

**RELATIVE EFFECTIVENESS OF BLENDED LEARNING MODEL ON TERTIARY INSTITUTION
STUDENTS PERFORMANCE IN RESEARCH METHODS AND STATISTICS COURSE**

BY

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ABSTRACT

This study investigated the relative effectiveness of blended learning instructional model on tertiary institution student's performance in General Education Research Methods. Two research hypothesis guided the study. Apre-test/post-test control group quasi experimental research design was adopted in the study. The population of the study was made up of 110 two hundred level students drawn from the tertiary institutions in Anambra State. Two instruments used in the study were Research Methods Student Achievement Test (RMSAT) and Blended Learning Model (BLM). Mean Standard deviation and t-test were used in the analysis of data. The results of the study showed that blended learning instructional model was -more effective in enhancing student's achievement in Research Methods than conventional teaching method. The findings also revealed that there was no significant difference between the academic achievement of male and female students taught with blended model in the experimental group as shown by their mean ratings. Based on the findings, recommendations were made among others that government should, supply sufficient JCT teaching equipment, organize computer, conferences, trainings, seminars and workshops for lecturers in tertiary institutions on the use of blended learning instructional model and online learning in the teaching of various courses especially General Education Research Methods. Adequate power supply by both the government and school authorities was also recommended for effective use of the JCT facilities by lecturers for effective service delivery.

Keywords: blended learning model, research methods, and tertiary institution.

Introduction

Learning is one of the most fundamental concepts in counseling psychology. It is very important for teachers, students, parents and for all those who are interested in understanding controlling and predicting behaviour. (Chukwurah, 2009). Learning can be seen as a relatively permanent change in the behavior, thoughts or feelings of individuals as a result of experience. Students and learners are exposed to different experiences in schools and when these experiences leads to a change in their behavior and ways of reasoning one can say that learning has taken place. There are different methods and techniques in education used by teachers to bring about learning experiences that will make the learner achieve maximally in schools. The traditional teaching model of learning is face to face learning whereby the teacher is in front of the students imparting knowledge to them. The internet revolution of the modern world makes it necessary for teachers and counsellors to make a paradigm shift from the old method of teaching to a blended learning model. Blended learning is a combination of different learning techniques (Ndirika, 2015). Many education techniques such as presentations, demonstrations, answer-question brainstorming, case study, co-operative learning and problem centered learning can be conducted in on-line based environments. Young in Abidoeye (2015) describes blended learning as a method of instruction that combined on line with face to face learning activities that are integrated in a planned, pedagogically valuable way and where some of the face to face is replaced by online activities. Wilson & Smilanich in Okafor (2016) see the blended learning as the implementation of the most effective learning solutions in a coordinated way to achieve the desired learning targets. Infact, it can be explained from the authors definitions that blended learning model is used by teachers to blend the perfect aspects of web-based learning and the traditional face to face learning for students maximum academic achievement.

General Education Research methods (Ed 341) as a course of study hi tertiary institutions has a unique and distinct problem for its search for solution to problems or answers to questions. As a course of study or discipline it follows a systematic scientific approach in finding solutions to educational problems. Findings from educational research lead to development and refinement of educational theories.

This course teaches students how to conduct research, statistics and computer usage and it is a General Education course for all students both at degree and NCE levels. Often times students carryover this course and some even fail to graduate as a result of not being able to pass the Education research method course. George (2000) once stated that technology plays a vital role in helping learners and teachers meet higher standard and perform at increased levels by promoting alternative and innovative approaches to teaching and learning. Singh and Reed in Y apici and Akbayin (2012) defined blended learning as the transfer of "right" skills to the "right" person at the "right" time by matching the "right" learning technologies with the "right" learning style for the purposes of achieving the learning objectives. Other researchers stated that blended learning has certain advantages such as flexibility and comfort in the learning, environment, increase in the level of learning, increase in performance in learning, increase in interest in learning, good quality interaction and low cost (Garnham & Kaleta, 2002; Young 2002; Collins 2003). Aladejen2009, applied the blended learning model in teaching the subject of evolution, the results obtained showed that there was a significant difference between the post test scores in favour of the experimental group,

Furthermore, gender disparities have been noticed and observed by various research lecturers as concerning performance and achievement in academic achievement. Research findings, show that male students are better academically than female students (Adebayo in Abidoye 2015). However there are a good number of studies that revealed that gender differences in academic performances does not exist (Abidoye, 2009). To have a better academic achievement and positive attitude towards Ed 341 and Edu 214 General & statistics courses Research methods there is need for lecturers to have a positive attitude and a sound knowledge and information background, to use blended learning model which is a combination of techniques to bring about learning. Because there is dearth of researches on the use of blended learning instructional model on Research Methods and Statistics, course delivery, the researcher has taken up the challenge to conduct this study.

Statement of the problem

Observations have shown that General Education Research Method and Statistics (ED 341) and (EDU 214) are characterized with the use of face to face traditional method of lecturing and teaching which does not give room for active participation and improvement in the academic achievement of students in the course. In other words most students fail to graduate in time because Research Method which is seen as the ¹¹ "almighty" Research could not be passed by them. Therefore the need for a paradigm shift from the traditional method of face to face teaching to employment of modern web-based technological instructional approach is paramount for maximum students achievement. The study therefore state the problem thus will there be relative effectiveness of blended learning instructional model on tertiary institution students' academic achievement in General Education Research Methods and statistics course in Anambra State.

Hypothesis: the following null hypothesis were formulated to guide the study;

1. There is no significant difference in the academic achievement of students taught with blended learning instructional model approach and their counterparts taught with traditional teaching method as shown by their mean ratings.
2. There is no significant difference in the academic achievement of male and female students taught with blended learning instructional model as shown by their mean ratings.

Methods

The study adopted pre-test post-test control group, quasi-experimental research design. Experimental research design allows for manipulation of the independent variable which is blended learning in order to determine its effects on the dependent variable which is academic achievement. The population of the study was made up of 110 two hundred level students drawn from Nwafor Orizu College of Education Nsugbe, Nnamdi Azikwe University, Awka, Chukwuemeka Odumegwu Ojukwu University Igbariam and Fed College of Education, Umunze all in Anambra State, Two departments were used in each of the four tertiary institutions selected for the study. The schools were selected because each of the schools have a well-equipped ICT center with internet facilities, the schools all mount Education Courses of which research methods and statistics is one of the General Education Course. The students were later sub-divided into experimental and control groups. Two instruments were used in the study, 57 in the experimental group while 53 were in the control group. Two instruments were used in the study and they Research Methods are Student Achievement Test (RMSAT) and Blended Learning Model (BLM).

Research Methods Students Achievement Test.

This instrument has a response format. It aims at measuring the acquisition level of students on the Research method course contents especially on problem identification. The instrument has two sections (A & B). Section A consists of personal data of the respondents while section B consists of 20 multiple choice items A to D. The instrument was validated by experts two from the department of curriculum and instruction and two experts for department of counseling psychology of Nnamdi Azikiwe University Awka.

Their comments and observations helped to modify some of the items and eliminated some completely. The instrument was later administered on trial pretest to 25 students from fed polytechnic Oko to ensure reliability. The reliability coefficient of 0.86 was obtained using Cronbach Alpha.

Blended Learning Model - This consists of research method course contents linked with website and which can be assessed in the internet, through computer system. It is a stimulus response model. The model was validated by two experts in the computer departments in Nwafor Orizu College of Education, Nsugbe. Two lecturers also from the department of curriculum and instruction also went through the model. The model was reviewed based on their comments and corrections. Before commencement of the treatment, both the students and lecturers have been trained on how to make use of computer and the internet facilities. The students were given a username and a password had already been put in the computer system. The course lecturers and other Research assistants were duly trained for the purpose.

Application: The application was carried out Educational research in the first semester of 2015/2016 academic year. In the research method and statistics course for the content unit of typologies of Participants were selected based on their performance in their 100 level according to their results from their heads of departments. The application process lasted 10 weeks. In order to create the online dimension of the blended learning environment, a website was designed for the purpose of the study. Before the application commenced, the pretest was applied to both groups. Also before the application, the students in the experimental group were trained in two course hours by the researcher. During this training, first the students in the experimental group were informed about the blended learning model and about what they were expected to do. Secondly, the website was introduced to the experimental group students through the internet with the help of a computer connected to a projector in the classroom. They were demonstrated in practice how to sign up the website and what to pay attention to while following up the activities, students were provided with annotated films taking them through the steps of data entry and analysis using SPSS. Blended learning model used in this study entailed lecture on the typologies of educational research using a combination of electronic technology assisted materials with face to face lecturing in interactive manner with counseling psychology students in the research class. In other words a balance between the traditional method of face to face platform and online virtual learning environments was established while lecturing so as to achieve the stated objectives of the course. The lecturer started first with placing student in small groups of 6-8 depending on the number of available computer on campus. The lesson started as large class discussion session on the concept and importance of Educational Research with lots of probing questions from lecturer to guide or direct students discussion. In addition the students were given an assignment (homework) that they were supposed to search for before coming to the classroom. They were asked to bring the homework to the classroom and also through online. It was also announced to them that they were expected to allocate at least 45mins a week to carry out the activities presented through internet. The research assignments were presented and the course content was taught in the face to face setting through question and answer, discussion methods. The lecturer evaluated the activities via the internet with the help of a computer in Research and Statistics course; a quiz to be responded, a forum environment for discussing the points that the students did not understand was designed. In the control group, the course contents were taught via the face to face learning in the classroom environment.

THE APPLICATION SCHEDULE

WE EXPERIMENTAL GROUP

EK

1. Training for introducing blended learning.
2. Application of research methods achievement test and blended learning model.
3. Through the website designed as appropriate to die blended learning model, the research methods content concept of educational research and importance; typologies of educational research were taught
4. The topic educational research process was taught via the blended learning model.
5. The topic problem identification in research was taught via blended learning model.
6. The topic roles of educational research was taught via the blended model learning.
7. The topic techniques and instrument for data collection was taught using blended learning model.
8. The topic qualities of a good educational problem were taught using blended learning model.
9. The topic psychometric properties of research instruments was taught using blended model.
10. The students were taught the steps of data entry and analysis using SPSS.

CONTROL GROUP

Same

With the help of the traditional teaching methods (presentation, questions & answer and discussion) the course content of the concept of Educational research and importance, typologies of educational research were taught
The educational research process was taught via the face to face method.
The topic problem identification was taught via the traditional teaching method.
The topic roles of educational research was taught via the face to face method.
The topic techniques of instrument for data collection was taught via the traditional teaching method.
The topic quality of a good educational problem was taught using traditional face to face method.
The topic psychometric property of research instruments was taught using face to face method.
The students were taught the steps of data entry and analysis SPSS displayed on the traditional black board in a face to face encounter.

The lesson page was designed as appropriate to the weekly outline thus before coming to the classroom in line with the contents of the research methods and statistics course, the students were able to examine the contents to be taught that week using CD-ROMS which contained the topics of discussion. The students were able to follow up the topics through. Summary page, presentations in video format, animations and different websites related the course of study. In addition, there were parts for image galleries, a dictionary and quizzes and a form.

Furthermore the system allowed determining the students' sign and sign out time for the website, the activities they carried out and the duration of the time the students spent on the activities. Such information provided the lecture with the opportunity to direct the students on the next applications to be made. Findings:

Hypothesis 1: There is no significant difference in the academic achievement of students taught with blended learning instructional model and their counterparts though with the traditional teaching method.

Table 1: t-test analysis of post test scores of both experimental and control groups

Instructional strategies	N	Mean x	SD	df	t-vale	Sig
Experimental group	57	13.63	2.58	1.08	4.93	0.00
control group	53	11.19			2.62	

From the table above, the calculated probability value is less than the declared probability value of 0.5. The null hypothesis which states that there is no significant difference between the-academic achievement of students taught with blended learning instructional approach and those students taught with traditional face to face teaching method, is hereby not accepted. This implication is that there is a significant effect of blended learning approach on student academic achievement in research methods and statistics course.

Hypothesis 2: There is no significant difference between the academic achievement of male and female students taught with blended learning instructional approach as shown by their mean ratings.

Table 2: t-test analysis of post-test scores of male and female students taught with blended learning instructional approach.

Gender	N	Meanx	SD	df	t-value	Sig
Male	22	13.68	1.99	55	0.15	0.908
Female	35	13.60	2.91			

Table 2 above indicates that there is no significant difference ($t/55 = 0.15$, $P > .05$) between the post test scores of male students of the experimental group ($x = 13.68$) and that of the female students ($x = 13.60$). Hence the null hypothesis 2 which states that there is no significant difference between the academic achievement of male and female students taught with blended learning instructional approach as shown by their mean ratings is hereby accepted. This implies that there exists no significant gender difference between the academic achievement of student in the research methods and statistics course when taught with blended learning instructional model.

Discussion of Findings

The main aim of this study was to determine the relative effectiveness of blended learning instructional model on tertiary institution student's academic achievement in General Education Research Methods and Statistics course. The results of the study as shown, from hypothesis 1 revealed that the blended learning instructional model contributed more to the student academic achievement in Research Methods and statistics course than traditional lecturer approach. This finding is in tandem with those of earlier studies Aladejiera (2009) and Abidoje (2015). These studies both agreed and concluded from their investigations that blended learning and web based environment learning approaches were more effective in enhancing student's academic achievement than the traditional face to face lecturer method.

Research hypothesis 2 also revealed that male students taught with blended learning model achieved slightly by higher in Research Method and Statistics course than their female counterparts, however the hypothesis of no significant difference was accepted because the difference was not significant. The findings agrees with previous study of Abidoje (2015), who found out that gender difference in academic performance does not exist when students are exposed with blended learning in geography course. However Awoniyi (2000) disagreed with the findings of the present study because his study revealed that there was a significant gender difference in the use of internet facilities and computer based learning teaching.

Conclusion

Based on the findings and discussion the following conclusions were drawn in the study Blended learning instructional model is effective in enhancing student's achievement in General Education Research Method & Statistics course as compared with traditional face to face lecturer method. Secondary there is no significant difference in the academic achievement of male and female students taught with blended learning instructional model.

Implication for Education and counseling. This study is important to education and counseling since it demonstrated that blended learning is effective in tertiary education as well. Therefore an effective teaching and learning can be achieved by blending the advantages of the web environment with face to face interaction the courses which have more visual elements such as Research Methods and statistics course. It is also important to tertiary institution, counsellor who will adopt blended leaning model in counselling to help students achieve maximally and minimum the society and phobia towards Research Methods & statistics course teachers and lecturers who will use the blended learning instructional model should develop their computer internet literacy rate. This could be achieved through in service training courses to be held in such web-supported applications.

Recommendations:

The following recommendations are made for improvement.

1. Government should supply sufficient ICT teaching equipments, organize computer conferences, seminars and workshop for tertiary institution lecturers, on the use of blended learning

- instructional model and online learning in the teaching of various courses especially General Education Research Methods and Statistics course.
2. Adequate power supply by both the government and school authorities must be made available for the electrical appliances to be used in teaching and learning of General Education Research Methods and Statistics.
 3. Both male and female students should be encouraged to develop interest in the Research Methods and Statistics course since both are equally good in the course

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