Culmination of Different Classroom Management Arrangement on Students Performance in Integrated Science

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Abstract

The study researched the culmination of different classroom management arrangements on students performance in integrated science. A criterion sampling technique was used in selecting eight(8) junior secondary schools in Ogba Egbema, Ndoni local government area of rivers state and a total of two hundred and thirty – eight integrated science students made the sample of the study. Two (2) research questions and four (4) research hypotheses were posited to guide the study. Integrated science performance test (ISPT) was the instrument used in gathering data for the study. Analysis of covariance (ANCOVA) was used for the data collected. The results indicate that classroom management (project involving groups and whole class activities) has a significant culmination or effect on the academic performance of integrated science students. Besides the result of the multiple classification analysis indicate that 25% of the total variance in the performance of student in integrated science is credited to classroom management. Amidst the recommendations made was that colleges of education charged with the responsibility of producing integrated science teachers, should ensure that the pre-service are familiar with the capability of classroom management, as this will improve the teaching and learning of integrated science in our junior secondary schools in Nigeria. Also, that facility of education should be adequately made available to schools.

Keywords: - *Integrated Science, Students Performance, Classroom Management*

Introduction

By way of definition, the management of science classroom is the use of human, time and material resources for the attainment of science education objectives in the classrooms. The concerted sharing of knowledge and experience of the essential values of science and the achievement of the objectives of our science education should be the emphasis of our science classroom. This implies that science classes should be concerned with encouraging students to explore nature through various processes (Uduak 2010). Baker and Lloyd (2012) have observed that "we can make what we have more effective by good organization and management". Science classrooms are managed

by the teachers because they have both the subject knowledge and the ability to direct the class. Teachers roles include :- designing efficient routines and teaching students how to use them, providing and organizing the classes, pacing science classroom activities , monitoring work. There are peculiar features found in science classrooms that are not found in other classrooms and these special characteristics demand special management skills. According to Pwol (2013) the feature are :- Laboratory sessions, practical work demonstration, discovery methods and science projects.

Classroom management as outlined by Nigel and Offorma (2003) includes, grouping of teacher, tutorials, questioning and organization of teacher pupil interactions, classroom arrangement, activities, target setting for the class, peer teaching etc.

Beckman (2014) believed that students that work in groups appear more satisfied with their class and perform better in examinations. In support of the above assertions Johnson et al (2011) agreed that students working in groups tend to learn more of what is taught and retain it longer than when the same content is presented in other instructional formats.

Poor classroom management has been suggested as one of the problems of poor performance of students in science. Akpan (2012) posited that school and classrooms are inclusive among the many factors or reasons for poor achievement in science.

Purpose of the Study

The main purpose of the study is to investigate the culmination of different classroom arrangements on the performance of students in integrated science. The study will specifically examine the following objectives

1. To determine the culminations of 2(two) arrangements (project involving groups and whole class activities) on students academic performance in integrated science.
2. To examine the differential culminations of 2(two) arrangement of classroom management on male and female integrated science students academic performance in integrated science after being expressed to

Research Questions:-

The following research questions are to guide the study:-

1. To what extent will arrangement of classroom management (project involving groups and whole class activities) affect student's academic performance in integrated science?
2. To what extent will arrangement of classroom management differentially affect the performance of male and female students in integrated science?

Research Hypotheses:-

The following null hypotheses are to guide this research study:-

H01 :- There is no significance difference in the academic performance of integrated science students exposed to project involving groups and whole class activities.

H02 :- There is no significance difference in the academic performance of male and female integrated science students exposed to project involving groups.

H03 :-There is no significance in the academic performance of male and female integrated science students exposed to whole class activity.

Research Methodology

Research Design:

The design adopted for this study is a non –randomized pretest – posttest control group. The population comprised all the 780 junior secondary three (JSS 111) integrated science students in the 8(eight) junior secondary schools in Ogba, Egbema,Ndoni Local Government Area of Rivers State.

Sample and Sampling Technique

Criterion sampling technique was used in selecting 8 junior secondary schools and the criteria include:-

(i) Schools with qualified, professional graduate of integrated science teachers as subject teachers in junior secondary 3(three) classes.
(ii) Schools that are currently presenting candidates for junior secondary school certificate examination (Jss).
(iii) The schools with functional Integrated science laboratory.

Eight (8) schools met the criteria with a total of 238 Integrated science students and they form the sample for the study. The 8 intact classes from the 8 schools were divided into two (2) experimental and control group.

Instrumentation:

Integrated science performance test (ISPT) was the main instrument used for data collection. A multiple choice questions which comprise 20 items was drawn from the concept of heat energy.

Reliability of the Instrument:

Kuder – Richardson's formula 21 (KR-21) was used to obtain a reliability coefficient of 0.82. Fifty (50) students from a school that met the criteria for the study was trial tested to establish its reliability. This school and students were not used for the study.

Scoring – Each correctly answered question attracted a score of 5marks x 20 items given a total of 100%.

Research Procedure

The Jss 3 integrated science teachers in the 8 schools were used as research assistance, pretest was administered to the 3 groups on the same day at the same time before commencement of the treatment. Students in experimental groups one and two were taught and group one were given a project to do in groups, while those in experimental group two were given the same project to do as a whole class. The control group, were taught using lecture method. Heat Energy was the concept used in teaching the three (3) classes. The post test, which contain the same questions as in the pretest but reshuffled in different order was administered to all the three (3) groups after five weeks of treatment.

Method of data analysis-

Analysis of covariance (ANCOVA) was used to analyze the data collected. The hypothesis were tested at 0.05 levels of significance.

Results

Hypothesis one

There is no significant difference in the academic performance of integrated science students exposed to project involving groups, whole class activities and the control groups.

Table 1: Analysis of covariance (ANCOVA) of the performance of integrated science students exposed to project involving groups, whole class activities and the control group.

Source of Variance	Sum of Squares	DF	Mean	F-cal	F-Critic	Decision at P<05
Pretest	95.76	1	95.76	0.65	3.89	NS
Main Effect	11659.45	2	5829.72	39.33	3.04	*
Explain	11755.20	3	3918.40	26.43	2.65	*
Residual	34688.49	234	148.24			
	46443.69	237	195.97			

* = significant at P<05 alpha level
Ns = not significant

Table 1 indicates the effect of treatment as 39.33, while its corresponding f-critical at 0.05 level of significant is 3.04.

Since the calculated f-value is greater than the critical f-value, the null hypothesis was rejected. The results indicate that students exposed to the different arrangements of classroom management performed better than their counterparts in the control class. Based on the significant difference in the main culmination of classroom management. Multiple classification analysis (MCA) was considered to determine the specific contribution of the gain in students academic performance in integrated science as shown in table 2.

Table 2: multiple classification analysis (MCA) of post test scores of integrated science students exposed to project involving groups, whole class activities and the control class.

Grand means = 51.13	**N**	**Unadjusted**	**Adjusted for independent variables and covariates**	
Variables & categories		Devn Eta	Devn	Beta
Instructional materials		0.50		0.50
Project involving groups	81	8.74	8.73	
Whole class activity	77	-0.55	-0.54	
Control class	80	-8.32	-8.32	

Multiple R = 0.50 Multiple R squared = 0.25

Table 2 shows a multiple regression index of 0.50 with a multiple regression squared index (R^2) of 0.25. This implies that 25% of the total variance in the performance of students in Integrated Science is attributed to the in influence of classroom Management.

Hypothese 2:-
There is no significant different in the academic performance of male and female integrated science students exposed to project involving groups.

Table 3 : Analysis of covariance (ANCOVA) of the performance of male and female integrated science students exposed to project involving groups using pretest as covariates.

Source of Variance	**Sum of Squares**	**DF**	**Mean square**	**F-cal**	**F-Crit**	**Decision at P<05**
Pretest	0.63	1	0.63	0.01	3.98	NS
Main Effect	185.11	1	185.11	1.34	3.98	NS
Explain	185.73	2	92.87	0.67	3.13	NS
Residual	10212.97	74	138.01			
Total	10398.70	76	136.83			

NS = Not significant at P=0.5 alpha level. The result on table 3 shows that the calculated F-value of 1.34 for the main culmination of gender is less than the critical F-vale of 3.98 at 0.05 alpha, so

the null hypothesis is retained. This implies that arrangement of class room management involving group not differentially affected male and female performance in integrated science.

Hypothesis Three

There is no significant difference in the academic performance of male and female integrated science students exposed to whole class activity the result is shown on the table 4.

Table 4: Analysis of covariance (ANCOVA) of performance of male and female integrated science students exposed to whole class activities using pretest as covariates.

Source of Variance	Sum of Squares	DF	Mean	F-cal	F-Critic	Decision at P<05
Pretest	259.88	1	259.88	1.88	3.96	NS
Main Culmination	57.57	1	57.57	0.42	3.96	NS
Explain	317.45	2	158.72	1.15	3.11	NS
Residual	10781.32	78	138.22			
Total	11098.77	80	138.74			

NS= Not significant at P.05

The result on table 4 shows that the calculate F-value of 0.42 for the main culmination of gender is less than the critical F-value of 3.08 at 0.05 alpha level, so the will hypothesis was retained. This implies that arrangement of class management involving whole class activity does not differentially affect male or female students in integrated science.

Discussion

The results of hypothesis one showed that there is a significant difference in the academic performance of integrated science students exposed to the techniques of classroom management (project involving groups and whole class activities). Also the result of the multiple classification Analysis (MCA) indicated that 25% of the students performance was attributed to the influence of classroom management techniques that the students were exposed to.

This confirmed the assertion of Beckman (2014), Johnson and Smith (2011), that students exposed to the techniques of classroom management tend to learn more of what satisfied with their classes and perform better in examinations than when is taught with other instructional formats. This is also in line with an empirical investigation reported by copper (2015), that students learn best when they are actively involved in the learning process.

The result of hypothesis two (2), three (3), and four (4) as shown on table 2,3 and 4 showed that a non – significant difference exist between the performance of male and female integrated science students exposed to the techniques of classroom management (project involving groups and whole

class activities). This implies that classroom management do not discriminate between sexes. This result in consonance with Beckman (2014) that shows no significance difference in achievement between male and females as well as no difference in their rate of contribution and class participation.

The findings of this study suggest that if all variable were held constant a well managed science classroom will promote higher academic achievement irrespective of sex. Where there are good/ challenging activities, students involvement in the classroom, students satisfaction in class work, cordial relationship between the teachers and students among others, there is the tendency for good academic performance. In other words Balogun (2013) observed that many science classrooms are characterize by boredom, frustrations, drudgery and teaching of facts for the purpose of passing examination. In our public secondary schools, the science classrooms has remained unchanged and this has contributed to poor performance of integrated science student. There is need for a change in classroom management, as integrated science is the subject that lays foundation for further studies in science.

Conclusion

Academic performance of integrated science students has been found to correlate significantly with classroom arrangement and classroom management. In a good classroom, boys and girls performs very well, therefore integrated science classrooms must be well managed by the teachers as to promote teaching and learning.

Recommendations:

(1) During students teaching practice, opportunities should be given to teacher – trainees to practice the skill of good classroom management.
(2) To promote the teaching and learning integrated science, colleges of education and faculties of education charged with the responsibility of producing integrated science teacher should ensure that the pre – science teachers are acquainted with the techniques of classroom management.
(3) The content of seminars and workshops in the science faculties should be formed by the use of techniques of classroom management etc.

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