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Effect of Class Size, Teachers Workload and School Environment on Pupils Performance in Basic Science and Technology in Public Schools in Rivers State Nigeria

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Abstract

This study examine the effect of class size, teachers' workload and school environment on Pupils' performance in Basic Science and Technology among Public Primary Schools in Rivers State. A survey research design was adopted and simple random sampling technique was used to select ten (10) Local Government Educational Board, fifty (50) Public Primary Schools, two hundred (200)Teachers and two thousand five hundred and seventy-three 2,573 Pupils in the state for the research study. Three (3) research questions and two (2) instruments namely, class size, teachers' work load and school environment questionnaire (CTSQ) and Basic Science and Technology achievement Test (BTAT). Data collected were analyzed using descriptive statistics and multiple regressions.

The result of the study shows that class size has significant effect on pupils' performance in Basic Science and Technology with a negative correlation of R= -0.489 at 0.001 level of significant. Teachers' workload has significant effect on Pupils' performance in Basic Science and Technology with a negative correlation of R=-0.039 at 0.001 level of significant. The adjusted R square reveals that 23.1% variance in the Pupils' achievement in Basic Science and Technology can be attributed to class size, teachers' workload and school environment. Class size significantly contributed to the prediction model B=.537,(t=19)=- 6.51, p<. 05. Based on the result of the findings, it was revealed that pupils' in less populated classes performed better than their counterparts in more populated classes. It also showed that heavy teachers' workload has detrimental effect on the quality of teaching learning activities. School environment has been found to be a plus to pupils'

performance and finally, large class size, heavy teachers' workload and poor school environment has been found to contribute to pupils' low performance in Basic Science and Technology in Rivers State of Nigeria.

INTRODUCTION

Primary education, as described by the National Policy on Education FRN 2004), is the education given in institutions for children from ages 6-11 +. Since the rest of the education system is built upon it, primary level is the key to the success or failure of the whole system. According to the National Policy on Education (FRN 2004), the goals of primary education are to:-

Inculcate permanent literacy and numeracy and ability to communicate effectively;

Lay a sound basis for scientific and reflective thinking; Give citizenship education as a basis for effective participation in and contribution to the life of the society; Mould the character and develop sound attitude and morals in thechild; Develop in the child ability to adapt to his changing environment;

Give the child opportunity of developing manipulative skills that will enable him to function effectively in the society within the limits of his capacity; and Provide the child with basic tools for further educational advancement, including preparation for trades and crafts of the locality. In spite of all these wonderful advantages of Primary Education, the quality of Primary school products is very low because of some reasons. One, the conditions of most schools is very poor. It is sad to see dilapidated building in many of our Public Primary school, bad toilet system, scanty and very bad chairs and tables for Pupils' use. Some schools are located in a place not suitable for learning e.g. some are close to the market, some are close to busy streets, factories, and some are located in water logged area. Some roofs are licking, some have no ceiling and Pupils will be forced to learning under scourging sun. Some blackboard are very bad, no hand wash stands and bowls for pupils' and teachers' use. How can a child learn in such poor school condition?

Okpala(1998) reiterated that there was a significant relationship between the child learning environment, teachers' professional quality and academic achievement. In the same vein, Oberneata (1992) and Udukwu (2002) claimed that students' academic achievement is dependent on some teachers' qualities and attitude. In addition, most of the primary school teachers do not usually attend conference by UBEC (Adeleke, 2003 & Osokoya. 2005)

Over the years, various educational scholars home and abroad have come out with different but related factors believed to be affecting students enrolment and achievement in the primary school. Heyneman (1976), Ahiarakwem (1981) and Abe (1995) have suggested human and materials resources as key factors necessary for achievement in developing countries. Tuckrnan (1971) and Osokoya (1998) on their own claimed , that academic performance depends upon the effect of school resources, students and teachers' personality factors, non-school factor and the output of school previously attended by the students. Heyneman (1983) concluded that higher achievement is associated with the availability of textbooks and other printed

materials Kathleen (1996) in his own research work on "school Size, school climate and student performance" also supported the views of Finns et-al (2003) which reveals that class size improves students performance. He said staff and students generally have a stronger sense of personal efficiency in small classes (Berlin and Cienkus 1989; Ruiter 1988). He added that students take more of the responsibility for their own learning in a small class size.

Furthermore, the heavy workload for the teacher is also one of the reasons for low quality in Primary school products. When a teacher teaches more than eight subjects and has two to three periods for each of the subjects in addition to do other administrative work, his concentration on his primary duty reduces and his efficiency drops. He pays little or no attention on pupils' note books, homework: class work, his behavior and attitude to lesson is discouraging because he or she is over stretched e.g. a class teacher who has forty periods per week and is also a sport master in the school, he spends little or no time with the pupils in the class as the school prepared for inter-house sport.

There is no doubt that classes with too many students will be difficult to manage by a teacher, no matter how prepared he or she might be for the lesson. In a large class the teacher will not have quality time for individual child. Class work and home work will be too much to be manage by the teacher. The lesson will not be child centered, pupils interest would no longer be a priority. Class size is seen as the total number of pupils in a classroom. It is the regular number of pupils in an arm of a class stream. It could be large, medium or small

STATEMENT OF THE PROBLEM

Research evidence has shown that the quality of the products of primary schools in Nigeria continues to the low. Researchers have tried to isolate factors that are likely to be responsible for this. Some researchers are of the opinion that class size is a major factor, while others are of the opinion that excess work load of the teachers may be responsible. Others are also of' the opinion that school environment may be responsible. It is on the basis of these, that this research work sought to examine the joint and relative influence of class size, teachers' workload and school environment on Pupils' achievement in basic science and technology.

RESEARCH QUESTION

The study provides answers to the following questions.

1. What is the nature of relationship among class size, teachers' workload, and school environment and pupil's achievement in Basic Science and technology?
2. What is the relative effect of class size, teacher's workload, and school environment on pupil's achievement in Basic Science and technology ?
3. What is the combined effect of class size, teachers' workload and school environment on Pupils' achievement in Basic Science and .technology?

METHODOLOGY

A survey research was adopted by the researcher. The survey design is primarily concerned with the present situation in the educational system in the State (Rivers State), where the research is carried out.

SAMPLE

Simple random sampling technique was used to select ten (10) Local Government Educational Board from the twenty-Three Local Government Area of the State.

Five schools were randomly selected from each of the ten (10) Local Government Educational Board, totaling into fifty (50) public primary schools in the State. Four teachers were randomly selected from each previously selected school which gives a total of two hundred (200) Teachers in the State. All Primary three pupils in each sampled school were also selected for the study giving a total of two thousand five hundred and seventy-three (2573) Pupils.

INSTRUMENTATION

Two instruments, one questionnaire and one achievement test for this study. These are

1. Class size teachers' workload and school environment questionnaire (CTSQ) Reliability coefficient 0.91 using cronbach Alpha method
2. Basic Science and Technology Achievement Test (BTAT) Reliability coefficient of 0.88 using Kuder – Richardson 21

DATA COLLECTION PROCEDURE

A teacher from each of the selected school assisted in the administration of the instruments to other teachers and also helped in collecting the instruments. The researcher later collected the instruments from these teachers, who served as research assistant and in some schools.

RESULTS

RESEARCH QUESTION 1

What is the nature of the relationship among class size, teachers' workload, and school environment pupil's achievement in basic science?

The table below presents the intercorrelation matrix showing the relationship among class size, teacher's workload, school environment and pupils' achievement in basic science and technology.

Table1. Correlation Matrix of class size, teacher's workload and school environment on pupils' achievement in basic science and technology.

Variables	Pupil's academic performance	Class size	Teacher workload	School environment
Pupils academic performance	1.000	-489	-039	-279
Class size	-.489	1.000	121	.651
Teachers' workload	-.039	.121	1.000	0.44
School environment	-.279	651	.044	1.000

Table 1. Reveals that there is a positive correlation of .121 between class size and teachers' workload on pupil's academic performance. There is also a negative correlation of -279 between class size and school environment on pupil's academic performance which implies that large class size means more workload and reduction in pupils' academic performance in basic science and technology,

Research Question 2: What is the combined effect of class size, teachers' workload and school environment on Pupils' achievement in Basic Science and technology?

Table 2. Shows the Model Summary of the Regression Analysis

Model	R	R square	Adjusted r square	Std error of the estimate
1	.492	.242	.231	9.843

The table 2 shows that the adjusted R square is 0.231 which implies 23.1% of the variance in the pupils' achievement in basic science can be attributed to class size, teachers' workload and school environment. This finding indicates that there is a composition effect of class size, teachers' workload and school environment on pupils' achievement in basic science.

Table 3: Shows that there is statistical significant effect of the joint contribution of class size, teachers' workload and school environment In pupils' achievement in basic science F-ratio (3,] 96) = 20.91, P < 0.05.

Table 3: Regression ANOV A

Model	Sum of squares	Df	Mean square	F	Sig.
Regression	6078.944	3	2026.315	20.914	.000
Residual	18989.936	196	96.887		
Total	25068.880	199			

Research question 3: What is the combined effect of class size, teachers' workload and school environment on Pupils' achievement in Basic Science and Technology?

Table 4: shows the relative contribution of each variable under unstandardized regression and corresponding standardized coefficient and t-values. The coefficient values indicate the significant level of each independent variable 't0 pupils' achievement in basic science and technology.

Table 4: Regression coefficients.

Model	Unstandardized coefficients		Standardized coefficient		
	B	Std error	Beta B	T	Sig
1. (constant)	110.733	27.854		3.976	.000
Class size	-2.682	.412	-537	-6.511	.000
Teachers' workload	.139	.379	.023	.367	.714
School environment	.130	.153	0.70	.849	.397

Table 4: shows that only the class size significantly contributed to the prediction model B = -.537, (t = 199) = -6.51, P < .05. Other predictors did not significantly contribute to the prediction.

Discussion

Table 1 and 2 reveal that there is a significant effect of class size on pupils' achievement in Basic Science and technology.

This statement can be supported by Charles (1996) in the Tennesseer's project Star (student-teacher achievement Ratio), (1985) stated that teachers' and students' in smaller classes substantially outperformed teachers and students in larger classes.

Farnsworth (2007) statement also supported the finding of this study he said smaller classes allows teacher to spend more time with students He also observed that bad behavior increases during class and recess or lunch time when pupils have less space to play in. He also small class size can boost pupils overall achievement.

The teacher knows each of his pupils better and this keeps 'the pupils on learning task of the moment. This knowledge enables the teacher to carefully supervise each child's progress academically, socially and otherwise.

Small classes enable teachers to also improve their job performance. He said that smaller classes are more likely to be "friendlier" where pupils develop better relationships with classmates and with their teachers.

Table 3 and 1 shows that there is a significant effect of teachers' workload on pupils' achievement in Basic Science. Greater workload on the part of the teacher results into pupils' low performance.

The work of Lawrence et-al *(2005)* on "secondary teachers' workload study, found out that heavy teacher's workload is having detrimental effects particularly on the quality of their teaching activities, lesson delivery, marking of students' notebooks, marking of class and homework given to students and also on their health. Teachers felt that the pressure of workload was adversely affecting the quality of their job performance.

Table 4. Reveal that a good and educative school environment is a plus to pupils' academic achievement. The school environment has to do with the physical environment and facilities within a school, such as classrooms, offices, libraries, laboratories Workshops, including the learning materials on the walls e.g. chats and concrete objects that facilitate learning. Poor school environment makes pupils performance low.

Ogundipe (2005) cited in Obemeata (1995) found out that indicators of the quality of education are related to achievement in school conditions which give a complete picture of the performance of the education system. If a school has a conducive learning environment, adequate libraries, furniture and efficient staff then there will be a high teacher job performance and high pupils' academic performance.

Obemeata further stressed that classrooms were grossly inadequate, and the few classrooms available were unreasonably crowded.

Unfortunately, many schools operate under this condition, especially those in the rural areas, operating without functional laboratories, workshops, libraries lack of good and spacious class rooms, lack of adequate furniture and electricity.' All these affect both teachers and pupils negatively.

In order to improve learning and to raise pupils' academic performance, there should be an enhanced learning environment. This could be done by improving the physical structure of schools and instructional materials.

RECOMMENDATION

The researcher offers the following recommendation

- Federal and State Ministry of Education should encourage schools to maintain smaller classes of 25 – 30 pupils per class
- Teachers in primary schools should be made to teach subjects that relate closely to their subject area
- The number of periods per week for a teacher should not be more than 20 period for effective teaching

CONCLUSION:

The findings of the study show that pupils in smaller classes that are taught by teachers with less or moderate workload, in a good learning environment, perform better than the other pupils. Hence primary school pupils’ are bound to perform better

if all pupils are taught in smaller classes, by teachers with less or moderate workload and in a good learning environment.

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