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EFFECTS OF SEQUENTIAL TEACHING METHODS ON SENIOR SECONDARY TWO STUDENT'S' ATTITUDE AND ACHIEVEMENT IN BIOLOGY IN JOS-SOUTH, PLATEAU STATE, NIGERIA.

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ABSTRACT

The study investigated the effects of sequential teaching method on senior secondary two students' attitude and achievement in Biology in Jos-South, Plateau State, Nigeria. The study employed the non- randomized pre-test, post-test quasi-experimental research design. The sample comprised 107 (54 male and 53 female) SS2 students offering Biology from four co-educational public secondary schools in Jos-South Local Government Area of Plateau State. Two research questions and two null hypotheses guided the study. The Biology Achievement Test (BAT) with reliability index, .92 and Students' Attitude Towards Biology Scale (SATBS) with reliability index .88 were used as instrument for data collection. Research questions were answered using mean and standard deviation while hypotheses were tested using Analysis of Covariance (ANCOVA) at .05 level of significance. Results revealed that sequential teaching methods changed students' attitude to Biology and also improved the achievement of secondary school students in Biology. Based on the findings of the study, it was recommended that Biology teachers should teach their students with sequential teaching methods to improve their attitude and achievement in the subject. On the It was recommended that Biology teachers should teach their students using sequential teaching methods to improve their attitude and achievement in the subject.

Keywords: Achievement, Attitude, Biology, Gender, Sequential Teaching Methods,

INTRODUCTION

Education is needed by every nation to equip her citizens with knowledge and appropriate life-long skills for solving personal and societal problems in a world that is scientifically and technologically driven. Education is the process of acquiring knowledge, skills, values, beliefs and habits in science that will enable individual to develop and grow throughout his or her life, for themselves or for the society (Verma, Doharey & Verma, 2023). Science is one of the school subjects that exposes learners to activities which provide them with desirable knowledge and appropriate life-long skills that enable them handle their problems in the society. According to Mormina (2019) Science is a vital enterprise, utilizing human intelligence to understand nature and natural phenomena in order to solve problems. It involves generating ideas and knowledge about natural phenomenon in our environment. Science consists of three main areas, namely Physics, Chemistry and Biology.

Biology is the study of plants and animals. To Michael (2015), Biology refers to the study of life. The importance of Biology can be seen in areas such as medicine, disease control, animal breeding, environmental studies. The knowledge of Biology is applicable in solving societal problems relating to health, population growth through planned-parenthood, environmental pollution and food shortage. There are four themes (organization of life, organization of work,

the organisms and its environment and continuity of life) in the senior secondary school Biology curriculum that cut across various topics among which are the digestive and respiratory systems.

Digestive system refers to the organs that breakdown food, absorb food nutrients, and expel any remaining waste out of the body. Respiratory system is a biological system consisting of specific organs and structures used for gaseous exchange in animals and plants. The human digestive and respiratory systems have been perceived among other topics like genetics, cell metabolism, and growth to be difficult by students (Chukwuemeka & Dorgu, 2019). Several reasons have been advanced for the topics as being seen as difficult, some of which are the abstract and bulky nature of the topics, students' negative feelings and attitude towards the topics, students' learning and studying habits, and poor or ineffective teaching methods (Salleh, Ahmad & Setyan, 2021).

A number of teaching methods have been advanced for teaching Biology in secondary schools. Some of the teaching methods are demonstration method, think-pair share method, scaffolding method, laboratory method, and lecture method. Studies by Fauzi, Rosyida, Rohma & Khoiroh (2021) have shown that some teaching methods used by some Biology teachers, still make learning of the perceived difficult topics abstract since the processes are largely invisible for students. Hence, the only alternative for students, then, is to learn the said topics through rote memorization of facts from Biology textbooks. This suggests that the teaching methods might not have been effectively yielding the right results in the subject, and there is the need, to adopt other methods to assist students to learn. It is in view of this, that Wafula, Mondoh and Wasike (2017) recommended the formulation of new policy guidelines, laying emphasis on use of sequential teaching methods, as a means to improve learners conceptual understanding of knowledge in Biology, especially with concepts that have to do with physiological processes or mechanisms such as enzyme action.

Sequential teaching methods refer to methods of teaching that embrace the use of teaching methods in different sequences, to facilitate students' mastery on the same concepts in in a subject. Wafula, Mondoh and Wasike (2017) describe the sequential teaching methods as the use of a combination of teaching methods sequentially to enhance mastery and meaningful learning and the effects of each teaching method varies depending on the position of a particular method in the specific sequence of teaching. The sequential teaching methods could help cater for the individual learning differences in the students. This is perhaps because it could be flexible as the teacher can incorporate teacher centered methods with student centered methods. This is in tandem with the findings of Gongden and Delmang (2016) who disclosed clearly that there is an advantage in the use of more than one teaching method in a class and for a topic as a variety of strategies and methods, ensure that all students have equal opportunities to learn. Hence, no one teaching method is perfect and can be used without the application of another in the course of teaching. This study embraced sequential teaching methods as the use of the following teaching methods: (lecture method, Computer Aided Instruction and Practical method), in different sequences to facilitate student's understanding of a concept in Biology.

Lecture method is a method of teaching in which the teachers do much of the talking. It is an instructional method that aids early coverage of course outline, covers a wide audience, saves time and is simple to use. However, lecture method could become boring as students exposed to it are generally not actively engaged during lessons. The use of a singular instructional method may also not be able to cover students' individual differences in the learning of school subjects, like Biology. Hence, it becomes necessary to combine lecture method with innovative and interactive methods like Computer Aided Instruction and practical respectively, to facilitate minds-on and hands-on activities in learning concepts in Biology.

Computer-Aided Instruction refers to instruction presented using the computer. Computer-Aided Instruction could create a positive result in students' attitude and achievement in Biology when blended with a student- centered methods of teaching, such as the demonstration or practical methods. Practical method of teaching Biology involves the use of experiments and activities that demonstrate biological concepts and processes. Practical activities engage learners to apply and extend their knowledge and understanding of Biology concepts and principles. In order to improve students' attitude and achievement in Biology, there is the need to investigate which teaching method (lecture, Computer-Aided Instruction and practical) should take precedence over others, to improve students' attitude and achievement in Biology.

Attitude is fundamental to the dynamics of behaviour, particularly, as it relates to teaching and learning. It is the tendency of a person to respond positively or negatively towards an object, situation, concept or another person (Sarmah & Puri, 2014). The attitude students have towards a school subject is likely to influence the students' learning outcome in that subject (Marcela & Mala, 2016) such as Biology. Academic achievement may be seen as a measure of output and the main changes in knowledge, skills and attitude of individuals as a result of experiences acquired from school. The Chief Examiners' reports of the West African Senior Secondary Certificate Examinations from 2013 to 2016 and 2019 revealed that students' achievement in Biology was poor and, particularly, in response to questions pertaining to the human digestive and respiratory systems. The report for the year 2019 revealed that majority of the students failed to state the respiratory surfaces of the listed organisms, while some students who could state the respiratory surfaces, lost marks due to wrong spellings. These consequently culminated in their poor achievement in Biology.

Underachievement in Biology has also been observed as being influenced by gender at the senior secondary school level of education in Nigeria (Ngwu, Ellah & Emmadiole, 2020).. However, issues pertaining to gender in sciences have been inconclusive due to variations from research findings. It is on this premise that the study investigated the effects of sequential teaching methods on senior secondary two students' attitude and achievement in Biology in Jos-South, Plateau State, Nigeria. Moreover, there is no study known to the researcher that has investigated the effects of sequential teaching methods on attitude and achievement of senior secondary two students in Biology in Plateau State, Nigeria.

Statement of the Problem

Achievement of senior secondary students in Biology has dwindling with little or no appreciable improvement from 2010-2015, and 2018-2019 and has raised concerns for both government and the society. Despite the importance of Biology to national development, literature evidences indicated poor and dwindling achievement of students in the subject nationwide in public examinations, such as, the West African Senior Secondary Certificate Examinations over the years. A similar finding of students' dwindling achievement in Biology is also obtainable in the study area. The Chief Examiners' reports of the West African Senior Secondary Certificate Examinations in 2021, attributed the poor achievement of students in Biology practical to candidates' unfamiliarity with the use of simple laboratory equipment, inadequate exposure to laboratory techniques, lack of observational skills, inability to draw and label diagrams correctly, inability to spell some Biology terms correctly, among others. Thus, students' inability to gain mastery of the basic skills needed for the understanding biological concepts may not be unconnected to the teaching methods adopted by Biology teachers. Participatory and activity-oriented teaching methods have been recommended by the Federal Government (Federal Republic of Nigeria [FRN], 2014) for the teaching of Biology in secondary schools. However, this

has not been the case, as students are often unfamiliar with some of the biological processes as evidenced in the results of the standardized examinations and this could be responsible for poor attitude of students towards the subject.

Negative attitude of students towards Biology could also emanate from the fact that some Biology teachers perceive certain topics in Biology curriculum as being too abstract for teaching using practical approaches for students' understanding. This is perhaps because the Biology teachers might have insufficiently explored the use of different teaching methods to teach the same concepts in Biology. Studies by Wafula, Mondoh and Wasike (2017) have shown that sequential teaching methods could help improve students' understanding of physiological processes or mechanisms in Biology. However, there has not been empirical evidences in the area of study to explain this. The fundamental problem of this study could be located in this broad question? What therefore, is the effect of sequential teaching methods on the attitude and achievement of senior secondary two students in Biology in Plateau State, Nigeria?

Aim of the Study

The study investigated the effects of sequential teaching methods on senior secondary two students' attitude and achievement in Biology in Jos South, Plateau, Nigeria. The specific objectives of the study were to:

1. determine the pre-test and post-test attitude directions of SS 2 Biology students in the three experimental groups and the control group.
2. determine the pre-test and post-test achievement mean scores of SS 2 Biology students in the three Experimental groups and control group.

Research Questions

1. What are the pre-test and post-test attitude directions of SS 2 Biology students in the three experimental groups and the control group?
2. What are the pre-test and post-test achievement mean scores of SS 2 Biology students in the three experimental groups and the control group?

Hypotheses

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

1. There is no significant difference between the pre-test and post-test Biology attitude mean scores of SS 2 students in the three experimental groups and the control group.
2. There is no significant difference between the pre-test and post-test Biology achievement mean scores of SS 2 students in the three experimental groups and c the control group.

Method

The study employed the non- randomized pre-test, post-test quasi-experimental research design. The population of the study will comprise the 485 (264 male and 221 female) SS 2 students offering Biology in the 13 co-educational public secondary schools that meet the criteria of the population. The sample for the study comprised 107 (54 male and 53 female) SS2 students offering Biology from four co-educational public secondary schools in Jos-South Local Government Area of Plateau State. The simple random sampling technique with lottery method was used to select four schools and also to select one intact class from the two arms of the SS2 Biology students in each of the four sampled schools to constitute the sample of students for the study. The instruments used for collecting data from the sample were the Biology Achievement Test (BAT) and Students' Attitude Towards Biology Scale (SATBS). The BAT consisted of 50 multiple

choice test items adopted from 1998-2022 WAEC past questions on the concepts of human digestive system and the human respiratory system obtained from the senior secondary two Biology curriculum. Each BAT item had four options, A to D. The content validity of BAT was established by subjecting it to the scrutiny and judgment of three experts as regards quality, appropriateness, relevance, comprehensiveness and adequacy. Two of the experts were in Science Education unit, Science and Technology Education Department and one in Research Measurement and Evaluation unit, Education Foundations Department, both from the Faculty of Education, University of Jos.

The content validity of SATBS was subjected to the scrutiny and judgment of two experts for adequacy, quality and comprehensiveness. Construct validity of SATBS was determined by subjecting the items to factor analysis. Two experts from Research, Educational Psychology unit, Department of Education Foundations, Faculty of Education from the University of Jos validated the SATBS, to establish its construct validity through factor analysis. Students' Attitude towards Biology Scale (SATBS**)** was used to elicit information from the students on their attitude towards Biology. The item statements of the SATBS were adapted from Ahmad, Sultana and Jamil (2022) Biology Attitude Scale (BAS). In order to ensure the relevance and accuracy of the instruments, BAT and SATBS were pilot-tested with a sample of 40 SS2 Biology students in two co-educational public secondary schools in Jos- South Local Government Area of Plateau State which had similar characteristics with the sample of the main study. The internal consistency of the SATBS was established as 0 .88 using the Cronbach alpha method, while the reliability index for BAT was determined as 0.92 using Kuder Richardson formula 21 (KR_{21}) and considered reliable.

The experimental groups were taught the concepts of the human digestive and respiratory systems by the research assistants using the sequential teaching methods (Lecture, Computer-Aided Instruction and Practical Biology) in three different sequences as follows; Group I (Lecture-Computer-Aided Instruction- Practical), Group II (Computer-Aided Instruction- Practical- Lecture) and Group III (Practical- Lecture- Computer-Aided Instruction). Computer-Aided Instruction involved using a monitor to project videos on the human digestive and respiratory systems while the students watched and observed videos projected by the biology teacher. The practical method in the study focused on the sub- topics of mechanism of breathing in human and enzyme activity of ptyalin with the experiments carried out by students.

Eight Biology teachers, that is, two from each of the sampled schools were employed as research assistants for the study. Six research assistants were trained for the experimental groups while the other two research assistants were not trained and they taught for the control group. Two hours training session per day was given to the assistants who taught the three experimental groups and the training lasted for five days after school hours in one of the schools at the Jos South Local Government Area of Plateau State. The control group was taught the same concepts in Biology as the experimental groups using the sequential teaching method (Lecture- Lecture-Lecture) with the contents and the objectives of the lessons the same as those of the experimental groups. After six weeks teaching exercise, a post-test was administered to the experimental groups and the control groups on ASATB and BAT. Research questions were answered using mean and standard deviation while Analysis of Covariance (ANCOVA) was used to test all the hypotheses at 0.05 level of significance.

Results

Research Question One

What are the pre-test and post-test attitude directions of SS 2 Biology students in the three experimental groups and the control group?

Table 1
Pre-test and Post-test Attitude Mean Scores of SS2 Students' in Biology in the Three Experimental Groups and Control Group

Group		Pre-test		Direction of Attitude	Post-test		Direction of Attitude	Mean
	N	Mean	SD		Mean	SD		Gain
Experimental I	32	58.75	23.25	Negative	93.03	7.681	Positive	34.28
Experimental II	29	58.83	27.585	Negative	92.38	7.876	Positive	33.55
Experimental III	28	59.86	22.456	Negative	93.68	7.165	Positive	33.82
Control	18	59.50	27.990	Negative	67.44	23.365	Negative	7.94

Key: Scores between 30 and 75 indicate negative attitude towards Biology while scores from 75 to 120 indicate positive attitude towards Biology.

Table 1 presents the mean and standard deviation results of pre-test and post-test attitude mean scores of SS2 students in Biology in the three experimental groups and control group. The result showed that the students taught Biology in experimental group I using the LCP sequence had attitude mean score of 93.03, while those taught using CPL sequence in experimental group II, had attitude mean score of 92.38 and the students taught using PLC sequence in experimental group III, had attitude mean score of 93.68. Thus, indicating that there was a change in the attitude of students after treatment using the sequential teaching methods (LCP, CPL and PLC). However, for the control group, attitude mean score of 6 7.44 was achieved. Thus, the direction of attitude of the SS2 students towards Biology in the control group, was negative. Hence, the attitude means scores of the three experimental groups improved, and the directions of attitude changed from negative to positive. This implies that all the sequential teaching methods improved students' attitude towards Biology.

Research Question Two
What are the pre-test and post-test achievement mean scores of SS 2 Biology students in the three experimental groups and control group?

Table 2
Pre-test and Post-test Achievement Mean Scores of SS2 Students in Biology in the Three Experimental Groups and Control Group

Group		Pre-test		Post-test		Mean
	N	Mean	SD	Mean	SD	Gain
Experimental I	32	31.06	7.130	64.69	11.490	33.63
Experimental II	29	29.03	6.625	59.03	13.759	30
Experimental III	28	30.93	6.520	55.43	10.239	24.5
Control	18	27.11	5.707	40.22	9.453	13.11

Table 2 presents the mean and standard deviation results of pre-test and post-test achievement mean scores of SS2 students in Biology in the three experimental groups and control group. The result showed that the students taught Biology in experimental group I using the LCP sequence had achievement mean score of 64.69, while those taught using CPL sequence in experimental group II, had achievement mean score of 59.03 and the students taught using PLC sequence in experimental group III, had achievement mean score of 55.43.Thereby indicating that there was an improvement in the achievement of students after treatment using the

sequential teaching methods (LCP,CPL and PLC). For the control group, achievement mean score of 40.22 was attained. This implies that all the sequential teaching methods increased students' achievement in Biology.

Hypothesis One
There is no significant difference between the pre-test and post-test Biology attitude mean scores of SS 2 students in the three experimental groups and control group.

Table 3
ANCOVA Results on Post-test Attitude Mean Scores of Three Experimental Groups and Control Group

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	9874.544[a]	4	2468.636	17.761	.000	.411
Intercept	112996.133	1	112996.133	812.977	.000	.889
Covariate	55.303	1	55.303	.398	.530	.004
Group	9826.325	3	3275.442	23.566	.000	.409
Error	14177.044	102	138.991			
Total	866267.000	107				
Corrected Total	24051.589	106				

a. R Squared = .411 (Adjusted R Squared = .387)

Table 3 shows that F (3,102) = 23.57, p < 0.05. Since the p value of 0.000 is less than 0.05 level of significance, the null hypothesis was rejected, indicating that there was a significant effect of sequential teaching methods on students' attitude to Biology. The result further revealed an adjusted R squared value of .387 which means that 38.7 percent of the variation in the dependent variable which is attitude, is explained by variation in the treatment of sequential teaching methods, while the remaining are due to other factors not included in this study. This implies that sequential teaching methods improved students' attitude towards Biology.

Table 4
Scheffe Post Hoc of the Differences in Students' Attitude Mean Scores in Biology by Methods

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
LCP	CPL	.654	3.023	.829	-5.341	6.650
	PLC	-.615	3.051	.841	-6.667	5.437
	LLL	25.609*	3.474	.000	18.719	32.499
CPL	LCP	-.654	3.023	.829	-6.650	5.341
	PLC	-1.269	3.124	.685	-7.466	4.927
	LLL	24.954*	3.538	.000	17.937	31.972
PLC	LCP	.615	3.051	.841	-5.437	6.667
	CPL	1.269	3.124	.685	-4.927	7.466
	LLL	26.224*	3.562	.000	19.159	33.288
LLL	LCP	-25.609*	3.474	.000	-32.499	-18.719
	CPL	-24.954*	3.538	.000	-31.972	-17.937
	PLC	-26.224*	3.562	.000	-33.288	-19.159

Table 4 also revealed that a significant difference exists between the attitude scores of students taught Biology using sequential teaching methods (LCP, CPL and PLC) and Lecture method (LLL) with the students taught Biology using sequential teaching methods having improved better in their attitude than those taught using lecture method. However, it further showed that there is no significant difference between the attitude scores of students taught using CPL, LCP and PLC. This showed that the three sequence are equally effective.

Hypothesis Two

There is no significant difference between the pre-test and post-test Biology achievement mean scores of SS 2 students in the three experimental groups and control group.

Table 5
ANCOVA Results on Post-test Achievement Mean Scores of Three Experimental Groups and Control Group

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	14412.120[a]	4	3603.030	56.862	.000	.690
Intercept	1472.236	1	1472.236	23.234	.000	.186
Covariate	7280.639	1	7280.639	114.901	.000	.530
Group	4782.254	3	1594.085	25.157	.000	.425
Error	6463.170	102	63.364			
Total	363860.000	107				
Corrected Total	20875.290	106				

a. R Squared = .690 (Adjusted R Squared = .678)

Table 5 shows that F (3,102) = 25.16, $p < 0.05$. Since the p value of 0.000 is less than 0.05 level of significance, the null hypothesis was rejected thus, indicating that there was a significant difference between the post-test Biology achievement scores of SS2 students in the three experimental groups and control group. The result further revealed an adjusted R squared value of .678. This means that 67.8 percent of the variation in the dependent variable which is achievement is explained by variation in the treatment of sequential teaching methods, while the remaining were due to other factors not included in this study. This implies that sequential teaching methods improved students' achievement in Biology in the three experimental groups than those in the control group.

Table 6
Scheffe PostHoc of the differences in Students' Achievement Mean Scores in Biology by Methods

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.[b]	Lower Bound	Upper Bound
LCP	CPL	3.075	2.055	.138	-1.001	7.151
	PLC	9.089*	2.060	.000	5.003	13.175
	LLL	19.443*	2.392	.000	14.699	24.187
CPL	LCP	-3.075	2.055	.138	-7.151	1.001
	PLC	6.013*	2.121	.006	1.807	10.220
	LLL	16.368*	2.399	.000	11.608	21.127
PLC	LCP	-9.089*	2.060	.000	-13.175	-5.003

	CPL	-6.013*	2.121	.006	-10.220	-1.807
	LLL	10.354*	2.447	.000	5.500	15.208
LLL	LCP	-19.443*	2.392	.000	-24.187	-14.699
	CPL	-16.368*	2.399	.000	-21.127	-11.608
	PLC	-10.354*	2.447	.000	-15.208	-5.500

Table 6 shows that a significant difference existed between the achievement scores of students taught Biology using sequential teaching method (CPL, LCP & PLC) and Lecture method (LLL) with the students taught Biology using sequential teaching methods having achieved higher than those taught using lecture method. However, it further showed that there was no significant difference between the achievement scores of students taught using CPL and LCP. Hence, the two sequences are equally effective. The most effective sequence being LCP.

DISCUSSION

The study investigated the effects of sequential teaching method on senior secondary two students' attitude and achievement in Biology in Jos-South, Plateau State, Nigeria. The result of research question one revealed that sequential teaching methods improve students' attitude towards Biology. This is in consonance with the findings of Selviana and David (2017) who disclosed that sequential teaching methods enhanced students' understanding of process of science, improved students' attitude towards Biology and significantly influenced their achievement in Biology. Findings from research question two revealed that students taught Biology using sequential teaching methods achieved higher significant achievement scores than those taught Biology using lecture method. This finding is in agreement Wafula, Mondoh, and Wasike (2017) who reported that sequential teaching method is an effective method of teaching because it helps students acquire useful knowledge.

Findings from hypothesis one revealed that there was a significant difference in the attitude mean scores of SS2 students towards Biology using the sequential teaching method (STM) and those taught Biology using the lecture method (LLL). This means that the use of STM enhances students' attitude more than the lecture method. The findings also revealed no significant difference between the attitude mean scores of SS2 students towards Biology using the three different sequences (LCP, CPL and PLC). This means that the three sequence were equally effective. Beginning a lesson with lecture method helps the students understand the basics of the lesson. Beginning the lesson with computer aided instruction enables the students to represent learning concepts in audiovisuals which could foster critical and reflective skills and other 21st century skills, thus, improving their desire to learn and their attitude to learning. Starting a lesson with practical method exposes the students to a means of expressing and demonstrating what they know. This in turn, triggers the desire to learn and in the long run, improves the attitude of students in the subject matter. Perhaps, the benefits of using different teaching sequences could be responsible for the no significant difference between SS2 students' attitude mean scores in this study. This finding is in tandem with the findings of Wafula, Mondoh, and Wasike (2017) which showed that sequential usage of different teaching methods was more effective due to complementary and the supplementary roles that each plays in the classroom. Findings from hypothesis two revealed that although that there was no significant difference between the achievement scores of SS2 students taught Biology using CPL and LCP, the LCP sequence was the most effective sequence. This is contrary to the findings of Mbaegbu, Osuafor and Akachukwu (2020) that that a significant difference existed in the mean achievement scores

of students in the experimental groups, in favour of demonstration-laboratory, experiment and lecture sequence. (DEL).

CONCLUSION

The result of the study indicated that majority of students in the three experimental groups had positive attitude towards Biology in the post-test as against the control group where majority of the students still had negative attitude mean score and as such, negative attitude towards the subject. It is an indication that sequential teaching methods can change students' attitude towards Biology. Sequential teaching methods were found to be effective in improving the achievement of secondary school Biology students as indicated in the result, that, there was a significant difference among the post-test achievement mean scores of students in Biology in the three experimental groups and the control group.

RECOMMENDATIONS

Based on the findings of the study, it was recommended that :

(i) Biology teachers should teach their students using sequential teaching methods to enhance their attitude and achievement in the subject.

(ii) Biology teachers should be exposed to seminars and workshops by the relevant stakeholders, such as, the ministries of education and professional bodies, such as, the Science Teachers Association of Nigeria (STAN) and Curriculum Organisation of Nigeria (CON) on how to effectively combine teaching methods in different sequences during a lesson, especially in the sequence of lecture, computer aided instruction and practical method, to improve students' attitude and achievement in Biology and other science subjects.

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