

Blended and non-blended learning strategies on students' academic achievement in Internet and electronic libraries in Anambra State, Nigeria

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Abstract

The study aimed at investigating the effects of blended strategies on students' academic achievement in Internet and Electronic libraries course. Two research questions and two hypotheses guided the study. The research adopted quasi-experimental design of pre-test post-test control group. A sample of sixty-six (66) students from two multistage selected public tertiary institutions out of a population of three hundred and ten (312) third year students from four public tertiary institutions in Anambra State, Nigeria was used for the study. The instrument for data collection was the Internet and Electronic Libraries Achievement Test (IELAT) with the reliability value of 0.86 using Kuder-Richardson (KR-21). The research questions were analyzed using mean and standard deviation while hypotheses were tested using Analysis of Covariance (ANCOVA). The result of data analysis showed that blended learning strategy enhanced students' academic achievement in electronic libraries. Blended learning is more effective in enhancing female students' academic achievement in electronic libraries. It was recommended that electronic libraries lecturers should adopt blended learning strategy as an effective strategy for teaching electronic libraries, Lecturers in tertiary institution should endeavor to attend workshops, seminars to acquire instructional pedagogical strategy skills.

Keywords: Blended and non-blended learning strategies, academic achievement, internet and electronic libraries, Anambra State, Nigeria

Introduction

The use of computer as an instructional aid in education has played a vital role in teaching and learning process. It has changed the process of teaching, learning and research. Many universities in south east, Nigeria are now adopting the use of computer in administration of the university, management of the university and in teaching and learning process. Library education should not be an exception. There is need to give the students the right education which is full of practical, activity oriented and increasing learning outcomes. However, it is necessary to provide the students with materials needed for improvement of skill and scientific knowledge for the students to be able to compete with other fellow students globally. In order to achieve this, objective, the required tools and competent lecturers needed to be employed in our universities should be engaged. Currently, computer is used everywhere, business today rely on computer technology to assist them in almost every area of corporate life. (Okekeosisi & Okigbo(2018). Pujari(2015) cited in

Okekeosisi and Okigbo, (2018) listed the importance of computer in the society as follows: improves human health, helps in mean of communication, help in information delivery, computers could be used in the classrooms to improve students' acquisition of basic skills in specific subjects areas, reduce the drudgery of learning by blending text with multimedia, enable teachers to strengthen their mode of content delivery (Tokpah. 2008; cited in Egara, Nzeadibe & Okeke, 2018).

As technology advances, computer could be used as a device to improve and enhance learning in internet and electronic libraries classroom. "The more we learn about the importance of computers, the more computer literate we become and the more chances we will have of advancement in mostly any field" (Okekeosisi & Okigbo, 2018). This is why it has become necessary to include blended and non-blended as one of the effective method of teaching used in tertiary institutions.

Blended learning is a combination of classroom learning activities and

multimedia resources in teaching and learning process to improve students' academic achievement. Blended learning combines the best features of classroom interaction and multimedia based teaching method (Mbonu, 2018). The blended learning strategy is an interesting instructional strategy whereby students receive instruction through online, media/instructor or digital resources and traditional based classroom method. Mbonu (2018) opined that blended learning strategy involves the effective combination of different modes of lesson delivery, models of teaching and styles of learning which are exercised in an interactively meaningful learning environment". Patterson (2016) highlighted the seven most important benefits of blended learning as follows; flexibility, effectiveness, efficiency, cost-effectiveness, efficiency, personalization, extended reach and covers all learning styles.

Internet and electronic libraries is a library and information science (LIS) course that deals with the study of electronic resources, online resources access, operations, integrated search and management. It occupies an indispensable place in library education. The concept of Internet and electronic libraries if well taught and understood can be applied in tackling information retrieval problem and imbibe conceptual change on students learning the course. It is a tool which people -students, researchers and librarians - can use to find information for themselves. The method of delivery of the subject itself using blended and non-blended learning strategy will help to boost the interest and academic achievement of the students. Internet and electronic libraries is also known as Electronic Libraries (EL) course.

The use of computer in teaching and learning of Internet and electronic libraries will make the course lesson more

interesting and encouraging. The constant use of conventional method to teach electronic libraries to the detriment of practical, power point exposure, computer exposure, project strategy, simulation and multimedia exposure has made the course very abstract, uninteresting and complex.

Despite the importance of Internet and electronic libraries in LIS education, it has been found out that students do not perform well in the course. The continuous use of conventional methods, in the teaching of the course without practical, demonstration has contributed to a large extent, to this problem of poor academic achievement in Internet and electronic libraries. The teaching of electronic libraries in universities generally appear be through lecture method, giving the students note to copy (note taking) chalk or white board illustrations and demonstration (Nwosu & Ndanwu, 2020).

In the bid to curb poor academic achievement of students in Internet and electronic libraries, there is need to incorporate an innovative teaching method which is learner-centered. An example of this innovative teaching method is blended learning strategy.

Academic achievement has to do with performance outcomes that indicate the degree to which an individual has accomplished specific objectives in instructional environment such as school, colleges and university (Steinmayr, Meibner, Weidinger, & Wirthwein, 2017). Academic achievement is also the knowledge attained and skills developed in school subjects (Parveen, Noor-Ui-Amin & Nazir, 2013). Parveen et al (2013) stated that "academic achievement means the achievement of students in the academic subjects in relation to their knowledge attaining ability or degree of competence in school tasks usually measured by standardized tests and expresses in grades or units based on pupils performance".

Gender is considered as a very pertinent factor in relation to academic achievement (Tahir, Ghayas & Adil, 2012). Tahir et al (2012) further stated that majority of studies on gender differences in academic achievement suggest that girls are high achievers. Gender is the state of being male or female (typically used with reference to social and cultural differences rather than Biological ones (Ugwuanyi, Mwantok & Mbara, 2018). They further opined that Gender is a social or cultural determinant that varies from place or from culture to culture". Aniodoh and Egbo (2013) cited in Mbonu (2018) revealed in their study that female students scored significantly higher than the male students in science subjects. Also Efolum (2007) cited in Mbonu (2018) revealed that male students are academically higher than their female counterparts. From these reports above, it could be seen and concluded that the issue of gender in relation to academic achievement is inconclusive. There is need therefore to investigate the comparative effects of blended and non-blended learning strategies on male and female students' academic achievement in Internet and electronic libraries.

Lecture method of teaching is a non-blended method of teaching. It is among the conventional method of teaching. The lecturer does all the talking while the students listen." Lecture method is a teaching method where an instructor is the central focus of information transfer" (Ugwu, Chukwunenye & Anozie, 2017). The students are not given opportunity to contribute their ideas in lecture method of teaching. The teacher, as this authority figure, does most of the talking while students" involvement in this teaching method is just to listen and sometimes pen down some notes if necessary during the lecture (Okeke, 2016).

"A mix of teaching methods and materials of direct learning or face-face in

class and e-learning by online methodologies in formal education as called blended learning has been popular in educational practice (Listiana & Jaharadak, 2019). In blended learning Teachers/instructors are responsible to maintain a good cooperation between students and customize methodologies usage for the respective classroom" (Listiana & Jaharadak, 2019). if we are to realize the potential of blended learning in higher education, then further research into academic practice and relevant academic development is essential (Torrissi-Steele, 2013).

"Blended learning is important because it breaks down the traditional walls of teaching, ones that don't work for all students and now with access to present-day technologies and resources we can tailor the learning experience for each student" (Giarla, 2016). Blended learning has been shown to improve student achievement in secondary school. Ceylanand Kesici, (2017) investigated the effect of blended learning to academic achievement of middle school students in south west part of Turkey and found that blended learning environment had generated a significant difference in students' academic achievement on behalf of experimental group. Alsalhi and Al-Qatawneh (2019) investigated the effect of blended learning on the achievement of ninth grade students in science and their attitudes towards its use. Alsalhi and Qatawneh (2019) reported statically significant differences between the experimental groups and the control groups, in favor of the experimental group.

Blended learning, according to Oweisand Wang (2018), "is a modern educational strategy that has replaced e-learning gradually in most educational institutions". Blended learning "combines forms of direct and indirect online learning and usually involves the Internet and Intranet, while indirect learning occur

simultaneously within traditional classes" (Oweis, & Wang, 2018). Hurix (2019) enumerated different types of blended learning models such as: online, rotation, flexible, online lab, personalized blended model, self-blended model and face-face learning. He further enumerated advantages of blended learning such as increase student interest, learning by doing, self-pacing learning and greater interaction within the instructors.

There have been studies on effect of blended learning on academic achievement of students. Utami (2017) conducted a study on effect of blended learning model on senior high school students'. The study adopted experimental research design with randomized control group Pre-test-post-test design. Sixty-three (63) students attending information and communication technology course were used as sample. Thirty-one (31) were in the experimental while thirty-two were in the control group. The result obtained show that the learning result of experimental group is higher than the learning result of control group.

A study by Alsalhi and Al-Qatawneh (2019) on effect of blended learning on the achievement of ninth grade students in science and their attitudes towards its use. The study adopted quasi experimental design. One hundred and twelve (112) students participated in the study. The result revealed that there were statistically significant differences between the experimental and the control groups, in favor of the experimental group. Obiedat, Eddeen, Harfoushi and Al-Hamarsheh (2014)'s study on effect of blended learning on academic achievement of students in university of Jordan revealed that there is a significant and positive impact of blended learning on academic achievement of the students in university of Jordan. Oweis and Wang (2018) carried out a study on the effect of using blended learning method on students' achievement

and motivation to learn English in Jordan. The study sample comprised of thirty four (34) students who were selected purposefully and distributed into experimental and control groups. The Analysis of Covariance (ANCOVA) was used to test the hypothesis at 0.05 level of significance. The result obtained using analysis of covariance at 0.05 level of significance revealed that statistically significant differences in achievement exist between the two groups, indicating that the experimental group performed better than the control group. This means that the use of blended learning strategies improved students' academic achievement in English.

Kebualemang and Mogwe (2017) conducted an empirical study on effects of blended learning on tertiary students and student's perceptions on the approach in Botswana. Qualitative approach was used. Two hundred (200) participants from university of Gaborone campus were the sample used for data collection. Results obtained revealed that blended learning model has a positive impact on the students, and students' perceptions on BL mode were also positive.

Purpose of the study

The main purpose of the study was to investigate the effect of blended and non-blended learning strategies on students' academic achievement in Internet and electronic libraries course. Specifically the study sought to:

1. Determine the effect of blended and non-blended on Internet and electronic libraries.
2. Examine the effect of blended and non-blended on mean academic achievement scores of male and female Internet and electronic libraries students.
3. Investigate the interaction effects between gender and teaching method on the students' academic

achievement in Internet and electronic libraries.

Research questions

The following questions are answered in the study:

1. What is the difference in the mean academic achievement scores of students' taught with blended learning strategy and those taught with non-blended learning strategy as measured by Internet and Electronic Libraries Achievement Test (ELAT)?
2. What are the effects of blended learning strategy on academic achievement of male and female students in electronic libraries?

Hypotheses

The following hypotheses are tested at 0.05 level of significance in the study:

1. There is no significance difference between the mean achievement score of students taught with blended learning strategy and those taught with Non-blended method, as measured by the Internet and Electronic Libraries Achievement Test (IELAT).

Methods

The quasi-experimental design was adopted in the study. This design was adopted because the respondent could not be randomized. Intact classes were therefore used. The population of the study consisted of all three hundred and ten (312) third (3) year library and information science students drawn from four public tertiary institutions that offer library and information science in Anambra State as thus: Nnamdi Azikiwe University, Awka; Chukwuemeka Odumegwu Ojukwu University; Nwafor Orizu College of Education and Federal College of

Education (Technical) Umunze. Multistage sampling technique was used to select two universities (Nnamdi Azikiwe University, Awka and Federal College of Education {Technical} Umunze) out of the four existing public tertiary institutions that offer library and information science programme in Anambra State. The third stage, using a flip of a coin one of the schools was chosen as the experimental group and the other, the control group. Third (3rd) year students were chosen because the topics taught were part of their work for the semester.

The two institutions (Federal college of education (Technical) Umunze, and Nnamdi Azikiwe University, Awka) were selected because they have functional computer and electricity. The two institutions serve as experimental and control classes.

Internet and Electronic Libraries Achievement Test (IELAT) with fifty multiple choice items, was the instrument used for the study. The IELAT instrument was developed by the researchers. Face and content validity of the instrument was ascertained using three experts, of Library and Information Science and Measurement and Evaluation Unit. Corrections and suggestions arising from these experts were used to review the instrument before it was used. Kuder Richardson (KR-21) was used to obtain the reliability, an internal consistency co-efficient of 0.86 was obtained.

The experiment group were taught using blended learning technique while the control groups were taught the same topic using the non-blended learning technique. The administration of pre-test was done before the commencement of the treatment (teaching). The actual teaching was done in the second third fourth and fifth week while the post-test was administered to the students in the sixth week. The scores (data) obtained from the pre-test and post-test were collected and analyzed using

mean and analysis of covariance (ANCOVA) was used to test the hypotheses at 0.05 level of significance.

Results

The results of the study are presented according to the research questions and hypotheses.

Research question 1

What are the effects of blended learning strategy and non-blended learning strategy of teaching on academic achievement of tertiary institution students in electronic libraries?

Analysis of data in relation to research question two is presented in Table 1.

Table 1: Pre-test and post-test mean interest scores of students taught electronic libraries using blended learning strategy and those taught with non-blended learning strategy

Source Variation	of N	Pre-test Mean	Post-test Mean	Gained Mean
BLS	32	49.41	67.06	17.65
NBLS	34	42.82	55.00	12.18

From the data in Table 1, the experimental group (those taught with blended learning strategy) obtained higher mean academic achievement score of 49.41 with post-test mean score of 67.06 in Pre-test and post-test respectively. While the control group representing those taught with the non-blended learning strategy, had a mean score of 42.82 and 55.00 respectively in Pre-test and post-test. However for each of the groups, the post-test and pre-test of the experimental group were greater than the pre-test and post-test of the control group.

This implies that the achievement score of students taught using blended learning strategy (experimental group) appeared to be higher than those taught using non-blended learning strategy.

Research question 2

What are the effects of blended learning strategy on academic achievement of male and female students in electronic libraries?

Analysis of data in relation to research question two is presented in Table 2

Pre-test and post-test mean academic achievement scores of male and female students taught electronic libraries using blended learning strategy

Source Variation	of N	Pre-test Mean	Post-test Mean	Gained Mean
Male	14	51.57	69.14	17.57
Female	18	47.72	65.44	17.72

In Table 2, it be seen that the male students taught electronic libraries using blended learning strategy have pre-test interest mean score of 51.57 and post-test mean score of 69.14 with gained mean

17.57.while the female students had Pre-test interest mean score of 47.72 and post-test mean score of 65.44 With gained mean 17.72, With gained mean score of 17.72, blended learning is more effective

in enhancing female students' academic achievement in electronic libraries.

Hypothesis 1

There is no significant interaction effect on gender and computer aided instruction on

the interest of the students. The test of hypothesis one is presented in Table 10.

The test of hypothesis two is presented in Table 3.

Table 3: Analysis of Covariance of the significant effect of gender, and their interactions on the academic achievement of the students in electronic libraries

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	12510.303 ^a	4	3127.576	40.111	.000
Intercept	717.133	1	717.133	9.197	.004
Gender	27.973	1	27.973	.359	.551
Method	569.431	1	569.431	7.303	.009
Post-test	11505.721	1	11505.721	147.561	.000
Method * Gender	4.675	1	4.675	.060	.807
Error	4756.318	61	77.972		
Total	156463.000	66			
Corrected Total	17266.621	65			

Table 3 shows the statistically significant effect of teaching method on the academic achievement of the students in electronic libraries $F(7.303)$, with associated probability value of 0.009 was obtained. Since the associated probability value of 0.009 is less than 0.05 set as level of significance, the null hypothesis H_0 is rejected. Thus, the null hypothesis which states that there is no significant difference between the mean achievement of students taught electronic libraries using Blended learning strategy and those taught using Non-blended learning strategy is rejected. In other words, there is a significant difference in the mean academic achievement of students taught electronic libraries using blended learning strategy and those taught using non-blended learning strategy in favour of those taught with BLS.

Summary of the findings

From the analysis, the following findings were made:

1. Blended Learning Strategy is effective in enhancing female students' achievements in electronic libraries
2. There is no significant difference in the post-test achievement mean scores of students taught electronic libraries using blended learning strategy and those taught with non-blended learning strategy.
3. There is significant difference in the post-test achievement mean scores of male and female students taught electronic libraries using blended learning strategy.

Discussion

Table I revealed that the students taught Internet and electronic libraries using blended learning strategy scored higher than those taught using conventional

(modified lecture method). This is an indication that blended learning strategy enhanced students' academic achievement in electronic libraries than conventional modified lecture method. One of the variables investigated in the study was the effect of gender (Female and Male) on the use of blended learning strategy in Internet and electronic libraries. Result in table 2 show that blended learning strategy is more effective in enhancing female students' academic achievement in electronic libraries.

Conclusion

Based on the findings of this study, the following conclusions were made:

The teaching and learning of internet and electronic libraries in tertiary institutions using conventional method/traditional method is ineffective because it does not enhance academic achievement for all students and does not contribute meaningful to learning of the course. Blended learning strategy is a good teaching method for ensuring enhanced academic achievement. Blended Learning Strategy (BLS) enhanced students' academic achievement in electronic libraries. There was a significant difference in mean academic achievement scores of male and female students taught Internet and electronic libraries using blended learning strategy and those taught using non-blended learning strategy. The female students had higher mean academic achievement scores than their male counterparts.

On the basis of the findings of this study, the following recommendations are made:

- i. Electronic libraries lecturers should adopt blended learning strategy as one of the methods used in teaching difficult concepts in Internet and electronic libraries.
- ii. Electronic ;libraries lecturers should be trained and retrained on

different ways of using blended learning strategy in teaching electronic libraries concept.

- iii. There should be remedial programme for male students in the use of blended learning strategy to enable them operate at the same level with their female counterparts.
- iv. Library and information science educators and curriculum planners should incorporate blended learning strategy as one of the methods for teaching electronic libraries in Tertiary institutions in Nigeria

Educational implications of the study

The findings of this study have implications for adoption of method of teaching by lecturers particularly in electronic libraries teaching and learning in tertiary institutions in Nigeria. The need for innovative and interesting instructional strategy cannot be overemphasized. Since this study revealed that Blended learning strategy proves effective in enhancing Internet and electronic libraries academic achievement irrespective of gender, It is imperative to encourage lecturers to adopt appropriate instructional strategy that are innovative and interesting.

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Angela Ifeoma Ndanwu, Oliver T. Onwudinjo and Victoria Ezejiofo: Blended and non-blended learning strategies on students' academic achievement in internet and electronic libraries in Anambra State, Nigeria

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Angela Ifeoma Ndanwu, Oliver T. Onwudinjo and Victoria Ezejiifo: Blended and non-blended learning strategies on students' academic achievement in internet and electronic libraries in Anambra State, Nigeria

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