

**EFFECT OF DESIGNATED COMPUTER APPLICATIONS ON ACADEMIC
PERFORMANCE OF BUSINESS EDUCATION STUDENTS IN FEDERAL COLLEGE OF
EDUCATION (TECHNICAL) EKIADOLOR BENIN EDO STATE**

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Abstract

This study examined the effect of designated computer applications on the academic performance of business education students in federal college of education (technical) Ekiadolor- Benin, Edo State. 162 year II and year III students of Business Education were used for the study. Four research questions and hypotheses guided the study. Quasi experimental research design was used and the major instruments of the study were Cognitive Achievement Test and Lesson note. Data collected were analyzed using t-test, Mean, Standard Deviation and ANCOVA. Results of the analysis showed that there is significance difference in academic performance of students taught with designated computer applications than those taught with traditional method of teaching. It was recommended among others that government should equip the college with modern computer and internet facilities in order to enhance students' academic performance.

Introduction

Computer is a general-purpose device that can be programmed to carry out a set of arithmetic or logical operations automatically. It is a system that is made up of input unit, processing unit and output unit (Leeners, 2016). There are different types of computers based on size and function. They include Analog, Digital, Hybrid, Super Computers, Mainframe Computers, Mini Computers and Micro Computers are classification of computer based on sizes. Others

are based on functions which include: Desktop computers, In-car computers, Game consoles, Laptops, notebook, Palmtop computers, Tablet computer, Smartphones, smart books, Programmable calculator among others (Leeners, 2016). The advantages of computers in education primarily include: storage of information, quick data processing, audio-visual aids in teaching, better presentation of information, access to the internet and quick communication between students, teachers and parents. Students find it easier to refer to the Internet than searching for

information in books. The process of learning has gone beyond learning from prescribed textbooks. When it comes to storing and retrieval of information, it is easier done on computers than maintaining hand-written notes (Alake, 2018). Computers facilitate audio-visual representation of information, thus making the process of learning interactive and interesting.

Computer application software is an interface between the user of the computer and the operating system of the computer. This software allows an infinite number of uses for a computer. Computer applications include: Microsoft word, Spreadsheet, PowerPoint, Email, Internet. Microsoft word is a programme that allows students to create, edit, format and print document. Spreadsheets use a grid of cells arranged in numbered rows and letter-named columns to organize data manipulations like arithmetic operations. It has a battery of supplied functions to answer statistical, engineering and financial needs. In addition, it can display data as line graphs, histograms and charts. PowerPoint is an application package that consists of a number of individual pages or "slides". The "slide" analogy is a reference to the slide projector. PowerPoint provides numerous features that offer flexibility and the ability to create a professional presentation. One of the features provides the ability to create a presentation that includes music which plays throughout the entire presentation or sound effects for particular slides.

E-mail or Electronic Mail is a method of exchanging digital messages from an author to one or more recipients. Email servers accept, forward, deliver, and store messages. Neither the users nor their computers are required to be online simultaneously (Garthy, 2015). All these packages could be effective for teaching and learning process in all subjects including Business Education courses.

Business Education is a vocational course that

prepares students for employment and/or continuing education opportunities in business through technical instruction in the classroom, experiential education in the laboratory, student internships, and through leadership and personal development by participating in student leadership organizations (Jimoh, 2018). In a specific term, Business Education involves teaching students the fundamentals, theories, and processes of business. In tertiary institutions, it comprises of business law, office practice, accounting, word processing, shorthand, typewriting, commerce, economics, computer appreciation, company law, secretarial duties and business communication. At the tertiary level, business education is divided into two broad options namely, Secretarial Studies or Office Education and Accounting option.

Secretarial Education courses include Office Practice, Commerce, Shorthand, Typewriting, Business mathematics, Marketing, Principles of Management, Computer appreciation, Labour economy, Office Technology and Management, Word processing, Teaching practice, SIWES, Business communication and Information technology. Accounting Education courses are: Financial accounting, Public sector economics, Principles of management, Advanced financial accounting, International economics, Auditing, Business communication, Taxation, Business statistics, Business law, Company law, Entrepreneurship, Economics, Teaching practice and SIWES. All these courses can conveniently be taught using Microsoft word, Excel, PowerPoint, Internet and Email (Hosler & Mary, 2017).

Ojo (2018) opined that the conventional mode of teaching Business courses are lecture, tutorial, case studies, practical, simulations, excursions and other appropriate methods. Practical method is compulsory for teaching Shorthand, Typewriting and Word Processing. With the advent of computer technology, several computer

applications are now used for teaching in place of the conventional method (Ojo, 2018). Hosler and Mary (2017) opined that Microsoft word, Excel/Spread sheet, PowerPoint, email, Internet are effective computer applications for teaching different subjects including Business Education courses. The accounting option of Business Education finds spreadsheet package as very essential in that it aid accounting, mathematics and graphical presentation. Secretarial Studies option will embrace Microsoft word which can be used for practicing typewriting, word processing and other courses. (Ojo, 2018). PowerPoint application package is very useful for presentation and teaching, be it large or small classroom. Through projector, the PowerPoint displayed content against a white board. Leeners (2016) added that PowerPoint cannot be ruled out in any class including Business Education classes.

Garthy (2015) and Blaisse (2016) added that learning with computer applications enhances students' assimilation rate and create friendly learning environment. Through e-learning, email, tutorials, game applications of learning make learning more interesting and fun. There is a great deal of interaction between the students and computer application.

Nunes and Cunha (2017), Harmelen (2017), Robert (2018), Vanderdonckt and Berquin (2019) opined that human-computer interaction is focused on user interface requirements. These approaches use graphical models such as use cases, task diagrams, or sequence diagrams in order to obtain user interface specifications. The essence of these methods is the design of user interfaces with their visual components and the identification of the window activation sequence. The ultimate goal of these approaches is to obtain design models at the solution space level.

The theoretical framework relevant to this study will be based on the cognitive theory of multimedia learning developed by Richard-Mayer

(2019) which states that people learn more deeply from words, pictures and sound than words alone. This attribute can mainly be found in computer system. During the teaching-learning process, students learn faster from multimedia devices than the conventional way of learning. Computer's ability to development students' creativity; can be related to the unique capability of computers to create highly interactive learning environments, to provide a variety of learning activities, to offer independence to users in the process of learning, to improve learners' self-confidence as a result of security in learning, and to encourage learners and motivate them to learn in a better way with technology-based tools.

Statement of the Problem

The Federal government through TETFund is currently providing computers (laptops) to colleges of Education lecturers and training them through Digital Bridge Institute (DBI) to ensure that classroom lecturers are computer literate. Despite this laudable development, it seems that many lecturers are yet to make use of computer for instructional delivery. Many Nigerian teachers appear unable to find effective ways to use computer technology in their classrooms or any other aspect of their teaching and learning activities. The duration of DBI computer training programme for lecturers; appears to be too short so as to make a meaningful impact on them.

The inability of lecturers to effectively use computer for teaching and learning processes have been traceable to lack of computer training by lecturers (Akande, 2016). A careful observation of the activities of lecturers will reveal that majority of them are not computer literate and cannot utilize computer facilities in teaching. The problem of computer technology illiteracy is a serious one in all strata of Nigerian educational system be it primary, secondary schools and tertiary institutions (Makiwa, 2018). From studies, it appears that lecturers do not have

basic computer appreciation skills and this may be a hindrance to efforts at achieving the use of computers for educational purposes in schools.

The academic performance of Business Education students from 2022 to 2025. 2023, 18% passed all course while 82% failed one or more courses. 2024. 23% passed all courses without failing while 77% failed one or two course (Departmental comprehensive result book 2024 edition).

From the above record, students' performance in Business Education courses is on the decline which may lead possibly to the production of ill-equipped N.C.E graduates. Could this low performance of students be connected to traditional method of teaching business education courses? This study seeks to find out if designated computer applications may improve the performance of Business Education Students in Federal College of Education (Technical) Ekiadolor Benin Edo State.

Purpose of the Study

The purpose of this study was to examine the effect of Designated Computer Applications on the academic performance of Business Education students in Federal College of Education (Technical) Ekiadolor Benin Edo State.

Specifically, the study sought to determine the:

- (1) difference in mean performance of students taught with Designated Computer Applications and those taught using traditional method.
- (2) Difference in pre-test and post-test scores of students taught with designated computer applications.
- (3) Difference in mean performance of male and female students taught with designated computer applications.
- (4) Difference in mean performance of Accounting and Office Education students taught with designated computer applications.

Research Question

The following research questions guided the study.

- 1) What is the mean difference in performance between students taught with designated computer applications and traditional method of Teaching?
- 2) What is the difference in pre-test and post-test scores of students taught with designated computer applications?
- 3) What is the mean difference in performance between male and female students taught with designated computer applications?
- 4) What is the difference in mean performance of Accounting and Office Education students taught with designated computer application?

Hypotheses

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

- 1). There is no significant difference in performance between students taught with designated computer applications and traditional method of Teaching
- 2). There is no significant difference in pre-test and post-test scores of students taught with designated computer applications
- 3). There is no significant different in performance between male and female students taught with designated computer applications
- 4). there is no significant different in the performance of Accounting and Office Education students taught with designated computer application.

Method

The design for this study is quasi experimental. It employs pre-test and post-test. According to Barua (2015), Quasi-experiments aim to demonstrate causality between an intervention

and an outcome that do not use randomization. Quasi experimental design is appropriate for this study in that the study is aimed at finding the academic outcome of Business Education students taught with designated computer applications and those taught with traditional method.

The group was non-randomized involving the control and experimental groups. The control group was taught using the traditional method of teaching while the experimental group was taught using designated computer applications. This is symbolically represented as follows:

	Pre-test	Treatment	Post-test
Control Group:	O_1	X_1	O^2
Experimental Group:	O_1	X_2	O

Where O_1 is the pre-test

Where O_2 is the post-test

Where X_1 is the traditional method

Where X_2 is the experimented method, using designated computer applications

The instruments that were used to gather data for this study was cognitive achievement test and lesson note that was used to teach the students. The lesson note was designed by the researcher based on the topic covered. (Business Communication) while cognitive achievement test was drawn from the instructional objectives of the topic covered.

Treatment plan:

The designated computer applications which include ms word, and ms power point was used to teach the experimental group while the traditional method of teaching were used to teach the control group. The experiment lasted for 6 weeks. Lesson note developed by the researcher guided the experimental process while the cognitive achievement test was used for data collection.

The pre-test were administered on both the experimental and control group before the commencement of the experiment. After the pre-

test, the regular class teachers in the two schools were used to start the experiment. In the control group the regular class teacher carried on with the teaching all through but with the guidance of the researcher. For the experimental group class, the class teacher was allowed to carry out the experiment because the class teacher can use the designated computer applications.

The reliability of the instrument was determined using test-retest. The instrument was administered to 30 Business Education Students in College of Education Agbor Delta State. This College operates the same N.C.C.E curriculum as the ones to be used for this study. Two weeks later, the instrument was re-administered to the same students. Their scores for both administrations were correlated using Pearson Product-Moment Correlation Coefficient statistics of alpha level of .05. The (r) value obtained was .72. This according to Udoh (2016) is reliable.

The cognitive achievement test was administered to all the students (both control and experimental) before and after the treatment with the help of the class teacher. The marking and scoring were done by the researcher in order to generate the pre-test and post-test scores.

T-test and ANCOVA (Analysis of Covariance) were used to test the null hypotheses at .05 level of significance. ANCOVA was used to test

hypothesis 1 while t-test was used to test hypotheses 2 to 4. Mean and standard deviation were used to answer the research questions. The purpose of ANCOVA is to compare two or more linear regression lines. It is a way of comparing the Y variable among groups while statistically controlling for variation in Y caused by variation in the X variable; while t-test is to compare two groups treatment versus control groups.

Table 1: mean performance between students exposed to Designated Computer Applications and those exposed to traditional method of teaching.

Group	n	Mean	SD	Mean Difference	Remark
Control	81	20.84	4.036	1.26	Higher
Experimental	81	22.10	3.488		
Total	162	42.94	3.811		

Data presentation in Table 1 showed that the mean performance of those exposed to Designated Computer Applications and Traditional method of teaching are 22.10 and 20.84 respectively. The mean difference of 1.26 reveals that the students exposed to Designated

Results

Research Question 1: what is the mean difference in performance between students taught with designated computer applications and traditional method of teaching?

Data collected to address Research Question 1 were summarized as in Table 1.

Computer Applications performed higher than those exposed to traditional method of teaching.

Research Question 2: what is difference in pretest and post test scores of students taught with designated computer applications?

Table 2: Mean difference in pretest and post test scores of students taught with designated computer applications.

Test	Mean	SD	Mean Difference	Remark
Pretest	21.25	3.397		
Post test	22.10	3.488	.85	Higher
Total	43.35			

Data presentation in Table 2 showed that the mean difference in pretest and post test scores of students taught with designated computer applications are 21.25 and 22.10 respectively. The mean difference of .85 revealed that the post test scores of students exposed to designated

computer applications is higher than the pretest.

Research Question 3: what is the difference in performance between male and female students taught wit designated computer application?

Table3: Difference in performance between male and female students taught wit designated computer application.

Sex	Mean	SD	Mean Difference	Remark
Male	20.94	4.007		
Female	22.12	3.472	.535	Higher
Total	43.06			

Data presentation in Table 3 showed that the mean difference in performance between male and female students taught with designated computer applications are 20.94 and 22.12 respectively. The mean difference of .535 revealed that the female students taught with designated computer applications performed

better than their male counterparts.

Research Question 4: what is the difference in performance of accounting and office practice students taught with designated computer applications?

Table 4: Difference performance of Accounting and Office Education students taught with designated computer application.

Option	Mean	SD	Mean Difference	Remark
Accounting Education	21.97	3.365		
Office Education	21.35	3.917	.552	Higher
Total	43.32			

Data presentation in Table 4 showed that the mean difference in performance of year two and year three students taught with designated computer applications are 21.97 and 21.35 respectively. The mean difference of .552 revealed that the year two students taught with designated computer applications performed

slightly better than their year three counterparts.

Hypotheses 1: there is no significance difference in performance between students taught with designated computer applications and traditional method of teaching

Table 5: The t-test analysis of mean performance between experimental and control group.

Group	n	Mean	SD	df	T-Value	P-Value	Decision
Experimental	81	22.10	3.488	160	2.125	.035	Significant
Control	81	20.84	4.036				
Total	162						

The results presented in Table 5 revealed that the t-value of 2.125 at degree of freedom (df) of 160 is significant when p-value is .035. Since the p-value is less than the alpha value of .05, the null hypothesis is rejected. This means that there is significant difference between the mean performance of students taught using designated

computer applications and those taught using traditional method of teaching.

Hypotheses 2: there is no significant difference in pre-test and post test scores of students taught with designated computer applications.

Data collected to address the Hypothesis are

summarized as in Table 6

Table 6: The t-test analysis of mean performance of the pre-test and post-test scores of students taught using designated computer application.

Test	n	Mean	SD	df	T-Value	P-Value	Decision
Pre-test	81	21.05	3.397	80	-2.268	.026	Significant
Post- test	81	22.10	4.488				
Total	162						

The results presented in Table 6 revealed that the t-value of -2.268 at degree of freedom (df) of 80 is significant when p-value is .026. Since the p-value is less than the alpha value of .05, the null hypothesis is rejected. This means that there is significant difference between the pre-test and

post-test scores of students taught using designated computer applications.

Hypotheses 3: there is no significant difference in performance between male and female students taught with designated computer applications.

Table 7: Analysis of the difference in mean performance between male and female students taught with designated computer application.

Sex	n	Mean	SD	df	T-Value	P-Value	Decision
Male	90	20.94	4.007	160	-1.976	.50	Not Significant
Female	72	22.12	3.472				
Total	162						

Data presented in Table 7 shows that the t-value of -1.976 at df of 160 is not significant when p-value is .050. Since the p-value is greater than the alpha value of .05, the null hypothesis is retained. It therefore means that there is no significant difference in the performance of male and female students taught with designated computer

applications.

Hypotheses 4: there is no significant difference in the performance of Accounting and Office Education students taught with designated computer application

Table 8: Analysis of the difference in mean performance of Accounting and Office Education students taught with designated computer applications.

Option	n	Mean	SD	df	T-Value	P-Value	Decision
Accounting Education	130	21.97	3.365	160	.827	.410	Not Significant
Office Education	32	21.35	3.917				
Total	162						

Data presented in Table 8 shows that the t-value of .827 at df of 160 is not significant when p-value is .410. Since the p-value is greater than the alpha value of 0.05, the null hypothesis is retained. It therefore means that there is no significant difference in the performance of Accounting and Office Education students taught with designated computer applications.

Discussion of Findings

In this study, four research questions were raised and four hypotheses formulated and tested at .05 level of significant. Findings from the analysis carried out on research question one and hypothesis one clearly indicated that there is significant difference between the mean performance of students taught using designated computer applications and those taught using traditional method of teaching. The students taught with designated computer applications performed higher than those taught with traditional method of teaching. This finding supports an earlier study conducted by Willis and Willis (2017) that the use of computer applications for teaching students have shown significance improvement on students' performance. Ohonba (2018) supported that students receiving lectures with computer facilities often perform better than students learning in a conventional way. Atagana (2017) argued that students learn and perform better when they are taught with what they are used to. Matty (2015) supported Atagana (2017)

Findings from analysis conducted on research question two and hypothesis two also revealed that there is significant difference between the pre-test and post-test scores of students taught using designated computer applications. This finding corroborates the study of Samad (2018) that when students are exposed to new teaching facilities, their scores are usually higher than the previous score if well conducted.

The result obtained in research question three and hypothesis three also showed that there is

no significant difference in the performance of male and female students taught with designated computer applications. This is in line with the Awoderu (2018) that the gender of the students has no influence on academic performance. The findings also supported the position of Ohonba (2018) that the gender of a student does not count when operating or using computer system for educational purposes.

The outcome of the analysis carried out on research question four and hypothesis four indicate that there is no significant difference in the performance of year two and year three students taught with designated computer applications. This finding agrees with Willis and Willis (2017) that students' academic levels have no influence on their performance when they are exposed to same academic activities. Jackson (2020), Makiwa (2018), that the students' levels of academic program do not affect their academic outcome.

Conclusion and Recommendations

It is evident from the study that there is significant difference in the performance of students taught using designated computer applications than those taught with conventional method of teaching. It therefore means that, business education students' performance will be higher when computer applications are used for teaching the students.

The outcome of the study has indicated a positive effect on the academic performance of business education students taught with designated computer applications over those taught with conventional method of teaching. These findings therefore have serious implications for students, teachers/lecturers, college management and curriculum planners on teaching business education courses in colleges of education. In the first instance there is need to review the curriculum to include designated computer applications for teaching business education courses and also, the

teacher/lecturers should be trained and retrained on how to use designated computer applications for teaching and learning purposes.

In view of what this study revealed, the following recommendations were made:

- 1) Government at various levels should endeavor to provide colleges of education with modern computer laboratory and internet facilities.
- 2) Teachers/lectures should be trained on the use of computer facilities for teaching.
- 3) Business education lecture rooms should be equipped with necessary facilities that will aid the use of designated computer applications.
- 4) Business education students should be encouraged to embrace the use of computer applications for their academic use.

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