



BUSINESS EDUCATION RESEARCH, Vol. 1. No 1.
Print - ISSN: 2734-2719, Online: 2734-2727

BER homepage/publisher: <https://www.ber.org.ng>

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Cite this article as: Mohammed, K. & Rose Kangyang Dalyop Jah, R. K. D. (2025). Effect of Flex Learning Strategy on Business Education Students' Academic Achievement and Knowledge Retention in Principles Management in Colleges of Education in North East, Nigeria. *Business Education Research*, 1(1); 92-101.

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Effect of Flex Learning Strategy on Business Education Students' Academic Achievement and Knowledge Retention in Principles Management in Colleges of Education in North East, Nigeria

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Abstract

The study determined the effect of flex learning strategy on students' academic achievement and knowledge retention in Principles of Management in Colleges of Education in North-East, Nigeria. The study was guided by two research questions and two hypotheses. The study adopted quasi experimental design with non-equivalent control group of intact classes. The researcher used an intact class of 69 (300 level students) made up of 27 male students and 42 females from the selected colleges of education in the North-East Nigeria. The instrument used for data collection was Principles of Management achievement test and Principle of Management Knowledge Retention Test, PMKRT. Kuder – Richardson (K – R 20) was used to determine the internal consistency of the PMAT items. After two weeks of administering PMAT, the same test was reshuffled and used as PMKRT. The statistical result of the calculated KR20 is .8199. For the knowledge retention, the Pearson Product Moment Correlation Coefficient was 0.9. Data generated from the pre-test, post-test and retention test were analyzed using mean and standard deviation. ANCOVA Analysis of Covariance was used to answer research hypothesis. The findings of the study revealed higher mean achievement and retention among N.C.E III Business Education students taught Principles of Management using flex learning strategy compared to the performance of students taught Principles of Management using lecture method. The flex strategy was found to have positive implications in improving practice for NUC and Business education management staff. It was recommended that the schools should adopt both flex learning strategy in the teaching and learning activities to facilitate academic achievement and retention of their students.

Keywords

Flex learning strategy, Business Education, Academic Achievement, Knowledge Retention.

Introduction

The development of a nation depends to a large extent on the level of technological advancements in the field of education. These advancements significantly impact the teaching and learning processes. Similarly, progress in science and technology, particularly through information and communication technology (ICT), has brought about changes in colleges of education, especially in the business education curriculum (Phoebe, 2021). This shift also enables teachers to create forums for students to interact using applications such as Instagram, WhatsApp, LinkedIn, YouTube, Facebook, Skype, and Google, among others. These platforms allow students to address issues that impede instructional activities, particularly in teaching Principles of Management in colleges of education (Mohammed, 2020).

Colleges of education are post-secondary institutions primarily established to train teachers who will teach in primary and junior secondary schools. According to Phoebe (2021), colleges of education in Nigeria are tertiary institutions designed to provide specialised training for aspiring teachers, particularly in Business Education.

Business Education is an essential component of youth preparation for life and career. According to Mohammed (2020), Business Education is a programme of study consisting of three units: Office Technology and Management (OTM), Accounting, and Marketing Education. Business Education students in colleges follow a curriculum that includes core concepts in Principles of Management, covering definitions of management, principles and functions of management,



organisational structure, communication within organisations, conflict management, change management, and personnel management. A strong foundation in Principles of Management enables students to develop competencies in organisational management, making them self-reliant and relevant in today's managerial landscape.

Anita (2015) noted that rapid changes in businesses and industries—such as evolving processes, production methods, distribution, and marketing of goods and services, as well as new modes of information transmission—necessitate an effective reorganisation of the teaching and learning process for Principles of Management. This reorganisation should place greater emphasis on the use of ICT facilities in educational service delivery. Several studies have highlighted a general decline in the standard of education and persistent failures among Business Education teachers and students in public colleges of education in North-Eastern Nigeria (Magaji, 2017). Some researchers, such as Usman (2018), have attributed this decline to ineffective teaching methods and strategies employed by lecturers. They argue that many traditional approaches used for instructional delivery fail to encourage student participation, treating students as passive recipients of knowledge.

Mohammed (2020) stated that students' poor academic achievement and knowledge retention in Principles of Management is largely due to teacher-related factors, such as instructional incompetence and poor student engagement. This has resulted in the production of graduates who are ill-equipped to meet the demands of the 21st-century labour market. Ali, Tariq, and Topping (2021) criticised the lecture method, which predominates in tertiary institutions, including colleges of education, for failing to achieve the desired learning outcomes. While some scholars advocate for a complete overhaul of the education system, others suggest exploring alternative instructional approaches (Davis, 2019). Educators are now integrating mixed curricula, including artificial intelligence software, multimedia-assisted instruction, and even inverted curricula. These developments highlight the necessity for innovative teaching strategies, such as flexible learning, to complement traditional methods when teaching Principles of Management.

The flex classroom strategy is an instructional model in which content is delivered online, allowing students to progress individually based on their needs, while the teacher remains on-site to provide support. Although most instruction takes place online, the teacher facilitates student engagement through small-group instruction, group projects, and individual tutoring. Moran and Myringer (2019) explain that the teacher's role is to guide students and facilitate classroom activities by encouraging group discussions, assigning

small-group projects, and coaching students individually.

According to Mohammed (2020), implementing flex learning requires the teacher to develop lesson materials based on an instructional plan. The teacher then delivers the lesson to students via an agreed multimedia package. Following the introduction of the lesson, students actively participate in activities that help them achieve the lesson objectives in terms of both content mastery and time management. Flex learning allows students to take ownership of their learning, employing online resources as the backbone of their studies. According to the Higher Education Academy, as cited in Davis (2019), flex learning determines the 'when, where, and how' of the learning process while maintaining a learner-centred approach. Gerstein (2015) describes the flex classroom as an environment where students collaboratively engage with content, work through problems, and advance their understanding, ultimately improving their academic achievement.

Academic achievement refers to the knowledge and skills students successfully acquire in the course of learning. According to Nwazo (2015), business education students' academic performance and retention levels are negatively impacted by the continued reliance on traditional teaching methods. Dörnyei, Achiever, and Scholer (2010) defined academic achievement as the degree to which a task is accomplished through effort, perseverance, and skill. Similarly, Phoebe (2017) described academic achievement as the extent to which students attain success in their academic pursuits, as reflected in their behaviour, skill development, punctuality, assertiveness, and social competencies. Thus, academic achievement measures the extent to which students or institutions accomplish short- or long-term educational goals while ensuring proper knowledge retention.

Knowledge retention, on the other hand, refers to the ability to recall and apply previously learned concepts. Fink (2013) defined knowledge retention as the ability to reproduce learned content when required. Mohammed (2020) similarly described it as the capacity to remember acquired knowledge. Al-Lahham (2016) observed that using concrete objects as illustrations enhances information retention and fosters a positive attitude towards learning. Consequently, retention refers to the ability to retain and recall information when needed.

A lecturer's knowledge level and understanding of instructional approaches are crucial factors in students' learning and knowledge retention (Entwistle, 2013). The teaching method adopted by a lecturer can either enhance or hinder students' achievement, retention, and interest in a subject (Yusuf & Afolabi, 2010). Aside from teaching methods, researchers argue that students' academic achievement



and retention are also affected by poor instructional strategies employed by teachers.

Statement of Problem

Information and Communication technologies make it possible for lecturers and learners to share knowledge and information by establishing a meeting forum where students would be meeting occasionally on applications which enable them to address problems that hinders instructional activities particularly of Principles of Management students of business education departments in Colleges of Education in North East. Business education should use this approach to enhance academic achievement in order to produce a set of student that can manage business enterprises and address the emerging business challenge.

Regrettably, the problem of low academic achievement and retention in Principles of Management recorded by business education students and in the North Eastern colleges of education is becoming serious. This situation is rather becoming worrisome and as such has become a matter of concern to academicians, employers of labour, parents and teachers. Based on this degrading situations, lecturers' pedagogies, strategies and tools used in teaching students have clearly shown to be defeated. If the present befalling situation is allowed to continue, there is going to be an incompetent set of NCE graduates who cannot take the present academic and business activities to a greater level.

Based on this premise, the researcher therefore established the effects of flex learning strategy on the academic achievement and knowledge retention of business education students in Management Principles in the North East Nigeria.

Purpose of the Study

The general purpose of the study was to determine the effect of flex learning strategy on business education students' academic achievement in Principles of Management in colleges of education in the North East Nigeria. Specifically, the study determined:

1. The mean achievement scores of Business Education students taught Principles of Management using flex learning strategy and those taught using lecture method in colleges of education in North-East Nigeria
2. The mean knowledge retention scores of Business Education students taught principles of management using flex learning strategy and those taught using lecture method in colleges of education in North-East Nigeria.

Research Questions

The following research questions guided the study:

1. What is the mean achievement scores of Business Education students taught Principles of Management using flex learning strategy and those taught using lecture method in colleges of education in North-East Nigeria?
2. What is the mean knowledge retention score of Business Education students taught principles of management using flex learning strategy and those taught using lecture method in colleges of education in North-East Nigeria?

Hypotheses

The following null hypotheses was tested at 0.05 level of significance.

Ho1: There is no significant difference between the mean achievement scores of Business Education students taught Principles of Management using flex learning strategy and those taught using lecture method in colleges of education in North-East Nigeria.

Ho2: There is no significant difference between the mean knowledge retention scores of Business Education students taught Principles of Management using flex learning strategy and those taught using lecture method in colleges of education in North-East Nigeria.

Design of the Study

The study adopted quasi-experimental research design. Quasi-experimental design, according to Kimko (2010) is a research design which uses non-randomized group and these options occur when the researcher cannot randomly sample and assign the subjects and, in this case, intact or pre-existing group was used.

Experimental Group	O1	X	O2	O3
	—	—	—	
Control Group	O1	O2	O3

KEY: O1 = Pre-tests, X1 = Treatment for Exp. Group I, O2= Post-tests, O3 = Retention test

Area of the Study

The study was conducted in the two colleges of education in the North East. Aminu Sale College of Education, Azare, Bauchi State and Federal College of Education Yola, Adamawa State. The schools were chosen because they have computer facilities to conduct the experiments.



Population of the Study

The population for the study was 69 Business education students offering Management Principles. Of the 69, 27 students comprising 18 males and 9 females are from Aminu Sale College of Education Bauchi State. While 42 students comprising 29 males 13 females from FCE Yola. Aminu Sale College of Education was the experimental group while FCE Yola served as the control group.

Sampling and Sampling Technique

The sample technique used is the multistage sampling. The researcher used stratified sampling as well as random balloting to select the 2 public college of education that offer (Office Technology and Management Options) as a course namely: Federal Colleges of Education Yola and Aminu Sale Bauchi State College of Education. The purpose of the researcher for the selection was because the schools have business education department which have state of the art equipment such as model offices and well-equipped computer laboratories. The sample for the study was an intact class of 69 students from the 2 colleges of education.

Instrument for Data Collection

The instruments that was used for data collection were Principles of Management Achievement

Test (PMAT) and Principles of Management Knowledge Retention Test (PMKRT). The PMAT was a 40-item multiple choice objective questions with options of A, B, C, and D, with only one option as the correct answer. To obtain the Principles of Management Knowledge Retention Test (PMKRT), the researcher shuffled the PMAT.

Reliability of the Instrument

In order to ascertain the reliability of the research instrument, a trial testing was conducted at the Department of Business Education, FCE Gombe for the experimental group and Kashim Ibrahim College of Education which is outside the study area.

Method of Data Analysis

To analyse data collected, mean and standard deviation were used to answer the 2 research questions that guided the study, while the null hypotheses were tested using Analysis of Covariance (ANCOVA) at 0.05 level of significance.

Results

Research Question One

What is the difference between achievement scores of students taught Principles of Management using flex method and those taught using lecture method in colleges of education in North-East Nigeria?

Table 1: pre-test and post-test Mean Achievement scores of Business Education students taught Principles of Management using Flex method and those taught using lecture method

Groups	Pre-test			Post-test		Mean Gain (Mg)
	N	\bar{x}	SD	\bar{x}	SD	
Flex (Treatment)	27	18.26	6.36	54.79	13.17	36.53
Lecture (Control)	42	23.40	7.90	54.21	12.61	30.81

Table 1 shows that the treatment group taught Management Principle with Flex method had a mean achievement score of 18.26 and standard deviation of 6.36 in the pre-test and a mean achievement score of 54.79 and standard deviation of 13.17 in the post-test, making a pre-test, post-test mean achievement gain of 36.53. The control group taught Management Principle with Lecture method had a mean achievement score of 23.40 and standard deviation of 7.90 in the pre-test and a mean achievement score of 54.21 and standard deviation of 12.61 in the post test, making a pre-test, post-test mean achievement gain of 30.81. With these

results, the students taught Management Principle using Flex instructional method had a higher mean achievement score than those taught with lecture methods in the Management principle academic achievement test

Research Question Two

What is the difference between mean knowledge retention scores of Business Education students taught Principles of Management using flex learning method and those taught using lecture method in colleges of education in North-East Nigeria?



Table 2: Pre-test and post-test Mean Knowledge Retention scores of Business Education students taught word

Groups	N	Post-test		Retention		Mean L (MI)
		\bar{x}	SD	\bar{x}	SD	
Flex (treatment)	27	54.79	13.17	49.24	8.06	5.55
lecture (Control)	42	54.21	12.61	69.76	11.29	15.55

Table 2 shows that the treatment group taught Management Principle with Flex Learning had a mean retention score of 54.79 and standard deviation of 13.17 in the pre-test and a mean retention score of 49.24 and standard deviation of 8.06 in the post-test, making a pre-test, post-test mean loss of 5.55. The control group taught Management Principle with lecture methods had a mean retention score of 54.21 and standard deviation of 12.61 in the pre-test and a mean retention score of 69.76 and standard deviation of 11.29 in the post test, making a pre-test, post-test mean achievement gain of 15.55. With these results, the students taught

Management Principles with Flex instructional method had a lower mean knowledge retention than lecture methods in the Management principle retention test.

Test of Hypotheses

Ho1: There is no significant difference in mean achievement scores of Business Education students taught Principles of Management using flex learning strategy and those taught using lecture method in Colleges of Education in North East Nigeria.

Table 3: Summary of Analysis of Covariance (ANCOVA) for Test of Significance of Methods and Interaction Effect of Gender and Method on Students' Academic Achievement in Management Principles

Tests of Between-Subjects Effects						
Source	Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2068.381a	6	344.730	1.519	.180	.084
Intercept	8934.604	1	8934.604	39.370	.000	.282
Pretest	471.166	1	471.166	2.076	.153	.020
Method	58.353	2	29.177	.129	.880	.003
Gender * Method	1377.831	2	688.916	3.036	.052	.057
Error	22693.974	100	226.940			
Total	84159.000	107				
Corrected Total	24762.355	106				

a. R Squared = .084 (Adjusted R Squared = .029)

The data in Table 3 show F-calculated values for method and interaction effect of treatments and gender on students' achievement in marketing. For the method (flex learning), the F-value is .126 with a significance of F at .880 which is greater than .05. The null hypothesis was therefore accepted at .05 level of significance. With this result, there was no significant difference between the effect of flex learning method and gender on students' academic achievement in Management Principle.

Findings of the Study

The students taught Management Principle with Flex Learning instructional methods had higher mean achievement scores than those students taught with lecture methods.

The students taught Management Principle with Flex Learning instructional methods had higher knowledge retention than those students taught with lecture methods

Table 3 shows that the null hypothesis was accepted at .05 level of significance. With this result, there was no significant difference between the effect of flex learning method and gender on students' academic achievement in Management Principle.

Discussion of Findings

The findings of the study are organised and discussed according to the research questions answered and hypotheses tested.

The findings from the first research question show that students taught Principles of Management using the Flex Learning method had higher mean



achievement scores than those taught using conventional methods. This finding aligns with the work of Chikaodili, Okibo, and Chinelle (2021), which revealed that students taught chemistry using a cooperative learning strategy and those taught using inquiry-based learning had significantly higher achievement scores than those taught using conventional methods.

The findings from the second research question showed that students taught Principles of Management using the Flex Learning method had higher knowledge retention than those taught using conventional methods. This finding is consistent with the work of Chika et al. (2021), which revealed that students taught chemistry using a cooperative learning strategy had significantly higher knowledge retention scores than those taught using the lecture method.

The test of the first hypothesis showed that the F-value for the method was 0.129, with a significance of F at 0.880, which is greater than 0.05. The null hypothesis was therefore accepted at the 0.05 level of significance. This result indicates that there was no significant difference between the effect of the Flex Learning method and the lecture method on students' academic achievement in Principles of Management. Consequently, the first hypothesis was retained, confirming that there was no significant difference between the mean achievement scores of students taught Principles of Management using the Flex Learning method and those taught using the flipped method.

This finding aligns with earlier findings by Mohammed (2020), whose study revealed that there was a significant difference between the mean achievement scores of students taught Word Processing using blended learning and those taught using inquiry methods. However, this study contradicts the findings of Khader Khader (2016), whose research revealed a significant difference between the arithmetic means of students' performance in science achievement as a whole due to the teaching method, gender, and the interaction between them.

Conclusion

Based on the findings, it was therefore concluded that flex learning strategy is more effective than lecture method in improving student's achievement and knowledge retention in Management Principles. It was also found the students taught using flex learning have higher retention levels than students taught with lecture methods. It was also recommended that the NCCE should consider curriculum review such that it can integrate blending of teaching methods.

Recommendations

Based on the findings of this study, it is recommended that:

1. Business Education Lecturers should make effective use of flex learning strategy in teaching the concept of Business Education courses such as management principles.
2. Curriculum planners should ensure the incorporation of flex learning strategy in the teaching and learning of not only management principles but also Business Education courses. This will help to make learning of the courses easier, thereby facilitating academic performance of students.
3. Government in conjunction with other professional bodies like NUC should endeavour to organise and sponsor regular workshops, seminars and conferences to train Business Education teachers on the use of flex learning teaching strategy.

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