Effects of Blended Learning Instructional Approach on Secondary School Students' Academic Achievement in Computer Studies

Ezeanyika, Vivian Anayochukwu & Okigbo, Ebele Chinelo
Department of Science Education,
Nnamdi Azikiwe University, Awka, Nigeria

Abstract

The study investigated the effect of blended learning instructional approach on secondary school students' achievement in computer studies. Two research questions guided the study and three null hypotheses. The quasi-experimental design was adopted, specifically the pretest-posttest non-equivalent control group was used. The population of the study was 5,880 senior secondary school year two (SS2) computer studies students in Onitsha education zone, of Anambra state. A sample of 112 SS 2 students was involved in the study. The instrument for data collection was Computer Studies Achievement Test (CSAT) validated by three experts. The reliability of the instrument was established using Kuder-Richardson Formula 20 which yielded internal consistency value of 0.79. The data obtained were analyzed using mean, standard deviation and analysis of covariance. The findings of the study revealed among others that there was significant difference between the mean academic scores of the students taught computer studies using blended learning instructional approach and those taught using conventional method in favour of blended learning. It was recommended that workshops should be organized for computer studies teachers by state ministry of education on how to use blended learning instructional approach in teaching.

Keywords: Achievement, Computer, Blended-Instruction

Introduction

Nigeria as a country has been working towards development of her economies in order to participate at the global level like other countries in the world. Thus, the country has continually developed its human capacities and technological infrastructure especially in computer literacy and operational skills. Computer literacy is so important that it finds application in virtually all aspects of human endeavour.

The necessity of the computer literacy drove the government of Anambra state to prioritize information communication technologies by supplying computers and other technological accessories to secondary schools in the state (Anambra state ministry of education, 2015). The Anambra state ministry of education in 2015 also organised an in-service training on technology literacy and better teaching and learning for teachers. The vision of the training was competency in computer operation and digital literacy. It is expected that when the teachers become skilled in the area of computer applications, they can impact this knowledge to students especially through computer studies.

Computer studies is a subject at the secondary school level of education targeted at equipping the students with the skills of efficient computer operation. Teaching and learning of computer studies have consistently generated interest among scholars over the years. This is because of the importance of computers to humanity. In the contemporary society, employment into any job demands that applicants should be computer savvy (Toshalis & Nakkula, 2012). This is because the learning of computer studies has become imperative In every society if the citizens are to cope with the fast changing development in science and

technology. The importance of computer studies to man accounted for its inclusion in secondary school curriculum.

The most important aspect of computer science is problem solving, an essential skill for life. Students could study the design, development and analysis of software and hardware used to solve problems in a variety of business, scientific and social contexts. Computer studies in schools plays important role in students' career development. Computer with the internet is the most powerful device that students can use to learn new skills and more advanced version of current lessons (Nweke, 2018). Computers help students to draw the creativity on the computer such as by using windows paint program. Likewise, if students are taking English classes or poem writing, then they can do it by typing in English on computers. If students are taking mathematical classes, they can use microsoft excel application to solve and understand questions. Thus, given the importance of computer studies, educational goals all around the institutions strive to ensure that students are taught the basics of computers and internet (Vanderlinden, 2014).

Despite the relevance of computer studies in development of the nation, society and individuals, analysis of school performance in computer studies examination results show that students have not improved in the achievement and skills in computer studies. Reports on students' achievement in computer studies by the WAEC Chief Examiner as contained in the WAEC website at www.waeconline.org.ng. The WAEC Chief Examiner's report in computer studies for five year period (2014-2018) shows that in 2014 students had little understanding of basic programming and related acronyms. In 2015, the chief examiner reported that students manifested high level confusion between algorithm and flowchart and students achievement did not improve compared to 2014. The Chief Examiner's report (2016) revealed that students lacked the ability to write basic instructions and student' achievement did not differ from their performance in the previous years. Thus, from 2014 to 2016, students' achievement was stagnant, without any improvement. According to the chief examiner's report (2017), students' performance in computer studies was slightly lower than that of the performance in 2016 and the students avoided questions on programming according to the chief examiner's report in 2018.

Research reports indicate that many reasons account for students' lack of improvement in achievement in computer studies. Among these are poor teaching approach and poor learning environment or non-functional computer laboratory (Olunloye, 2010), and lack of confidence in the subject by students. In a heterogeneous class where students of different abilities are taught together, only a few of the students achieve high scores in tests. This, therefore, calls for computer studies educators to intensify efforts in research to proffer solution that will ameliorate the situation especially through recourse to more innovative instructional approaches.

Instructional approaches employed by teachers are one of the most important areas that researchers have put their searchlight. This is because it can easily be manipulated to bring positive changes in learners. According to Olunloye (2010), teachers should improve their teaching methods in order to enhance better understanding and application. Thus, there is need to explore approaches that will greatly improve students' achievement in computer studies. This goes to say that the conventional teaching approach alone may be deficient in meeting the needs of the majority of learners.

The conventional teaching approach is described as teacher centred and didactic with learners' simply listening, copying notes, doing class work and doing assignments. The use of conventional method in teaching has been castigated across all subject areas. This is not because conventional method of teaching does not have benefits but because it is teacher-centred. One of the commonest benefit of conventional method is that it is good for teaching large number of students. It can also be used to cover large content areas. However,

conventional method does not allow students to take responsibility for their own learning as may be found in most innovative teaching methods such as the use of blended learning instructional approach.

Blended learning is an instructional approach that combines online digital media with traditional classroom methods (Graham & Dziuban, 2008). In literature, the terms blended learning, hybrid learning, technology-mediated instruction, web-enhanced instruction, and mixed-mode instruction are often used interchangeably. It requires the physical presence of both teacher and student, with some elements of student control over time, place, path, or pace. While students still attend brick-and-mortar schools with a teacher present, conventional classroom practices are combined with computer-mediated activities regarding content and delivery.

Blended learning approach, as will be used in this study involves the classroom teacher first teaching the students a particular concept and guiding them to immediately check it up online, watch videos or tutorials on the concept. Secondly, students will on the teacher's guidance, visit databases and websites that contain more information on what they are being taught. The students will be guided by the teacher to view or watch animations, simulations and illustrative tutorial via the internet on what has been taught. In the third stage, the teacher interacts with the students over what they are learning both in the classroom and via the internet asking the teacher questions on what they need further clarifications. After the questions and clarification, the teacher explains the next content of the lesson using the same strategy as explained above.

Blended instruction is reportedly more effective in some subject areas such as English language than purely online classes (Halverson, Graham, Spring & Drysdale, 2012) and in mathematics (Ojaleye & Awofala, 2018). By using a combination of digital instruction and one-on-one face time, students can work on their own with new concepts which frees teachers up to circulate and support individual students who may need individualized attention. Teachers can now streamline their instruction to help all students reach their full potential. Proponents of blended learning like Caraivan (2011), Delialioglu and Yildirim, (2008) and Gambari, Shittu, Ogunlade and Osunlad (2018) argue that incorporating the asynchronous internet communication technology into teaching courses serves to facilitate a simultaneous independent and collaborative learning experience. This incorporation is a major contributor to student satisfaction and success in such courses. It may motivate the students to start learning about the concept beyond what the teacher has taught seeing that they can access information on their own. Blended learning therefore, arouses the interest and motivation to learn. More seriously, blended learning could improve students' achievement of learning giving their active participation in the learning process irrespective of gender.

Gender is a social phenomenon that defines masculinity and feminity. It depicts the sexual dimension of being either male or female. Gender difference in achievement in different subject area have always been reoccurring in research. Analysing the WAEC result of 2008, Uwaidiae (2008) reported that 7.32% and 6.42% of male and female students respectively obtained credit passes. Specifically, Abiam and Odok (2006) found no significant relationship between gender and achievement. Amelink (2009) also indicated that male students performed better in geometry and measurement among eight graders, while females performed better in numbers and operations. While Anusiuba (2018) found significant difference in the achievement of students in computer studies taught using animated media, studies by Nweke (2018) found no significant difference in the mean achievement scores of male and female students taught computer studies using the same animated media. Studies by Ojaleye and Awofala (2018) also found significant difference in the mean achievement scores of male and female students taught mathematics using blended learning and problem solving approach, whereas, Adepeko (2018) found no significant

difference in the mean achievement scores of male and female students taught geometry using blended learning. Therefore, there is need for more studies on instructional strategies that could enhance equal achievement among the male and female students.

Purpose of Study

The purpose of the study was to investigate the effects of blended learning instructional approach on secondary school students' academic achievement in computer studies. Specifically, the study determined the:

1. Difference between the mean achievement scores of students taught computer studies using blended learning instructional approach (BLIA) and that of those taught using conventional method.
2. Difference between the mean achievement scores of male and female students taught computer studies using BLIA.
3. Interaction effect of teaching methods and gender on students' achievement in computer studies.

Research Questions

The following research questions guided the study:

1. What is the difference between the mean achievement scores of students taught computer studies using blended learning instructional approach (BLIA) and those taught using conventional method?
2. What is the difference between the mean achievement scores of male and female students taught computer studies using BLIA?

Hypotheses

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

1. There is no significant difference between the mean achievement scores of students taught computer studies using BLIA and those taught using conventional method.
2. There is no significant difference between the mean achievement scores of male and female students taught computer studies using BLIA.
3. There is no interaction effect of teaching methods and gender on students' achievement in computer studies.

Method

The design to be adopted for the study is quasi-experimental, specifically the pre-test, post-test, non-equivalent control group design. The area chosen for the study is Onitsha education zone of Anambra state. The population of the study consists of 5,880 senior secondary school year two (SS2) computer studies students in Onitsha education zone of Anambra state (Source: Planning, statistics and research division, post primary schools services commission, 2019). The population comprised 2,723 male and 3,157 female computer studies students.

Total sample size for the study is 112 SS2 computer studies students obtained through a multi-stage procedure. The schools in the education zone were stratified according to the local government areas in which they were situated. Two local government areas out of three were selected using simple random sampling (balloting without replacement). In the two local government selected, the co-educational schools were listed out and one school each from the two local government areas was purposively selected. The choice of the coeducational school was because it took care of the gender variables in the study. The two schools obtained, were with a toss of coin, categorized into experimental and control groups. The experimental school

had 59 students (31 females, 28 males) while the control group had 53 students (33 females and 20 males).

The instrument for data collection is Computer Studies Achievement test (CSAT). CSAT consisted of 50 item multiple choice objective questions obtained from WASSCE past questions. A table of specification was used to draw up a pool of 50 items which was used as CSAT. This is to ensure that enough sample questions were drawn from each of the contents to be taught. Also, the CSAT was designed to generate information about the students' biography. Instructional plan using blended learning was also developed on the concepts to be taught. Computer studies achievement test (CSAT), the objective of the study and research questions and hypotheses along with the lesson plans were given to lecturers in the departments of science education, and educational foundations, Nnamdi Azikiwe University, Awka and one experienced secondary school computer studies teacher. The validators were requested to vet the instrument on the clarity of language, appropriateness for the students' involved and plausibility of the distractors. They were required to write retain (r), modify (m) or delete (d) against any question they wished the researcher to retain, modify and delete respectively. They were also requested to examine the lesson plan and its activities for level of language, suitability for the level of the students. Their corrections and recommendations were effected in the final copy of the instrument.

The reliability of the CSAT was established using Kudder-Richardson Formula 20 (KR-20). Kr-20 was chosen because it is a suitable reliability estimate for multiple choice objective test items that are dichotomously scored and with heterogeneous difficulty level. The instrument was administered once to 40 students in Nnewi and the generated scores were computed for reliability using kr-20. The coefficient of internal consistency obtained for CSAT was 0.79.

The experiment was conducted in two phases. The first phase dealt with the training of the research assistants and the second phase for the teaching of the students. The teaching of the students in the experimental and control groups was done by the trained regular computer studies teachers. The experimental group was taught using blended learning. For experimentation, the students were given pretest in the first week. No feedback was provided on the pretest and no corrections or revisions were made on the pretest. After the pretest, a special orientation on how to use the computer system for learning for the experimental group was organized for the students by the teacher with the assistance and close supervision of the researcher. After the exercise, the students were assigned a number from 1 to 7 and groups numbers 1 to 7 were created. All the students bearing number 1 were distributed across the 7 group and so do the students bearing number 2, 3, 4, 5, 6 and 7. In the subsequent weeks of the treatment, the students with numbers 1 withdraws to form a group, students with numbers 2 form another group and so on. In the third week, students with even numbers are scrambled to form 3 different groups while in the 4th week, students with odd numbers are scrambled with different groups constituted. Each group did not exceed a maximum number of 7. The essence of the grouping and group reshuffling is to ensure greater interaction among students, prevent students from selecting their friends as group members and allowing students the opportunity to be identified with a group where they can be active where their initial groups were not favourable.

In each group, the group members voted for an operator, a compiler and 2 group tutors. The groups were provided with computer and accompanying gadgets. For each lesson, the group operator operates the computer, the compiler types the group answers to the exercise for each lesson, and submit them via the teachers' email address that were provided. The group tutors ensures that each group member learns the lesson and facilitate further discussion among each group. The blended learning instruction consisted of the

teacher teaching the student in the conventional style first and then allowing them to go and study in their groups via interaction with online materials under the guidance of the teacher. The materials include video simulations and tutorials. The lesson was designed in such a way that students can pulse the exercise to ensure active engagement in a continual order. The lesson presented on the screen is embedded with sounds with different voice codings and some videos. The students in each group have to observe the screen as the operator handles the computer, the compiler compiling the group answers to be typed and submitted after the lesson and the tutors ensure that students among their groups with any confusion are cleared during the free times provided in the lesson. After the computer session, the teacher comes back to the class to interact with students over what they have learnt. After the sixth week, the teacher conducted a revision exercise in the sixth week for students to ask questions and posttest was given to the students immediately after revision. In the control group, the students were exposed to the same content using conventional method. A revision exercise was conducted for the students in the control group before the posttest.

Data relating to the research questions were analyzed using mean and standard deviation. Analysis of covariance (Ancova) was used to test the null hypotheses at 0.05 level of significance. The choice of Ancova is to take care of the initial group differences and to eliminate any imbalances the students may have before the experiment. The decision rule for the hypotheses was that whenever the probability value (p-value) is less than or equal to the significant value of 0.05, the null hypothesis is rejected, otherwise the null hypothesis is not rejected.

Results

Research Question 1: What is the difference between the mean achievement scores of students taught computer studies using blended learning instructional approach (BLIA) and those taught using conventional method?

Table 1: Mean Achievement Scores Of Students Taught Computer Studies Using BLIA And Those Taught Using Conventional Method

Group	N	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Gained Mean
BLIA	59	20.34	9.19	78.27	5.78	57.93
CM	53	18.68	8.33	50.19	4.04	31.51

Table 1 reveals that the students taught computer studies using BLIA has pretest mean achievement score of 20.34 and posttest mean achievement score of 78.27 with gained mean achievement score of 57.93, while those in the control group taught with conventional method has pretest mean score of 18.68 and posttest mean score of 50.19 with gained mean 31.51. The use of BLIA reduced the variation of score from 9.19 in the pretest to 5.78 in the posttest. There was a low score variation in the posttest of the cm group (4.04.85) compared to those taught using BLIA (5.78).

Research Question 2: What is the difference between the mean achievement scores of male and female students taught computer studies using BLIA?

Table 2: Mean Achievement Scores Of Male And Female Students Taught Computer Studies Using BLIA

Gender	N	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Gained Mean
Male	31	21.61	9.95	80.42	4.60	58.81
Female	28	18.93	8.21	75.89	6.09	56.96

Table 2 reveals that the male students taught computer studies using BLIA has pretest mean achievement score of 22.61 and posttest mean achievement score of 80.42 with gained mean achievement score of 58.81, while the females have pretest mean score of 18.93 and posttest mean score of 75.89 with gained mean 56.96. The use of BLIA reduced the variation of score among males more than among females.

Hypothesis 1: There is no significant difference between the mean achievement scores of students taught computer studies using blia and those taught using conventional method.

Table 3: ANCOVA Test Of Significant Difference Between Mean Achievement Scores Of Students Taught Computer Studies Using BLIA And Conventional Method

Source Of Variation	SS	Df	MS	F	P-Value	Decision
Corrected Model	22037.656[a]	2	11018.828	434.172	.000	
Intercept	81152.021	1	81152.021	3197.609	.000	
Pretest	19.466	1	19.466	.767	.383	
Method	21722.198	1	21722.198	855.913	.000	Sig
Error	2766.308	109	25.379			
Total	497744.000	112				
Corrected Total	24803.964	111				

Table 3 shows that at 0.05 level of significance, 1df numerator and 111df denominator, the calculated f is 855.913 with pvalue of .000 which is less than 0.05. Therefore, the null hypothesis was rejected. Thus, there is a significant difference between the mean achievement scores of students taught computer studies using BLIA and those taught using conventional method. This is in favour of BLIA group.

Hypothesis 2: There is no significant difference between the mean achievement scores of male and female students taught computer studies using BLIA.

Table 4: ANCOVA Test Of Significant Difference Between The Mean Achievement Scores Of Male And Female Students Taught Computer Studies Using BLIA

| Source Of Variation	SS	Df	MS	F	P-Value	Decision
Corrected Model	321.614[a]	2	160.807	5.572	.006	
Intercept	57420.840	1	57420.840	1989.774	.000	
Pretest	20.180	1	20.180	.699	.407	
Gender	272.631	1	272.631	9.447	.003	Sig
Error	1616.047	56	28.858			
Total	363394.000	59				
Corrected Total	1937.661	58				

Table 4 shows that at 0.05 level of significance, 1df numerator and 58df denominator, the calculated f is .9.447 with pvalue of .003 which is less than 0.05. Therefore, the null hypothesis is rejected. Thus, there is a significant difference between the mean achievement scores of male and female students taught computer studies using Blia in favour of males.

Hypothesis 3: There is no interaction effect of teaching methods and gender on students' achievement in computer studies.

Table 5: ANCOVA Test Of Interaction Effect Of Teaching Methods And Gender On Students' Achievement In Computer Studies

Source Of Variation	SS	Df	MS	F	P-Value	Decision
Corrected Model	22412.732[a]	4	5603.183	250.725	.000	
Intercept	81457.599	1	81457.599	3644.967	.000	
Pretest	1.510	1	1.510	.068	.795	
Method	21294.526	1	21294.526	952.862	.000	
Gender	334.405	1	334.405	14.964	.000	
Method * Gender	22.562	1	22.562	1.010	.317	NS
Error	2391.232	107	22.348			
Total	497744.000	112				
Corrected Total	24803.964	111				

Table 5 further shows that at 0.05 level of significance, 1df numerator and 111df denominator, the calculated f is 1.010 with pvalue of .317 which is greater than 0.05. Therefore, the null hypothesis is not rejected. Thus, there is no interaction effect of teaching methods and gender on students' achievement in computer studies.
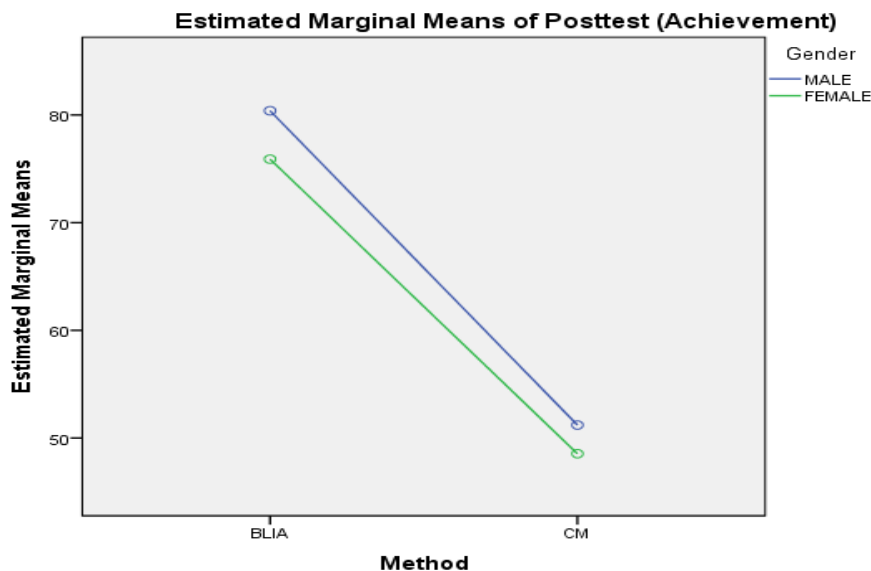
Covariates appearing in the model are evaluated at the following values: Pretest (Achievement) = 19.55

Figure 1: Interaction of teaching methods and gender on students' achievement

Discussion

The finding of the study showed that there is a significant difference in the mean achievement scores of students taught using blended learning instructional approach and those taught using conventional method in favour of blended learning instructional approach. The students in the blended learning instructional approach group performed better than those in the conventional group because the use of blended learning provided the opportunity to engage the students to learn in different ways and at their pace. Through the offline or traditional class learning, students are taught by the teacher. Students who may not have gained a full understanding of the concept taught may do so when they go online. They can search information on the concept, read and learn from materials in different medium, thereby helping them to improve academic achievement.

The blended learning approach through the online learning engaged multiple senses of the learners. They learn not only by word, but they get to see videos, simulations and other multimedia formats of the materials that could help them understand the concept better. Thus,

blended learning instructional approach gave students the opportunity to understand things as they are shown in multiple formats and not by mere imagination. The supplementary materials gotten from the online study helps the students to improve their achievement more than the conventional classroom students.

Another factor that might have helped the students to improve achievement more than those in the conventional group is that blended learning instructional approach afforded the students the opportunity to learn from variety of content types. The illustration in the variety of ways of presenting information to be learnt gave the student access to the materials in ways they can learn them. Video, audio and visually enhanced presentations are included in a blended learning materials which help to keep learners engaged and, also, to make sure that all material is easily understood at their own pace. Something that is not always the case in the fast-paced environment of a physical classroom where the teacher have to finish the content within the duration of period allotted for the lesson without waiting for the students to all learn.

The finding of the study is in line with that of Iga (2018) that the mean score of experimental group taught using blended learning is higher than the mean score of control group. The finding of the study also support that of Kayii and Dambo (2018) that the experimental group taught using blended learning achieved significantly higher than the control group taught with lecture method. The finding of Zhang and Zhu (2018) that students engaged in blended learning had better academic achievements in their English as a second language courses compared to students participating in the face-to-face learning mode, supports the finding of the study.

The finding of the study also revealed that there was significant difference between the mean achievement of male and female students taught using blended learning instructional approach. No significant interaction effect of teaching methods and gender on achievement of the students were found. The observed difference between the achievement of the male and female students taught using blended learning could be because of the students differed in their interaction with online materials and also because of their preference of different media format of the materials which may have affected their understanding differently.

The finding of the study is not in support of the finding of Gambariet et al. (2018) that there was no significant difference in the performance of male and female undergraduate taught blended learning. The finding of the study is in contrast to that of Omenka and Kurume (2013) that there was no significant difference in the mathematics achievement of male and female students when ethno mathematic approach was used. The finding of the study is also in contrast to that of Adepeko (2018) gender has no effect on the students' academic achievement when exposed to the same amount of activities. The finding of the study is in line with that of Ojaleye and Awofala (2018) that there was a statistically significant main effect of gender on students' achievement in algebra, and also no statistically significant interaction effect of treatment and gender on students' achievement in algebra.

Conclusion

The findings of the study showed that blended learning instructional approach significantly improved the achievement of students in computer studies. The conclusion is that blended learning is effective for improving students' achievement in computer studies in Onitsha education zone of Anambra State.

Recommendations
The following recommendations are made in the light of the findings of the study:

1. Workshops and seminars should be organized by state ministry of education for secondary school teachers on how to use BLIA in teaching computer studies concepts.
2. Provisions should be made by school heads of computer, internet and power generating facilities that will enable teachers to adopt and students to learn using the blended learning approach.

References

Abiam, P.O. & Odok, J.K. (2006). *Factors in students' achievement in different in different branches of secondary school mathematics. Journal Of Education And Technology, 2*(1), 161-168.

Adepeko, O.O. (2018). Relative effectiveness of blended learning instructional approach on academic achievement of physics students in secondary schools in Ondo State, Nigeria. *International Journal Of Advanced Academic Research, 4*(8), 8-17.

Amelink, C.T. (2009). *Literature overview: gender differences in mathematics performance.* Retrieved From Http/Www.waeeonline.org.ng On 20/05/2015.

Anusiuba, I.O, Osuafor, A.M. & Nweke, N.M. (2019). Effects of animated media instructional strategies on achievement and retention of secondary school students in computer studies. *International Journal Of Scientific & Engineering Research, 10*(6), 1-5.

Caraivan, L. (2011). Blended learning: From concept to implementation. *Euromentor Journal*, *2*(4), 1-18.

Delialioglu, O. & Yildirim, Z. (2008). Design and development of a technology enhanced hybrid instruction based on molta model: its effectiveness in comparison to traditional instruction. *Computers & Education, 51(1)*, 474– 483.

Gambari, A.I., Shittu, A.T., Ogunlade, O.O. & Osunlade, O.R. (2018). Effectiveness of blended learning and e-learning modes of instruction on the performance of undergraduates In Kwara State, Nigeria. *Malaysian Online Journal Of Educational Science, 5*(1), 25-36.

Graham, C.R. & Dziuban, C.D. (2008). Core research and issues related to blended learning environments. In J.M. Spector, M.D. Merrill, J.J.G. Van Merrienboer, & M.P. Driscoll Eds., *Handbook Of Research On Educational Communications And Technology* (3rd Ed.). Mahwah, NJ: Lawrence Earlbaum Associates.

Nweke, N.M., Okeke, S.O.C., Anusiuba, I.O. & Egbo, F.N. (2018). effects of computer assisted instruction (CAI) on achievement and retention of students with hearing impairment in computer studies. *IOSR Journal Of Research & Method In Education, 9*(5), 24-37.

Ojaleye, O. & Awofala, A.O.A. (2018). Blended learning and problem-based learning instructional strategies as determinants of senior secondary school students' achievement in algebra. *International Journal Of Research In Education And Science (IJRES), 4*(2), 486-501.

Olunloye, O. (2010). *Mass failure in mathematics: a national disaster.* tribune of 07/02/2010 Retrieved From Http/Www.Tribune.Com.Nig On 08/05/2015

Omenka, J.E. & Kurumeh, M.S. (2013). Gender and location as correlates of achievement in number and numeration using ethno mathematics approach in the junior secondary schools in benue state. *Greener Journal Of Educational Research, 3*(4), 184-190.

Toshalis, E. & Nakkula, M. J. (2012). Motivation, engagement, and student voice. *Education Digest, 78*(1), 29-35.

Uwaidiae, I. (2010*). WAEC Releases May/June WASSCE Results.* This Day Newspaper Of 20/08/2010. Retrieved From Allafrica.Com.Nigeria,Nig On 6/05/2015

Vanderlinden, K. (2014). Blended learning as transformational institutional learning. *New Directions For Higher Education, 165,* 75-85.

Zhang, W. & Zhu, C. (2018). Impact of blended learning on university students' achievement of English as a second language. *International Journal On E-Learning, 17*(2), 251-273.