

CLASSROOM ENVIRONMENT AND SS1 STUDENTS' REPORT OF AVOIDANCE STRATEGY IN MATHEMATICS IN IKOM EDUCATION ZONE, CROSS RIVER STATE, NIGERIA

Okri, John Arikpo (Ph.D)

okrijohn@yahoo.com

Obi, Joy Joseph

obijoy643@gmail.com

Rev. Fr. Peter Anditung

anditungagbudu@gmail.com

Adie Emmanuel Benimpuye

emmaadie40@gmail.co

Department of Science Education
Faculty of Vocation and Science Education
University of Calabar, Calabar.



Abstract

The study investigated the effectiveness of classroom environment and SSII students' report of avoidance strategy in mathematics in Ikom education zone, Cross River State. A sample of 300 SSII students (150 males and 150 females) was used for the study. Purposive multi stage random sampling technique (stratified and simple random sampling) was used to compose the sample. Three research questions were answered and three hypotheses were tested in the study at p 0.05. Questionnaire was used to collect the data. The obtained data was analyzed using one way analysis of variance (ANOVA). It was found that students classroom truancy significantly influence students' report of avoidance strategy in mathematics performance. And also, teacher classroom activities significantly influence students' report of avoidance strategy in mathematics performance. Based on this, it was recommended among others that students' academic performance can be improved if the teacher's classroom environment is made friendly and conducive for all type of students' learning ability.

Keywords: Avoidance, strategy, report, classroom, environment



Introduction

Mathematics as a subject helps in the understanding of subjects in other fields like economics, accounts, to mention but a few. Therefore, we can say that no other subject forms a strong binding force among the various branch of science and social sciences outside Mathematics. Ekwueme (2013) noted that, mathematics has been found to be very important because it is needed for all scientific

and technological research and technical training in the society at large as well as the intended function and be useful to himself or herself.

A functional educational programme will be effective and successful if the aims, objectives behind its formulation have been attained. Based on the development of the human race, socially, economically, educationally, spiritually and among others. it

is very important for the programme to be modified to meet present situation and the global trend of the new society we are. These modifications can be with respect to the teachers, students content, strategies and methods adopted in the process of teaching and learning. In Nigeria, secondary school students often dread and show a negative attitude towards mathematics (Carson, 2011 & Awofala, 2011). Akinsola (2004) opined that one cause of mathematics trauma for students is the teaching style mostly adopted in mathematics classroom. Kravitz (2013) is of the view that several problems associated with poor achievement in mathematics in the country includes limited background preparation in mathematics, lack of teaching tools, equipment and materials, mathematics fright, teacher indifference, cultural values, low level of students' interest in mathematics and government of the day not providing the necessary materials needed for the teaching and learning of the subject. These problems make the mathematics educators to pay more attention on how to improve the teaching and learning of mathematics in schools. These includes the use of mastery learning approach (Akinsola 2004), the use of problem solving strategy (Melinda, 2015), the use of personalization approach (Clement & Sarama, 2015; Kaushai, Cheng Nance & Chun-yen, 2015), the use of computer and text assisted instruction approach.

It is however, observed that, by early adolescence, most students begin to purposely withdraw efforts, resist new approaches to learning approach and avoids seeking academic help when they need it. These avoidance strategies often adopted by the students could have grievous consequences to undermine their performance and affect their future ambitions in terms of learning which may eventually lead to dropping out of schools. Teachers can help in curbing this trend by adjusting their practices and thereby have a positive influence on their spirits to improve upon their performance in Mathematics and other related school subjects.

Within the school setting, one of the major determinants towards the attainment of

its objectives is the methodology adopted by the teacher. In a teacher centered environment, the students are passive and watch morosely as the lesson unfolds. This makes it difficult for them to associate theory and practice, because they are unable to internalize the content of the materials. As a result, a student-centered curriculum and methodology is being advocated so that this gap can be bridged with relevant applications to real life situations made easy (Udonsa, 2015)

Mathematics has always played a major role in the existence of man from cradle upwards, owing to its pride of place, as an intellectual stimulating subject with its prongs getting into activities of politics, economy, science and technology. It is a compulsory subject in the curriculum for every school age in Nigeria (Abakpa & Iji, 2011), Over the years, scholars and researchers around the world have been concerned with the factors that can aid in better understanding of its concepts and how students can benefit now and always. Although, it is also noticed that some applications of mathematics are not present in our individual homes and environment, and from the basic levels of schooling upwards, many students still avoid, shy away from attempting, solving problems and questions bordering on it during external examinations such as the West African Examination Council (WAEC) and National Examination Council (NECO). This development is worrisome as it is a recurring decimal in the chief examiner's report (WAEC 2017, 2018, 2019). The poor performance rate on mathematics by many students have been attributed to low or complete lack of confidence in mathematics as a subject, poor teaching approach, inadequate classroom facilities to enhance teaching and learning of the subject (Akusoba & Okeke, 2009).

Apart from the poor performance by students in external examinations, also appalling is the inability of students to associate what is learnt in the classroom to the world at large. Since the 21st century is driven by information and abundant knowledge due to rapid advancement in researches, technologies, and societal dynamics, for students to thrive

under these circumstances, the incorporation of those perceived as avoidance strategies by students must be discussed and remedied (Kolk, 2011).

Through the effective use of technology and other devices of the 21st century, areas of strengths and deficiencies can therefore be identified and worked upon (Musa, Dauda, & Debra 2014), the questions that may likely arise will be, why should students engage in behaviour that undermine their performance? Anecdotal information gathered in conversations with teachers suggests that they may ascribe avoidance strategies to factors such as laziness, devaluation of school and lack of parental support. This could be answered with the solution to the problem of mathematics in our society. From other views, it shows that from the hawkers on the streets to the professional in their various offices, every one depends on calculation and this is found in mathematics as a subject. The problem of mathematics education in Nigerian secondary schools has assumed a direct proportion as many youths tends to have a negative attitude towards mathematics as a subject.

Statement of the problem

Despite the importance the Nigerian educational system places on mathematics by making it core for all secondary school students, yet the disposition of our students towards the study of the subject is unfavorable. The study seeks to investigate the avoidance strategies in mathematics relating to classroom environment in our secondary schools in Nigeria. It also seeks to investigate the classroom environment and the reports of students' avoidance strategies in mathematics. Misconception of the subject also arise from the knowledge of the students due to poor foundation laid in previous classes, influence of developmental stage of the students, and their innate ability level also determine their avoidance strategies in mathematics classes. In the light of these, this study is also designed to find out the influence of the school environment on students' truancy and interest towards mathematics will be examined

Purpose of the study

The purpose of the study, therefore, seeks to:

1. Examine the aspect of the learning environment (the classroom environment).
2. What students may perceive as avoidance strategies in mathematics (truancy).
3. Parental background in terms of educational discipline and levels, interest. (Textbooks).

Research questions

The following research questions have been developed to guide the study.

1. To what extent does classroom truancy influence students' performance in mathematics?
2. To what extent do teachers' classroom activities influence students' performance in mathematics?
3. How does lack of textbook influence students' interest in mathematics performance?

Research hypotheses

1. There is no significant influence of classroom truancy and students' performance in mathematics.
2. There is no significant influence of teachers' classroom activities and students' performance in mathematics.
3. There is no significant influence of lack of textbooks and students; interest in mathematics performance.

Assumptions of the study

This study operates on the assumptions that:

- a. The response given by the samples of the questionnaire would be free of bias.
- b. Students' variables are measurable construct.
- c. What students perceived as avoidance strategies will be identified and stated in the study.
- d. That Mathematics is a general school subject offered by all whether since or arts based.

Methodology

The research design adopted for this study is the ex-post facto design. Isangedighi, Joshua, Asim and Ekuri (2004) asserted that ex-post facto research design is a systematic empirical inquiry in which the researcher does not have direct control of independent variables because their manifestations have already occurred or have been manipulated. Inferences about relations among variables are made without direct intervention from concomitant variation of independent and dependent variable. The ex-post facto design is suitable for this study because of the nature and magnitude of relationships among variables being investigated. It is economical for measuring several variables and their inter-relationships simultaneously. More so, the researcher has direct control over the independent variable since they have already occurred in the population.

The study was conducted in Cross River State of Nigeria. It is one of the thirty-six (36) States in Nigeria. Cross river state is made up of eighteen (18) Local Government Areas (Abi, Akamkpa, Akpabuyo, Bakassi, Bekwarra, Biase, Boki Calabar Municipality, Calabar South, Etung, Ikom, Obudu, Obubra, Obanliku, Odukpani, Ogoja, Yakurr and Yala).

Cross River State is located in the South-South Geo-Political Zone of Southern Nigeria. It is bounded in the North by Benue

State, in the south by the Atlantic Ocean, in the West by Abia and Ebonyi States, in the East by Cameroon Republic. It falls within the tropics and lies between latitudes $5^{\circ}32'$ and $4^{\circ}27'$ North of the Equator and longitude $7^{\circ}50'$ and $9^{\circ}28'$ East of the Greenwich Meridian (Mofinews, 2006). The state has a total land mass of $27,074,424 \text{ km}^2$ (CRS, 1999). The area falls within the mangrove fresh water swamp and tropical rainforest vegetation's. The geographical features of cross river state include: Oban and Obudu hills and the Cross River which runs across the State, there are also waterfalls in Agbokim in Etung Local Government Area and Oban hills (Qua falls) in Akamkpa.

The main occupation of the people of these areas includes; farming, fishing, hunting and trading. The main farm crops are cocoa yam, plantain, cassava, banana, rice, maize, okro, melon and vegetable. The people of Cross River also involved in lumbering activities.

The target population includes all senior secondary school students (SS 2) in both mixed-sex and single-sex public and private secondary schools that have presented candidates for WAEC of a minimum of eight (8) years. Table 1 below shows the number of public government schools.

Table 1
Number of Public Schools in Ikom Education Zone of Cross River State

Zone	L.G. A	Number of Schools	No. of students
Central Education Zone	Abi	9	1852
	Boki	27	2430
	Etung	8	1325
	Ikom	14	2598
	Obubra	15	2151
	Yakurr	13	2531
	Total	86	12797

Source: (CRSSEB 2017).

The sampling technique adopted for this study is the multi-stage sampling technique which is a combination of the stratified and simple random sampling. The researcher stratified the population based on the

established schools. Then simple random was used to select the subjects which are respondents for the study. The stratification was done on the basis of the number of students in a particular school. Then 5% of

students were chosen in each school that was selected.

The total sample that was selected for the study were 300 respondents representing 5% of each school selected. The justification for the selection of 5% in each school as sample size is to allow proper generalization of finding since the sample were true representation of the entire population and to give room for a manageable sample size that the researcher can comfortably work with.

Instrumentation

A researcher-developed questionnaire that was used to collect data on students' avoidance strategies in terms of teachers covered classroom activities, classroom truancy on students' effective learning in terms of homework assistance, home environment and provision of mathematic textbooks. The questionnaire was designed to measure teachers' activities or performance with respect to those variables. The instruments were divided into two sections. Section A elicited demographic information from subjects while section B elicited responses to test hypotheses on the listed variables.

Copies of the instrument questionnaires were face validated by the researcher's and also by some experts in educational research, measurement and evaluation, University of Calabar. The items were examined for

appropriateness and arrangement. Also, the face validation was ascertained, the ability of the items to measure the variables in the various sub-scales. After the validation exercise, the items that were ambiguous were dropped while the others were used to compile the final instruments.

The reliability of instrument for the study was done using Cronbach Alpha Co-efficient to answer internal consistency of items in the instrument. Cronbach Alpha is appropriate for testing the internal consistency of the instruments like questionnaire which measure the degree of agreement. The instrument was administered to fifty (50) secondary senior students who were not part of the actual study and their responses were subjected to statistical test for reliability with Cronbach alpha method of reliability estimate.

Hypothesis one

There is no significant influence of classroom truancy and students' performance in mathematics. The independent variable in this hypothesis is classroom truancy, while the dependent variable is students' performance in mathematics. One-way analysis of variance (ANOVA) was the statistical tool used for this data analysis. Result of the analysis is presented in Table 2.

Table 2: One-way analysis of variance of the influence of classroom truancy and students' performance in mathematics

Variable		N	X	Std.
Classroom truancy	High	89	9.13	3.22
	Average	135	12.15	3.21
	Low	76	11.44	2.52
	Total	300	10.11	3.58
Source of variance	SS	DF	Ms	F-cal
Between group	183.72	2	223.42	4.87*
Within group	10333.28	297	13.27	
Total	10517.20	299		

*significance of groups at $p < 0.05$, $df = 2$ and 297 , $\text{crit } f = 3.23$

From table 2 above, it could be observed that the calculated F-value of 4.87 is

higher than the critical F-value of 3.23, required for significance at 0.05 level with 2 and 297 degree of freedom. The null

hypothesis is therefore rejected implying that, there is a significant influence of classroom truancy and students' performance in mathematics.

Hypothesis two

There is no significant influence of teachers' classroom activities and students' performance in mathematics. The independent variable in

this hypothesis is teachers' classroom activities, while the dependent variable is students' performance in mathematics. One-way analysis of variance (ANOVA) was the statistical tool used for this data analysis. Result of the analysis is presented in table 3.

Table 3: One-way analysis of variance of the influence of teachers' classroom activities and students' performance in mathematics

Variable		N	X	Std.
Teachers' classroom activities	High	121	10.11	2.12
	Average	102	12.33	2.31
	Low	77	10.04	2.53
	Total	300	10.13	2.48
Source of variance	SS	DF	Ms	F-cal
Between group	245.15	2	243.44	5.51*
Within group	10272.05	297	14.29	
Total	10517.20	299		

*significance of groups at $p < 0.05$, $df=2$ and 299 , $crit f=3.23$

From table 3 above, it could be observed that the calculated F-value of 5.51 is higher than the critical f-value of 3.23, required for significance at 0.05 level with 2 and 297 degree of freedom. The null hypothesis is therefore rejected implying that, there is a significant influence of teachers' classroom activities and students' performance in mathematics.

Hypothesis three

There is no significant influence of lack of textbooks and students; interest in mathematics performance. The independence variable in this hypothesis is lack of textbooks, while the dependent variable is student's mathematics performance. One-way analysis of variance (ANOVA) was the statistical tool used for this data analysis. Result of the analysis is presented in table 4.

Table 4: One-way analysis of variance of the influence of lack of textbooks and students; interest in mathematics performance.

Variable		N	X	Std.
Lack of textbooks	High	149	12.12	2.33
	Average	98	12.13	2.12
	Low	62	10.81	2.55
	Total	300	10.13	2.48
Source of variance	SS	DF	Ms	F-cal
Between group	312.52	2	256.31	6.22*
Within group	10204.68	297	13.41	
Total	10517.20	299		

*Significance of groups at $p < 0.05$, $df=2$ and 153 , $crit f=3.23$

From table 4 above, it could be observed that the calculated F-valued of 6.22 is higher than the critical f-value of 3.23, required for significance at 0.05 level with 2 and 299 degree of freedom. The null hypothesis is therefore rejected implying that, there is a significant influence of lack of textbooks and students; interest in mathematics performance.

Discussion of findings

The first hypothesis states that there is no significant influence of classroom truancy and students' performance in mathematics in Ikom Education Zone. This null hypothesis was rejected because the calculated F-value was found to be greater than the critical F-value. The implication of this result is that there is a significant influence of classroom truancy on students' performance in mathematics.

The finding of this hypothesis agree with the earlier finding of Ma'aruf (2005) in longitudinal study of African-American males, found that of those students who were often truant in high school and primary 75% failed to graduate. He further stresses that failure to graduate, in turn, is associated with diminished earning potential in adulthood and other poor outcome.

Conclusion

The place of classroom environment, textbook, students and teachers of mathematics stands in the gap in the development of technology and science in our society in which mathematics is the bedrock.

Based on this facts, the classroom environment and the teaching of the subject should be adequately held paramount. No country can afford to loose students who have no interest in mathematics because of our sciences and technology that are built on the subject mathematics. It is therefore pertinent to motivate teachers teaching the subjects and the students involved in the subject should be seen as a preference.

Recommendations

The second hypothesis states that there is no significant influence of teachers' classroom activities and students' performance in

mathematics in Ikom Education Zone. This null hypothesis was rejected because the calculated F-valued was found to be greater than the critical F-value. The implication of this result is that there is a significant influence of teachers' classroom activities on students' performance in the study area.

The finding of this hypothesis is in line with the position of strong (2008) who posits that the best lesson plan, the most fascinating/educative instructional materials and the most positive classroom environment are all meaningless if the classroom management component is lacking or the teacher lacks rapport with the students. The finding was also in agreement with the position of Mbakwem (2001) who revealed that the classroom teacher must carry the class members along with him or her, instill in them the habit of team spirit, cooperation, moral rectitude and emotional balance in the face of all odds; which will enhance academic performance of the students, especially in mathematics.

The third hypothesis states that there is no significant influence of lack of textbooks and students' interest in mathematics performance in Ikom Education Zone. This null hypothesis was rejected because the calculated F-valued was found to be greater than the critical F-value. The implication of this result is that there is a significant influence of lack of textbooks and students' interest in mathematics performance in mathematics.

The finding is in line with the earlier position of UNESCO (2006) during EFA global monitoring report identified three sets of provisions that are essential to improving the imbalances in the curriculum and quality of learning as: reforming curriculum and textbooks; enhancing the number and quality of teachers, making the teaching-learning process, including the school environment, more learners friendly and thus enhances learners' academic performance. In the same vein, Sidhu (2008) who explained the impact of textbooks and other factors on students' performance in mathematics revealed that textbooks influenced performance by presenting a complete and well-detailed curriculum as well as replacing

subsequent mathematics education after secondary school.

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