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Blending A Wiki Classroom into A Face To Face Classroom: Impact on Students' Academic Performance.

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Abstract: *Blended learning approach combines the best of both the face to face classroom (F2F) and online learning experience.This provides a complete and enriched learning experience to the learners. This study investigated the impact of blending wiki classroom with face to face (F2F) classroom on students' academic performance in the Faculty of Education, University of Port Harcourt. Rivers State, Nigeria. A 2-group pre-test post-test quasi experimental design was adopted. Two objectives, two research questions and two hypotheses guided the study. The population comprised 100 - level undergraduate students from eight departments in the Faculty. Simple random sampling technique was used to select two departments, and all one hundred and sixty(160) students from the two departments were used. These were intact classes. A performance test titled Instructional Technology Performance Test (ITPT) was used to collect data. The reliability of the ITPT was tested using Kuder Richardson (21) and a co-efficient of 0.80 was obtained. Mean and standard deviation were used to answer the research questions while independent sample t-test was used to analyze the null hypotheses at 0.05 level of significance. Findings revealed that blending a wiki classroom into a F2F classroom enhanced the academic performance of undergraduate students. Based on the findings, it was recommended that wikis should be blended into a F2F classroom.*

Key words: *wiki classroom, academic performance, blended learning, face to face (F2F) classroom*

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I. Introduction

The world existsin a globe where information can be easily accessed through connectible devices.Different educational resources can easily be accessed online via mobile devices such as smart phones, tablets and laptops. Teaching and learning barriers are now easily overcome via electronic means with most learners opting to attend online classes while still busy with their daily activities. Blending technology into the teaching and learning process provides students with the benefits of electronic and the face to face (F2F)learning where the physical presence of the teacher could still be felt when needed.Staker and Horn (2012) define blended learning as a formal education program in which a student learns partly through an online medium with some form of student autonomy (that is, the student having control over time, place, path, and/or pace) and partly through a F2F class away from home. This implies that blended learning is a means of simplifying the traditional process of instructional delivery, creating room for flexible options and empowering students to become knowledge constructors based on the vast resources and information they access in the course of the teaching and learning exercise using blended learning strategies.

II. Literature Review

This research was anchored on the theory of connectivism. Connectivism views learning as the process of creating connections and enlarging networks. This theory was developed by George Siemens in 2005 (Downes, 2012). It is commonly referred to as the learning theory of the digital age. It is the learning theory that focuses on technology's effort on how people operate, communicate, and learn. Connectivists believe that learning is not solely based on content, but connection (Downes, 2012). Anderson (2005) reported that connectivism encourages high level of students' online social presence. This implies that connectivisim supports the integration of technological tools in teaching and learning activities. Blended learning supports and encourages the use of technological tools in blending F2F learning with online learning activities. In addition, the academic performance, interest, and retention of students could be enhanced when students connect to other students and teachers, collaborate on academic activities, and share knowledge.

Blended learning dates far back to the 1840's when Sir Isaac Pitman launches the first distance education course. His course centered on shorthand. Pitman sent shorthand texts to his students via mailed postcards and they were required to send them back to be graded and corrected. By the 1970's, companies began

using video networks to train their employees **(**Christopher**,** 2015**)**. Today, with the advent of computers, blended learning has become very popular and effective. Blending a F2F classroomwith an online classroomfacilitates learning and presents the learners with in class and out-of-classroom experience. F2F classroom is seen as a form of instructional delivery done solely via the classroom, where all activities that is concerned with teaching and learning starts and ends in the four walls of the classroom. In this kind of scenario, the teacher is restricted to the resources he/she can present or use in the classroom. Blended learning on the other hand augments F2F lessons with other technologies, such as cell phones, personal digital assistants, classroom response systems, and electronic whiteboards. Students use LMS, blogs, discussion boards, wiki classroom, GoSoapBox, etc to discuss and submit class related activities. Blended learning thus enhances F2F learning to bring about improved performance. In blending a lesson, there are various models that could be adopted. These include rotational models, flex models, A La Carte model, and enriched virtual model, just to mention few. The following subheadings present a brief description of each of these models.

A. Rotation Model

The rotation model is defined as a class, course, or subject in which students alternate one learning modality to another, at least one of which being online learning. As explained by Horn andStaker (2014) the variation often entails students either moving between online learning, small-group instruction, and paper-pencil work, or moving between whole-class instruction and online learning. This method has been used in the classroom for many years, however, including an online learning component in the rotation is what makes this a blended learning method. This model consist of four types Station rotation, lab rotation, flipped classroom, and individual rotation.

i. Station Rotation

In station rotation, students rotate within a classroom or set of classrooms. Rotations may consist of; individual learning using online learning programs, small group direct instruction with a teacher, and independent work at students' desks.

ii. Lab Rotation

Lab rotation is very similar to station rotation. Horn andStaker(2014) further explained that the key difference is that students move to a computer lab for their online learning part of instruction. The advantage lab rotation has over station rotation is that the lab frees up classroom space for other events within the rotation model. Teachers have used lab rotation for several years. The main difference in the current use of this model is that teachers incorporate the online learning component into their classroom lessons to create a more structured course.

iii. Flipped Classroom

In a flipped classroom, students learn the lesson content online independently so that class time can be used to deliberate on the concepts learned. For example, students listen to lectures outside of class time, and then do class work during classes under teacher's guidance. This method gives the student the advantage of being involved in activity-based learning rather than passive learning.

iv. Individual Rotation

In individual rotation, different learning modalities are introduced based on students' needs and interests. The students' course is not recommended by a teacher or schedule but rather is tailored to suit each students need (Horn andStaker(2014)). Teachers are to elucidate on the information learned online via face-to-face projects and discussions based on areas students have chosen.

B. Flex Model

A Flex model refers to courses where online learning constitute the main bulk of students' learning experience. Clifford (2016) describes it as a course in which online learning is the backbone of student learning,The difference between the Flex Model and the Rotational Model is that the Flex model commences with online learning and adds teacher support as required, whereas the Rotation model begins with a teacher-fronted approach and adds the online learning component.

C. A La Carte Model

The A La Carte model refers to a course that a student takes online while attending a brick-and-mortar school. This model is the most common type of blended learning employed though the online and the offline courses do not relate (Horn andStaker, 2014). Although there is no face-to-face component associated with the online course, this approach is considered a blended learning model because students are engaged in a blend of both online learning and conventional schooling.

D. Enriched Virtual Model

The Enriched Virtual model requires students to have face-to-face instructional sessions, but students are given the flexibility to complete the rest of the classwork online from a location of their choice(White, 2016). This model differs from fully-online schools where students are not obliged to attend a conventional school. It differs from the Flipped Classroom model because students are required to meet face-to-face with teachers on a regularly arranged basis. This model affords needed support for students while allowing the flexibility of self-directed, online instruction.

Irrespective of the model chosen, several technologies could be used to blend a F2F class with an online class. One of such technologies is the wiki classroom. Wiki classroom creates connections amongst learners and has the ability to improve collaborative activities as individual participation in any given group could be monitored. In this study, the wiki classroom was used as a blending technology. The term WIKI is derived from Hawaiian phrase wiki-wiki which means quick. It is seen as a collaborative website whose content can be edited by visitors to the site, allowing users to easily create and edit web pages collaboratively (Parker & Chao 2007). A wiki is a web communication and collaboration tool that can be used to engage students in learning with others within a collaborative environment.

It can be deduced from the explanations of Ioannou, Andri & Stylianou- (2012)that wiki is an interactive website that supports high level of collaboration and promotes learning.They further explained thatthe use of wiki has been explored by various researchers as a teaching tool in schools, colleges and universities. A major appeal of wiki is that collaborative content can be created, changed and tracked easily. As explained, this suggests thatusers are able to swiftly start expanding any page or site for discussions, posting assignments and various collaborative projects. There are many wiki platforms or host sites such as PB works, Wetpaint and Wikispace just to mention few. These platforms could be used to create wikis for different purposes. To create a wiki classroom, the authors of this article adopted wikispace. The wiki classroom provided an easy technological interface that promoted collaboration among students,enabled the authors to track students'work in progress, and view how well an individual in a group has contributed.Bransford, Brown & Cocking, (2000) explained that meaningful learning engages students in tackling the topic to be learnt in such a way that they create meaningful and understandable knowledge structures on the basis of a goal for learning.

From the foregoing, it could be seen that wiki classroom has the potential for improving students' performance scores if blended with a F2F classroom. Many scholars have proven via their findings that a blended classroom has a way of enhancing performancescores of learners. A study carried out by Paula, Lindsey and Alan (2011)investigated the effect of blended learning on students' performance in an undergraduate occupational therapy curriculum. A retrospective two cohort design was used to review the students' access to virtual learning environment and their performance on the summative assessments of the two concurrent academic cohorts. Results of the study revealed that the habituation of blended learning into an existing curriculum results in improved academic performance. From their findings, it can be deduced that blended learning has the ability to enhance students' performance.

In another study by Paul and Bazelais (2018), the impact of blended learning was investigated. The results revealed that the blended learning approach leads to more conceptual change, acquisition of more skills and higher performance. Their findings further revealed that blending a classroom enhances students' creativity.

Suciati and Sunarno(2017) determined the effect of a Blended Learning (BL) model toward students' achievement viewed from students' creativity. The data were collected by using test and non-test techniques through observations, a questionnaire, and documentation and analysed using one way ANOVA with an alpha of 5% level of significance. Results showed that the implementation of the BL model viewed from students' creativity was effective in terms of student achievement.

A study by Zhigang, Ming, Tsai, Jinyuan and Chris (2014) was to investigate whether the blended learning model adopted by an undergraduate nursing program (UNP) could yield a better academic performance as compared with the traditional classroom learning. Students who enrolled in two undergraduate nursing courses in fall 2008 and spring 2009 semesters were taken as a convenient sample. Students' academic performances were compared before and after the two undergraduate nursing courses adopted blended learning. However, their statistical results showed that there was no significant difference in terms of academic performance before and after the courses adopted blended learning.

Statement of the Problem

Overthe years, it has been observed that academic activities in most Nigerian campuses of higher learning gets disrupted due to incessantstrike actions by academic unions, students protest and cult activities. This disruption sometimes leads to a crash program when students resume school, which in turn affects the assimilation of learners and subsequently their academic performance. By blending wiki classroom into the traditional F2F classroom, it is believed that the impact of such disruptions would be greatly minimized and

students' academic performance would be enhanced, since students can still have their lectures in their online wiki classroom.

Aim and Objectives

The study aimed at examining the impact of blending a F2Fclassroom with a wiki classroom on students' academic performance. Specifically the study seeks to:

- To determine the effectiveness of blending wiki classroominto F2F classroom on the academic performance of under graduate students.
- To ascertain the difference between the academic performance of male and female under graduate students taught using wiki classroom.

Research Questions

1 What is the effect of blending wiki classroom into F2F classroom on the academic performance of under graduate students?
2 What is the difference in the academic performance of male and female students taught using wiki classroom?

Hypotheses

1 Blending wiki classroom into F2F classroom has no significant effect on the academic performance of under graduate students
2 There is no significant differencein the academic performance of male and female students taught using wiki classroom.

Methods

The study was carried out in the Faculty of Education, University of Port Harcourt, Rivers State, Nigeria. Wiki classroom is the independent variable, while academic performance is the dependent variable and gender serves as the moderating variable. The 2-group pre-test post-test quasi experimental design was adopted for the study. Two departments namely: Curriculum Studies and Educational Technology and Educational Foundations were randomly sampled out of the eight departments in the Faculty. One department was used as a control group, while the other was used as an experimental group. A performance test titled Instructional Technology Performance Test (ITPT) was used to collect data. The instrument was validated by two subject matter experts and experts in measurement and evaluation. The reliability of the ITPT was tested using Kuder Richardson (21) and a co-efficient of 0.80 was obtained. One hundred and sixty (160) hundred-level under graduate students constituted the sample of the study.

Wiki classroom was blended into a F2F classroom as a supportive learning environment in a first-yearInstructional Technology Course Titled EDU 101.1. The course is a required component in the Faculty of Education which cuts across all departments in the Faculty and had enrolments of 1859 students across a semester of three months. The course itself aims to provide students with a basic introduction to the use of technology in instruction. Topics used for the period of this study included systems approach to instruction and improvisation in instruction. The course is taught through a weekly 2-hour lecture.

Procedure

At the beginning of the class for the experimental group, a brief introduction of the course was done, the course outline was given, detailed explanations of the wiki classroom and how it will be used in the course was made.Students were asked to submit their e-mail addresses; they were given a demo on what the invitation mail would look like in their email inbox and how to get to the wiki classroom. They were further instructed to use their matriculation numbers as their user name for a proper means of identification. The first two topics on the course outline were handled in the F2F class. Before the end of the second week, the students were already present in the wiki classroom. Subsequent topics were handled in both the F2F class and the Wiki classroom. For the control group, all topics on the course outline were handled in the F2F class. No technology was blended into the learning. For analyses, mean and standard deviation were used to answer the research questions while independent sample t-test was used to analyze the null hypotheses at 0.05 level of significance

III. Results and Discussion

Research Question 1: What is the effect of blending wiki classroom into F2F classroom on the academic performance of under graduate students?

Table 1. Mean and standard deviation analysis showing the effect of wiki as support learning tool on the academic performance scores of undergraduate students.

Groups	N	Mean	Std. Dev
Experimental Group	80	27.4	3.9
Control Group	80	15.4	2.6

Table 1 above summarizes the answer to research question one. It reveals that the mean score of the experimental group (27.42) is higher than the mean score of the control group (15.41).

Research question 2: What is the difference in the academic performance of male and female students taught using wiki classroom?

Table 2 Mean and standard deviation analysis showing the academic performance of male and female under graduate students taught using wiki.

Sex	N	Mean	Std. Dev
Male	36	26.4	2.5
Female	44	28.4	2.1

Table 2summarizes the answer to research question 2. It revealed a mean score of 26.40 and 28.42 respectively for both the male and female students.

Hypothesis 1: Blending wiki classroom into F2F classroom has no significant effect on the academic performance of under graduate students

Table 3: T-test analysis scores of Respondents

Group	Control	Experimental
Number	80	80
Mean	14.4	27.5
SD	3.9	2.6
T- Stat	26.05	
Df	138	
p-value	0.0001	

Table 3 showed the summary of t-test on the performance scores of students taught using wiki technology and those taught without wiki. The T-test shows a significant difference (t-stat = 26.05, df = 138, p-value <0.0001) in the average assessment scores of the control and experimental groups. The null hypothesis that states that blending wiki classroom into F2F classroom has no significant effect on the academic performance of under graduate students was rejected. Thus there is a significant difference in the performance scores of students taught with F2F and those taught with wiki classroom in favour of the latter group. This finding corresponds with the findings of Camacho,Carrion,Chayah and Campos (2016) which reported that the use of wiki technologies to support the teaching and learning process recorded a very high academic performance. However, this finding is not in conformity with the findings of Zhigang et al (2014). The results of their findings showed no significant difference in terms of academic performance before and after the courses adopted blended learning.

Hypothesis 2: There is no significant difference in the academic performance of male and female students taught using wiki classroom.

Table 4: T-test analysis Scores of Male and Female Respondents

Group	Male	Female
Number	36	44
Mean	26.4	28.4
SD	2.5	2.1
t- Stat	-3.78	
Df	139	
p-value	1.9960	

Table 4 showed the comparison assessment scores of male and female respondents. The t-test showed no significant difference (t-stat = -3.78, df = 139, p-value = 1.9960) in the average scores of the male and female students taught using wiki classroom as a blended learning tool. Hence, the hypothesis of no significant difference in the academic performance of male and female students taught using wiki classroom was retained.This is in contrast with the findings of Hazari, North and Moreland(2009) which reported significant differences in assessment scores between male and females that were taught using wiki.

IV. Conclusion

The findings of the study showed that the use of wiki technology as a supportive learning tool enhanced the academic performance of undergraduate students. Gender differences were not significant in the academic performance of the students' that were where taught using wiki classroom.

V. Recommendations

- Wiki classroom should often be used as a blended learning tool, since it has been discovered by the authors that it has the potency and ability to enhance students' academic performance.
- An enlightenment campaign on the relevance of wiki as a blended learning tool should be conducted by NERDC. Thereby preparing a Nigerian curriculum that would incorporate blended learning in instruction.

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