Global Journal of Arts Humanity and Social Sciences ISSN: 2583-2034

GSAR PUBLISHERS
GLOBAL SCIENTIFIC AND ACADEMIC RESEARCH

Glob. J.Arts.Humanit.Soc.Sci
ISSN: 2583-2034
Vol-3 Iss-12, page 1444-1449

ENHANCEMENT OF SECONDARY SCHOOL STUDENTS' ACHIEVEMENT AND ATTITUDE IN PHYSICAL AND HEALTH EDUCATION THROUGH BLENDED INSTRUCTIONAL STRATEGY

BY

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Article History
Received: 01/10/2023
Accepted: 01/12/2023
Published: 12/12/2023

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Abstract

The study explored the enhancement of secondary school students' achievement and attitude in physical and health education through blended instructional strategy. The research comprised two hundred and eighty-nine (289) senior secondary class two (SSII) PHE students. The study was directed by two research topics and hypotheses. "Non-equivalent pretest, posttest control group design" was used in the study. A researcher's developed PHE Achievement Test (PAT) and PHE Attitude Inventory (PAI) was used for the study. The acquired data were subjected to analysis of covariance (ANCOVA), standard deviation, and mean scores. The study's conclusions demonstrate that students who learned PHE using a blended learning approach performed better than those who learned it through conventional means. Finally, blended teaching strategy increased the attitude of students in PHE. It was recommended that the use of blended instructional strategy should be incorporated into the PHEcurriculum and its use be encouraged at all level.

Keywords: Blended Instructional Strategy, Students' Achievement, Attitude, Physical and Health Education

INTRODUCTION

Education is unquestionably, the cornerstone of all progressive advancements worldwide. For the purpose of achieving progressive and sustainable national development, governments throughout the world give it careful consideration. Nigeria has seen a sharp increase in demand for education in recent years, due to the fact that Nigerians may enter the workforce with a certificate obtained upon finishing school. As a developing country, Nigeria has established and structured schools to attain specified educational aims and objectives as a result of realising the significance of education overall.

One unit in the programme of tertiary education done in Nigerian tertiary schools is Human Kinetics and Health Education, which is sometimes called Physical and Health Education. As stated in the national policy on education FRN (2014), "Providing students with a professional physical and Health Education knowledge and skills that will positively facilitate Physical Education, Games and Sports, and Health Education changes in the community which could lead to attainment of healthful living and productive society" is the foundation for the justification of human kinetics and health education. The basic objectives of this programme is to:

- Enhance mental and physical aptitudes relevant to issues with human mobility.
- Equip teachers in health and physical education for post-primary settings.
- Train individuals for roles as coaches, administrators, and organisers of sports in sports councils, learning institutions, and the commercial sector..
- Provide a suitable foundation for further study in sports, leisure, health, and physical education. (NUC, 2021).

Despite universally accepted position of human kinetics and health education, reports (Okah, 2021) have shown low academic achievement among undergraduates in Bayelsa State. So many reasons have been attributed to the cause of the low academic achievement which are funding (Goode, 2010), lack of resources and experiences, (Odua, et al., 2021), lack of administrative competencies (Egemuzie-Paul, 2021), and psychosocial factors (Abuge, 2021).

The National Policy on Science and Technology Education (2018) established the fact that there is need to put into action new learning solutions that is scalable, widely engaging, and will awaken curiosity for learning then it is imperative to use emerging technology to prepare students for the future. It also made clear the need of the introduction of innovative learning and teaching delivery methods that make for the development of right scientific attitudes. The policy also emphasized that the method of teaching which focuses on student-centered and hands-on techniques rather than theoretical, abstract, and teacher-centered methods are approaches responsible for the decline in interest and consequently low enrollment and poor performance of students in science and technology education subjects.

Ndioho, et al., (2021) stated that "one of the 21st century innovative teaching strategies which allow students to access information and communication technology facilities and tailor learning experiences towards their needs is blended learning." It is an integrated system that combines the conventional method of face-to-face teaching and learning with technologically mediated instruction. Blended learning is the process of creating educational courses that incorporates the finest elements of both in-person and virtual learning..

Blended learning also refers to the utilisation of online resources and programmes to provide lessons while a teacher supports teaching. (Ndioho, et al., 2021) Blended learning comprises of

(1) Both in-person and virtual instruction
(2) Incorporation of technology, and
(3) A combination of approaches.

The same blended learning is referred to by many names, including "hybrid, mixed, and integrative learning". In addition, its learning environment offeres social interaction and teamwork, features lacking in fully online systems. Teachers may communicate with students directly or indirectly in a mixed-learning environment, and there are no time constraints. With blended learning, students have more control over their education, including what and how they study. Lectures in a mixed learning environment may be recorded on video in advance for independent viewing by students. Web-based assessments and simulations are further features of blended learning. The way the curriculum is applied to tasks is one of the ways the classroom time is organised. Teachers play the role of a facilitator, assisting students in developing the abilities and knowledge needed to utilise the online resources and engage in individual study time.

The teacher-led modified lecture technique is a style of instruction that some instructors like using while delivering lessons. The debate, project, demonstration, and discovery methods are a few examples of modified lecture methods. Teachers often use these well-liked techniques to impart information, skills, and knowledge to their pupils (Charles-Owaba, 2019). The term "conventional method" refers to the modified lecture method used in this study. The majority of chemistry professors choose this approach above other traditional teaching strategies, which is why the researcher selected it.

Academic achievement is the knowledge acquired and skills developed in schools (Charles-Owaba, 2019) It is the degree of realization of the predetermined learning objectives by the learner. It gives an account of the student's current academic status. The academic status might be described in terms of test and examination results, both internal and external. In his research, Charles-Owaba (2019) used the grade point average derived from self-report surveys to operationalize academic achievement. The researcher operationalizes academic achievements in this study as learners' results on chemistry examinations created by teachers. Celik (2018), for example, demonstrated that giving students an interactive and engaging learning environment only improved their performance provided the students had a favourable attitude towards the subject; otherwise, no gain in performance was shown.

Attitude as conceived by Richler and Snowman (2018) is concerned with the cognitive, affective, and behavioral aspects of an individual. The cognitive aspects represent the picture and experience the individual has about the object also affective represent the belief or the amount of favorable and unfavorable feelings an individual has towards an object, while the behavioral component refers to the actual behavior of the individual towards the object or issue. Attitude towards science can play an important role among students that study chemistry as It is what determines feelings like liking or not liking something which affect students' feelings, beliefs, and tendency to act toward chemistry (Surya & Arty 2021). In a different manner, a student's attitude towards the study of chemistry may be understood as a combination of their thoughts (cognitive element) and feelings (affective element) about the topic. Attitudes are usually conceived as evaluative appraisals. As a result, the target of this study is to establish the effect of blended learning and teaching strategy on the enhancement of achievement and attitude in senior secondary school chemistry in Bayelsa State.

Purpose of the Study

The study examined the "enhancement of secondary school students' achievement and attitude in physical and health education through blended instructional strategy." Specifically, the study achieved the following:

i. Determine the difference in mean achievement scores of students taught physical and health education using blended instructional strategy and those taught using modified lecture method.
ii. Determine the difference in mean attitude scores of students taught physical and health education using blended instructional strategy and those taught using modified lecture method.

Research Questions

To direct the research, the following questions were developed;

i. What is the difference in mean achievement scores of students taught physical and health education using blended instructional strategy and those taught using modified lecture method?
ii. What is the difference in mean attitude scores of students taught physical and health education using blended instructional strategy and those taught using modified lecture method?

Hypotheses

The following research hypotheses were developed and examined at the significance level of 0.05.

H_{01}: There is no significant difference in the mean achievement scores of students taught physical and health education using blended instructional strategy and those taught using modified lecture method.

H_{02}: There is no significant difference in the mean attitude scores of students taught physical and health education using blended instructional strategy and those taught using modified lecture method.

Methodology

For the research, a quasi-experimental design with a "pre-test, post-test, and non-equivalent control group" was used. Since it was not possible to randomly organize students for any intervention during school hours in order to avoid artificial circumstances, the choice of this approach permits analysis of intact groups in a real-life classroom context. All of the Bayelsa State PHE students comprised the study's population. During the research, a sample of 289 second-year senior secondary school (SS2) students was used. Because they are the only educational institutions with Knowledge-Based Centers—where functioning computer labs are available—the two coeducational Federal Government Colleges (FGC, Odi, and FSTC, Tungbo) were purposefully chosen. Additionally, the senior secondary mathematics curriculum's material was specifically chosen for the SS2 class, and there was no upcoming external test that would prevent pupils from participating fully in the study. There are two science courses and two art classes at each school, for a total of eight classes in the two schools that were chosen for the research. Four classes total—two from each of the two science and two from the two arts courses at the school—were chosen for the research using a simple random selection method that included flipping a coin. By using a random selection technique called balloting, the classes were divided into two experimental groups and two control groups, with two classes going to each group. The study's sample consisted of all 289 SS2 students from the four streams of the chosen education institutions. The instructional tools consisted of the instrument which is a PHE Achievement Test (PAT), PHE Attitude Inventory (PAI), Marking Guide, Blended Instructional Package, and Lesson Packages. Two (2) instructors from the Science Education Department's Human Kinetics and Physical Education Units, as well as one (1) measurement and evaluation specialist, validated the instruments. Their suggestions and corrections formed the final draft used in the study.

PHE Attitude Inventory (PII) was developed by the researcher from vocational interest and other interest inventory. The PAI was a researcher-made, questionnaire that served as a means for students to communicate their opinions on probability and mathematics in general. It is divided into two parts. In Section A, generic responder information was requested, while Section B bothered on their attitude toward PHE. The PAI is a 15-item inventory with a five-point response type of *"Strongly Agree* - if you like it very much to engage in the activity"; *"Agree* - if you like to engage in it"; *"undecided* - if you like to neither like nor dislike it"; *"Disagree* - if you dislike engaging in the activity"; and "*Strongly Disagree* - if you very much dislike engaging in it". "Like very much, like, neither like nor dislike, dislike and dislike very much" all had values of 5, 4, 3, 2, and 1 respectively.

The researcher scored the instrument of which each correct option was scored 5 marks, which totals 100% at maximum. Four classes from different schools that were on par with the sampled schools but did not take part in the study were used to trial test the instrument and materials. The reliability coefficient was computed using Kudder-Richardson (K-R_{20}) and reliability coefficient of 0.72 obtained was considered appropriate for the study. The internal consistency of the PAI was estimated using the Cronbach Alpha (α). The selection of the Cronbach Alpha (α) approach was predicated on the non-dichotomous scoring of the instrument's replies. Stated differently, the replies indicate the degree of agreement or disagreement with each assertion of the provided items on the instrument, rather than whether an answer is correct or incorrect, pass or fail. The reliability test on PAI yielded coefficient of internal consistency of 0.8 which indicates that the reliability is very high and was therefore appropriate for the study.

The Blended Instructional Strategy was used to teach the PHE content of the SS2 Syllabus (NERD, 2016) for three (3) weeks involving two (2) contacts of one hundred and forty (140) minutes each week.

Six regular teachers were engaged. The PAT and PAI were administered as pre-test and the teachers taught the experimental group with Blended instructional Strategy and lesson packages after the pre-test and the control group was taught without the strategy but with the lesson packages only. The reorganized version of PAT and PAI were administered as post-test in both control and experimental group. Version 26 of the "Statistical Package for Social Science (SPSS)" programme was used to analyse. The mean (x) and standard deviation (SD) were used to provide answers to the study questions. Two-way Analysis of Covariance was used to evaluate the study hypotheses at 0.05 levels of significance (ANCOVA). As a variant of analysis of variance, ANCOVA lets you investigate group differences while statistically adjusting for a covariate or extra variable. The covariates were the pr-PAI and pre-PAT scores.

Research Question One

What is the difference in mean achievement scores of students taught physical and health education using blended instructional strategy and those taught using modified lecture method?

Table 1: Mean Achievement Scores, Standard Deviations, and Adjusted Mean Scores of the Experimental and Control Group in PHE

Group	No. of Cases	Pre-Test		Post-Test		Mean Difference
		Mean	Standard Deviation	Mean	Standard Deviation	
Control	156	41.81	6.54	59.92	9.37	18.11
Experimental	143	40.91	7.48	82.17	7.81	46.26

Source: Fieldwork, 2023.

According to the results, students in the control group had a mean attitude score of 2.29 and a standard deviation of 0.813 on the pre-PAI, whereas students in the experimental group had a mean interest score of 2.15 and a standard deviation of 0.965. Similarly, in the post-PAI, the experimental group's students' mean attitude score is 4.44, while their standard deviation is 1.241. This suggests that "students taught PHE using a blended instructional strategy saw more improvements in their attitudes than students taught PHE using a modified lecture technique".

Hypotheses Testing

H_{01}: There is no significant difference in the mean achievement scores of students taught physical and health education using blended instructional strategy and those taught using modified lecture method.

Table 4: Analysis of Co-variance (ANCOVA) for Students' Overall Scores by Instructional Approach

Source of Variance	Sum of Squares	Df	Mean Square	F_{cal}	F_{crit}
Covariates	2524.168	1	2524.168	46.163	
Effects	9723.314	2	4861.657	88.911	
	9714.530	1	9714.530	177.662	3.84
Methods Gender	2.003	1	2.003	0.037	3.84
2 Way Interaction	44.954	1	44.954	0.822	3.84
Method*					
Explained	12292.437	4	3073.109	56.202	
Residual	4702.465	86	54.680		
TOTAL	16994.901	96	188.832		

Source: Fieldwork, 2022.

The main effect, teaching method, has an F-calculated value of 177.662 and is more than the table value of 3.84 at the 0.05 level of significance, according to the summary of data analysis shown in Table 3. This is predicated on a numerator with one degree of freedom and a denominator with 267 degrees of freedom. The null hypothesis is therefore disproved. This suggests that "there is a statistically significant difference between the mean achievement scores of PHE students taught using a blended instructional strategy and those taught using a modified lecture style".

H_{02}: There is no significant difference in the mean attitude scores of students taught physical and health education using blended instructional strategy and those taught using modified lecture method.

Table 4: Analysis of Co-variance (ANCOVA) for Students' Overall Scores by Instructional Approach and Interest Scores

Source of Variance	Sum of Squares	Df	Mean Square	F_{cal}	F_{crit}
Covariates	24588.883	1	2458.883	51.259	
Main Effects	15889.857	2	7944.928	165.622	

Methods	15788.883	1	15788.883	329.140	3.84
Location	73.681	1	73.681	8.536	3.84
2 Way Interaction	19.210	1	19.210	0.400	3.84
Method* Interest scores					
Explained	18367.950	4	4591.987	95.726	
Residual	4125.435	86	47.970		
TOTAL	22493.385	96	249.926		

Source: Fieldwork, 2023.

The summary of ANCOVA in Table 5 shows that the mean interest scores of experimental groups have F-calculated value of 8.536, which is greater than the table value of 3.84. This implies that the null hypothesis is rejected. That is the difference in mean attitude scores of students taught PHE, using Blended Instructional Strategy and those taught using modified lecture method is statistically significant.

Discussion of Findings

The result of this study reveals that students in the experimental group improved in achievement more than those in the control group which may be attributed to the use of the treatment via blended instructional Strategy. This finding is in agreement with the findings of Abdulcarismo (2009), Okechukwu et al. (2010), Ugwanyi and Agwagah (2011) shows students taught PHE utilising conventional teaching techniques perform significantly different from those exposed to blended learning and teaching methodologies.

Finally, the findings of this study shows that the Blended Instructional strategy increases the attitude of students in PHE. The group taught using the blended instructional technique had a higher mean attitude score than the group taught using the traditional method, according to the results from Table 2 for research question two. This was further supported by study hypothesis two's outcome in Table 4, which looks for a significant difference between the two groups' mean attitude ratings. The analysis revealed there was a statistically significant difference in the mean attitude ratings between the two groups.. Thus, this reaffirmed the findings of Abdulcarismo (2009), Almegdadi (2015), and Arsaythamby (2013), who reported that the use of the right teaching resources increases students' interest.

Conclusion

The study has established that the use of blended instructional strategy improves the students' achievement and attitude in PHE.

Recommendations

Given the results of this investigation, the following suggestions are deemed pertinent;

1. More aids should be developed and used by teachers to teach PHE content to reduce its abstractness.
2. Ministry of Education should embark on in-service training, seminars, and workshop to acquaint the already serving teachers with the skills needed to use blended instructional strategy.

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