have been used to aid education. This according to Okereke in Omoni and Ifeanyichukwu (2015) includes electronic mail, real time text conferencing, and online tutorials which seem to have been used in the teaching and learning process for several years. Some e-learning platforms used in the developing countries such as Nigeria, as highlighted by Ipaye (2011) are as follows websites, wikis, blogs, second life, e-mail, twitters, course management system, video/audio podcasts, Facebook, threaded discussion lists, video/audio text chat and videoconferences software among others. Despite these, the platform appears to be poorly utilized in Nigerian tertiary institutions for teaching business education. It therefore appears that business education students in many institutions lack basic e-mail addresses for sending and receiving mails, while others are not computer literate.

Furthermore, studies have proven that computer-based learning and web-based learning have been used in the teaching and learning process for several years. Regarding this, the use of these tools seems to be very assuring, but due to the gap between developed and developing countries, knowledge transfer could be difficult and costly (Omoni & Ifeanyichukwu, 2015). The impact of computer-based learning and web-based learning is increasingly dominating the current educational system as the impact of technology continuously dominates our day to day activities worldwide (Bass, 2016).

As posited by Olusegun, Gabriel, Sshil, and Zhang in Omoni and Ifeanyichukwu (2015), computer-based learning and web-based learning utilization is influenced by students' computer literacy and many business education students seems not to have the needed competency in computer operations that forms the basis for e-learning integration. Nevertheless, the teaching of business education also requires the application of e-learning tools which could improve the academic achievement. Business education is a programme geared towards the acquisition of knowledge and skills needed in the workplace. One vital need in the current business environment is that workers ability to use computer programmes for different purposes. The usage of e-learning tools by business education students in tertiary institutions will lay the foundation for computer and software utilization in the business environment. Through this, the academic achievement of students in business education will improve drastically.

Business education is an educational process or context, which has the primary aim of preparing people for roles in enterprises, such roles could be as employees, entrepreneurs, employers or simply as self-employed persons (Ojeaga & Igbinedion, 2012). In Nigeria, business education is offered at the junior, senior and post-secondary school levels. At the junior secondary school level, it comprises business studies as a pre-vocational subject. At this level, it serves as an introduction to the social sciences subjects and helps students to develop manipulative skills, inventiveness and respect for dignity of labour as well as preparing students for further studies and develops in them the understanding and attitudes needed for successful advancement in their educational pursuits (Epumepu, 2012).

On the other hand, at the senior secondary school level, its educational subjects include book keeping, keyboarding, marketing, accounting, office education, office management, store-keeping, cooperative education and desk top publishing/word processing. At the post secondary school level, business education is offered as a discipline in the faculty of education (Federal Republic of Nigeria, FRN, 2013). The curriculum areas covered at post-secondary school level include education, business administration, teaching practice, industrial work experience, accounting, marketing, finance, operations Management, economics for business, business law, office practice, personnel management, entrepreneurship education, book keeping, consumer education, human relations, professional work ethics, curriculum development, methodology, research techniques, principles of business education and others. Studies have shown that the academic achievement of undergraduate in business education seems to be dwindling from observations. This could be as a result of the use of conventional method of teaching business education in tertiary institutions.

Academic achievement on the other refers to the height of formal education successfully attained by an individual in the course of pursuing a career. It involves a product of effort or series of effort. Academic achievement is a test for the measurement

and comparison of skills in various fields of academics or study. Stiggings (2011) sees academic achievement as something a learner do or achieves at school, college, or university, in class, in a laboratory or field work. Academic achievement refers to achievement of individuals' objective to various types of knowledge and skills. The objectives are established based on the age, prior learning and capacity of individual with regards to education, socialization and qualification.

Omeh (2017) identified Academic Achievement as what learner is able to accomplish through the execution of class work in the school. Some of the purpose of academic achievement are listed in his work which are as follows: to determine the relative effectiveness of a programme in terms of students behavior output; to identify student growth or lack of growth in acquiring desirable knowledge of their teaching technique and learning material; to help motivate students to learn as they discover their progress or lack of progress in given task; to encourage students to develop a sense of discipline and systematic study habits; to acquaint parent or guardians with their children achievement; to predict the general trend in the development of teaching and learning process; to make reliable decision about education planning and to provide educational administrator with adequate information about teachers effectiveness and school need.

Factors such as gender and location are important when considering the influence of computer-based learning and web-based learning on the academic achievement of business education students. The gender concept seeks to distinguish between the social and historical construction of male and female on the one hand and sex on the other, as well as to explain power relationships between men and women and how they relate in and with society. Gender constitutes a structure of social practice that establishes relations of power, attitudes and hierarchies, not only among people, but also among groups and institutions, which would simply overcome the analysis or individual perception of being female or male. This category permits an understanding of socially predefined roles for men and women as perpetrators of unequal hierarchical relations (Steinfeldt, Vaughan, Lafollette & Steinfeldt, 2012). Gender is the range of physical, biological, mental and behavioural characteristics pertaining to and differentiating between masculinity and femininity.

Udry cited in Oriakhi and Ujiro (2015) noted that depending on the context, the term may refer to biological sex (i.e. the state of being male, female or intersex), sex based social structure (including gender roles and other social roles) or gender identity. Gender issues are currently the main focus of discussion in research all over the world, Nigeria inclusive. The question of gender is a matter of great concern especially among academics and policy formulators. For instance, Kumar and Bajpal (2015) study revealed that significance difference between male and female students on the impact of e-learning on achievement motivation and academic performance. Richardson and Woodley (2018) found that females could achieve higher learning outcomes than males because they were more persistent and committed than males. Females had stronger self-regulation than males, which also led to their significantly more positive online learning outcomes than males (Alghamdi, Karpinski, Lepp & Barkley, 2020). However, no significant gender differences were revealed in learning outcomes because males were more stable in attitudes, while females performed well in engagement (Nistor, 2020). Furthermore, Harvey, Parahoo & Santally (2017) found no significant gender differences in learning outcomes as a result of adopting e-learning platform. Moreover, Kay and Knaack (2018)

showed no gender differences between males and females with respect to academic performance in secondary students. Female students even score e-learning courses higher on average than male students (Gonzalez-Gomez, Guardiola, Martín & Montero, 2019).

Furthermore, School location (urban/rural) has also been linked to e-learning and academic achievement. The influence of school location on the overall educational and behavioural outcomes of students cannot be overemphasized. Ntibi and Edoho (2017) noted that school location refers to the particular place, in relation to other areas in the physical environment (rural or urban), where the school is sited. Ezike cited in Nwankwo, Okechi and Nweke (2015) conceptualized urban environment as those environment which have high population density containing a high variety and beauty and common place views. He further identified the rural environment as being characterized by low population density containing a low variety and isolated place views. Lipton cited in Owioye and Yara (2011) in his contribution noted that “rural community is characterized by low population, subsistence mode of life, monotonous and burdensome” and citing hotels, recreational centers, markets, banks and good road network as being present in their urban environment. This can influence the ability to adopt e-learning strategy. In line with this, Suresh, Priya and Gayathri (2018) noted that e-learning is not available to everybody and people in the rural areas have no access to e-learning. Hence, it becomes imperative to determine the influence of computer-based learning and web-based learning on the academic achievement of business education undergraduates students in tertiary institutions in Anambra State.

Purpose of the Study

The main purpose of this study was to investigate the influence of computer-based learning and web-based learning on the academic achievement of business education undergraduate students. Specifically, the study sought to:

1. Determine the influence of computer-based learning on academic achievement of male and female business education undergraduate students in tertiary institutions in Anambra State.
2. Ascertain the influence of web-based learning on academic achievement of urban and rural based business education undergraduate students in tertiary institutions in Anambra State.

Research Questions

The study was guided by the following research questions;

1. What is the influence of computer-based learning on academic achievement of male and female business education undergraduate students in tertiary institutions in Anambra State?
2. In what ways does web-based learning influence the academic achievement of urban and rural based business education undergraduate students in tertiary institutions in Anambra State?

Hypotheses

The following null hypotheses were tested at .05 level of significance

1. Computer-based learning would not significantly influence the academic achievement of male and female business education undergraduate students in tertiary institutions in Anambra State.
2. Web-based learning would not significantly influence the academic achievement of urban and rural based business education undergraduate students in tertiary institutions in Anambra State.

METHOD

Descriptive survey research design was adopted in this study. The study was carried out in Anambra State of Nigeria. The population of the study consists of six hundred and seventy seven (677) Business Education students (Office of the Head of Department of the Respective Tertiary Institutions, 2021). The four institutions were selected for the study because they offer Business Education. The population of the study comprised all the Business Education students in Nnamdi Azikiwe University Awka; Chukwuemeka Odumegwu Ojukwu, Igbariam; Nwafor Orizu College of Education, Nsugbe and Federal College of Education (Technical), Umuze. The study adopted 677 business education students as the sample size because they are small and manageable.

The instrument for data collection was researcher developed questionnaires viz; “Computer-Based Learning and Web-Based Learning Questionnaire” (CBWBLQ). The instrument contained two sections; A, and B. Section A sought demographic information of the respondents such as names of Institution, gender, age and year of study. Section B contained 20 items which elicit information on computer-based learning and web-based learning. The items of was placed on 4-point rating scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).. Academic achievement was measured using the students’ scores in two courses the courses include Introduction to Computer, Fundamentals of Government Accounting System, Industrial Works Experience I, EDU 254, EDU 222, EDU 104, EDU II, BUS 222, BED 382.

The face and content validity of the instruments were established by three experts. The instruments was trial-tested on a representative sample of 30 Business Education students, 15 students was randomly selected from Enugu State University of Science and Technology (ESUT) and 15 students from Federal College of Education Eha-Amufu, Enugu State, The institutions were chosen for reliability test because they shares similar characteristics with tertiary institutions students used for this study. The data collected from the respondents was analyzed using mean and standard deviation. Mean was used to answer the research questions earlier formulated in the study while the standard deviation was used to ascertain how homogenous or heterogeneous the opinions of the respondents are in relation to the items in the questionnaire administered.

The hypotheses were analyzed using simple regression analysis. Muijs' in Cohen et al (2007) suggestion for assessing the goodness of fit of regression model using squared regression coefficient (R^2) and Beta weights (β) was adopted in this study. For R^2 : 0–0.1 weak fit; 0.1–0.3 modest fit; 0.3–0.5 moderate fit; >0.5 strong fit.

For beta weighting (β):

0 - 0.1 = weak effect

0.1 - 0.3 = modest effect

0.3 - 0.5 = moderate effect

>0.5 = strong effect

However, negative beta weighting (β) indicates negative effect/relationship

PRESENTATION AND ANALYSIS OF DATA

Research Question 1: What is the influence of computer-based learning on academic achievement of male and female business education undergraduate students in tertiary institutions in Anambra State?

Table 1: Mean and Standard Deviation of Business Education Students on Computer Based Learning and their Academic Achievement.

Variables	N	Mean	Std. Deviation	Decision
Computer-Based Learning	582	31.65	1.96	High
Academic Achievement	582	62.69	10.67	Influence

*Real Limit: 10.50 – 40.00

Table 1 above showed the mean response of business education undergraduates on computer-based learning and their academic achievement. The mean response and standard deviation (SD) of business education undergraduate were 31.65 with SD of 1.96 and academic achievement was 62.69 with SD of 10.67. This implies that computer-based learning had high influence to the academic achievement of business education undergraduates in Anambra State.

Research Question 2: In what way does web-based learning influence the academic achievement of urban and rural based business education undergraduate students in tertiary institutions in Anambra State?

Table 2: Mean and Standard Deviation of Business Education Undergraduates on Web-Based Learning and their Academic Achievement

Variables	N	Mean	Std. Deviation	Decision
Web-Based Learning	582	31.46	2.56	High
Academic Achievement	582	62.69	10.67	Influence

*Real Limit: 10.50 – 40.00

Analysis in Table 2 revealed the means and standard deviation of business education undergraduates on web-based learning and their academic achievement. The mean responses and standard deviation of business education undergraduates on web-based learning were 31.46 with standard deviation of 2.56 and academic achievement were 62.69 with standard deviation of 10.67. This study concluded that web-based learning had high influence to the academic achievement of business education undergraduates in Anambra State.

Test of Hypotheses

Hypothesis 1: Computer-based learning would not significantly influence the academic achievement of male and female business education undergraduate students in tertiary institutions in Anambra State.

Table 5: Independent-test Comparison of Male and Female Business Education Undergraduate Students Response on Whether Computer-based Learning would Significantly Influence the Academic Achievement

Source of variation	N	$\bar{x}$ SD	df	t-cal	p-value	Decision
Male	235	31.66 1.97	580	.023		Reject
Female	347	31.65 1.98			.001	Ho

* Significant at $p < .05$

As can be seen on Table 6, independent t-test of responses of male and female business education undergraduates on computer-based learning and their academic achievement indicated that $t(580) = .023$, $p\text{-value} = .001$. The $p\text{-value}$ of .001 was less than .05 level of significance, therefore the null hypotheses was rejected. Based on the result, there is a significant influence of computer-based learning on academic achievement of male and female business education undergraduates in tertiary institutions in Anambra State.

Hypothesis Two: Web-based learning would not significantly influence the academic achievement of urban and rural based business education undergraduate students in tertiary institutions in Anambra State.

Table 6: Independent-test Comparison of Urban and Rural Based Students on whether Web-based learning would significantly influence the academic achievement

Source of variation	N	$\bar{x}$ SD	df	t-cal	p-value	Decision
Urban Based	395	32.65 2.57	580	.020	.004	Reject Ho,
Rural Based	187	31.65 2.56				

* Significant at $p < .05$

Result from Table 7 revealed the independent t-test of urban and rural business education undergraduates of web-based learning and their academic achievement revealed that $t(580) = .020$, $p\text{-value} = .004$. The $p\text{-value}$ of .004 was less than .05 alpha level, hence the null hypothesis was rejected. Therefore, web-based would significantly influence the academic achievement of urban and rural business education undergraduates in tertiary institutions in Anambra State.

DISCUSSION OF FINDINGS

The findings were discussed in line with the research questions and hypotheses that guided this study. Objective one of this study investigated the influence of computer-based learning on academic achievement of business education undergraduate students in tertiary institutions in Anambra State. Data from the study shows that the analysis of the research question shows that computer-based learning influences the academic achievement of business education undergraduate students in tertiary institutions in Anambra State. Furthermore, the null hypothesis which states that computer-based learning would not significantly influence the academic achievement of male and female business education undergraduate students in tertiary institutions in Anambra State was rejected. This implies that computer-based learning significantly influences the academic achievement of male and female business education undergraduate students in tertiary institutions in Anambra State. This agrees with the findings of Kassahun (2014) that e-learning have significant influence on the academic performance of mathematics students. This also agrees with the findings of Kumar and Bajpal (2015) that e-learning have significant impact on academic performance of college students.

Objective two of this study investigated the influence of web-based learning on academic achievement of business education undergraduate students in tertiary institutions in Anambra State. The research question analyzed indicates that web-based learning influences the academic achievement of business education undergraduate students in tertiary institutions in Anambra State. The corresponding null hypothesis which states that web-based learning would not significantly influences the academic achievement of urban and rural based business education undergraduate students in tertiary institutions in Anambra State was rejected. This indicates that web-based learning significantly influences the academic achievement of urban and rural based business education undergraduate students in tertiary institutions in Anambra State. This agrees with the position of Barker and Wendel (2011) that students in virtual schools showed greater improvement than their conventional school counterparts in critical thinking, researching, using computers, learning independently, problem-solving, creative thinking, decision-making, and time management. This also collaborates the findings of Suresh, Priya and Gayathri (2018) that e-learning helps to improve the academic performance of undergraduate students.

CONCLUSION

The study investigated the influence of computer-based learning and web-based learning

on the academic achievement of business education students in tertiary institutions in Anambra State. Data generated were subjected to statistical analysis and the following were discovered. The study found that computer-based learning and web-based learning have significant influence on the academic achievement of business education undergraduate students in tertiary institutions in Anambra State. Based on the foregoing, the study concludes that computer-based learning and web-based learning has significant influence on the academic achievement of business education students in tertiary institutions in Anambra State. Therefore, computer-based learning and web-based learning platforms have the capacity to provide higher interactive potential for learners to develop their

intellectual and creative ability. In a rapidly changing world of technology, it has become necessary for universities and colleges of education to imbibe the culture of e-learning for their students.

RECOMMENDATIONS

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

1. The management of universities should endeavor to establish more ICT centers and provide necessary facilities like computers, web-connectivity, constant electricity supply, e-Library, e-Journals, e-Books, screen touch electronic boards, multimedia projectors/PowerPoint and softwares in order to enhance instructors and students' access to e-learning facilities.
2. Attention should be paid to the deploring enough facilities in our higher institutions. Therefore, ICT system together with necessary peripherals should be bought. This will enhance the teaching and learning and allow discovery of more facts.

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