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AN EVALUATION OF THE RELATIONSHIP BETWEEN CLASSROOM SIZE AND SECONDARY SCHOOL STUDENTS ACADEMIC ACHIEVEMENT

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Abstract

The main purpose of this study is to evaluate the relationship between classroom size and secondary school students' academic achievement. The specific objectives studied include the following: To establish whether there is some kind of mechanism which can assist in establishing what determines a large, small or even optimum class size which strikes a balance between size and achievement. The research design used in this study is the survey research design. The design of the study was carefully carried out to suit the purpose of the research project using primary source of data. The population of this study consists of teachers in public secondary schools in Enugu North Local Government Area. The population, according to the census figure released by the Post Primary School Management Board (PPSMB) in 2015 is given as, nine (9) secondary schools in Enugu north LGA, seven hundred and sixty one (761) teachers. (PPSMB 2015). Data treatment method was by use of tables. Based on the findings of this study, this study concludes that class size has significant impact on the appropriateness of teachers' instructional strategies. With respect to the psychological impact of class size on students' performance, it was revealed that students' feel shy to speak in large class size and also find it really hard to express themselves in a large class; also, the atmosphere becomes noisy and stressful, thereby breeding the opportunity to miss lessons without the notice of the teacher in large class size. There is therefore enough reason to agree that large class size has psychological impacts on students' academic performance. The

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study recommends that; that where the class size cannot be reduced in a given time due to challenges beyond the control of the school authorities, it is recommended that teachers and management of the school should employ rotational students' group formation and study.

Introduction

As the world population continues to increase, the class sizes are also affected. Class size is often mentioned by experts in the educational literature as having effect on student's feelings and performance, quality of school budgets and on administration as well (Owoeye and Yara, 2011). It is considered as one of the important determinants of academic performance over which teachers in schools have little or no control. Class size may be defined as the number of students per teacher in a given class or the population of a class (Ajayi et al., 2017). Mokobia and Okoye (2011) explained that educators universally have identified class size as important and desirable attribute of effective educational system. Consequently, debate has continued in the educational literature stakeholders such as academics, policy makers and parents over the educational consequences of class size. Some researchers have maintained that class size is a tool which can be adopted in measuring performance of educational system (Kedney, 2013). According to Imoke (2006) optimum class size implies rational coordination of educational infrastructures, subject to available number of students in order to attain high level of productivity.

In Nigeria however, the class size is becoming increasingly unmanageable, putting teachers in an impossible position of giving individual student required attention. In Nigeria public schools, the teachers' eye contact with the students in class has become so reduced that some of the poorly motivated students can form number of committees at the back of the class while teaching is going on to engage in non-school discussion. Regular assignments and home works are dreaded by teachers considering the staggering number of books to mark and to record. As school population increases class sizes also increase, the performances of students become an issue. In Nigeria, Class size in public secondary schools is far above the recommended 30 or 40 students per classroom. Martins *et al.*, (2007) reported in Oyo State that average class size in most secondary school exceeds 50. Nigerian schools that have as many as eighty (80), hundred (100) or above 100 students per class have also been reported (Osim, 2011). These class sizes are considered to be too large for optimum academic achievement of students. This among other factors might have prompted Yusuf (2012) to conclude that a number of things are wrong with the educational systems in Nigeria.

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Different researchers (Adeyela, 2000; Adeyemi, 2012; McKeachie, 1980) have reported that large class sizes have negative effect on academic task. Idienumah (1987) has included that class size ranks amongst the most important factors that have strong and direct influence on academic performance of schools. Similarly, Alebiosu (2000) and Oderinde (2003) have reported that students in small classes have greater achievement level than those in large classes.

Kolawole (1982) established an inverse correlation between class size and student's achievement concluding that the larger the class, the lower the student's achievement.

Nevertheless, academic performance is directly a function of attitudes of the learners. It is expected that large classes reduce effective classroom control. It thus has a potential to encourage distraction and disruptive behaviours amongst the students. Finn *et al.* (2003) remarked that students in small classes display less disruptive behavior than those in large classes. Fischer and Grant (1983) asserted that class size significantly affects the level of students' cognitive skills in the classroom. According to Finn and Achilles (1999), small classes improved both the students' performance and learning behavior as well as it yields fewer classroom disruptions and discipline problem. In view of the above, research has suggested that smaller classes are usually preferred by both instructors and students (Smith and Glass, 1979; Guseman, 1985).

Statement of the Problem

The effectiveness of a classroom management is when the teacher and student achieve the purpose of which either are together in a class. Under an overcrowded classroom environment like what is obtained in most of our schools today it becomes pertinent to ask, how effective is teaching and learning particularly in subject area that requires close monitoring of the learner by the teacher.

Objectives of the Study

The main aim of the study is to evaluate the relationship between classroom size and secondary school student's academic achievement. Specific objective of the study include:

1. To establish whether there is some kind of mechanism which can assist in establishing what determines a large, small or even optimum class size which strikes a balance between size and achievement.

Research Question

1. To what extent does class size affect the use of instructional materials in secondary school class in Enugu North Local Government Area of Enugu State?

Literature Review

Conceptual Framework

Class Size and Classroom Instruction

Class size directly affects classroom instruction due to larger class sizes requiring teachers to utilize class time for management tasks rather than for instruction. Class size also directly affects classroom instruction through the interactions of the teachers with the students. Higher levels of interaction between students and teachers, as well as increased levels of student engagement within smaller classes, have been cited in numerous studies (Blatchford, Bassett, Goldstein, &

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Martin, 2013; Blatchford, Bassett, & Brown, 2005; Blatchford et al., 2007; Cakmak, 2009; Finn et al., 2003; Smith etal., 2003). From teacher survey and interview data, Pedder (2006) and Blatchford et al. (2003a) cited that teachers felt they were able to be more effective in smaller classes due to the increased opportunities for individual student feedback and more individualized student attention.

Additionally, teacher surveys and interviews have revealed that teachers felt they were better able to differentiate instructional lessons to accommodate the diverse needs of students within smaller classes (Blatchford et al., 2007; Cakmak, 2009). Being able to have greater flexibility in the variety of instructional activities, including the use of more small group work and less whole group lectures, was another advantage of smaller classes cited by teachers within the research of Egelson, Harmon, and Achilles (2016) and Graue, Hatch, Rao, and Oen (2007). In smaller classes, teachers felt they were able to provide extensive coverage of the curriculum due to being able to utilize a variety of activities for instruction (Englehart, 2007).

Class Size and Academic Achievement

Analysis of survey and interview data from teachers provides information regarding how class size affects the practices of the classroom environment, which is closely related to studies regarding the relationship between class size and student academic achievement. During the 1980's, the issue of class size reduction was at the forefront of education, and many states sought clear, quantitative data on the relationship between class size and student academic achievement through the use of trial programs or large-scale field experiments (Biddle & Berliner, 2012). One such study was Indiana's Project Prime Time, which initially used randomly selected public schools in the state funded experiment to analyze reduced class sizes of approximately 18 students per class in secondary school through third (Biddle & Berliner, 2012; Gilman & Antes, 1985; Gilman & Kiger, 2013; Mueller, Chase, & Walden, 1988). The project began with 24 randomly selected schools and was expanded to schools throughout the state in subsequent years, resulting in the inclusion of 52 schools and the identification of small classes as being those having an average of 19.1 students per teacher and large class sizes having 29.9 students per teacher. To account for pre-existing smaller classes, researchers used student academic achievement data gathered from the Iowa Test of Basic Skills and the Stanford Achievement Test for grade two from six school districts that had implemented the smaller class sizes and compared this data to three school districts that had not implemented the smaller class sizes. Significant increases in student achievement in the areas of reading and mathematics were found (Biddle & Berliner, 2002; Gilman & Antes, 1985; Gillman & Kiger, 2003; Mueller et al., 1988). Parent, teacher, and principal surveys indicated that stakeholders also felt the smaller classes resulted in increased student achievement as well as increases in teacher morale and in student ability beliefs (Mueller et al., 1988).

The positive results of Project Prime Time are often discredited by educational researchers.

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The study's findings only credited the reduced class size variable as being the factor that resulted in the increased reading and mathematics scores and did not account for other variables that could have resulted in the academic increases reported in the study (Gilman & Antes, 1985). A strength of the Project Prime Time study is that the participating school districts were randomly selected; however, the participating teachers were not randomly chosen, and the inconsistent use of professional development regarding effective instructional practices also weakened the design of the study (Gilman & Antes, 1985).

Research Methodology

Research Design

The research design for this study is the survey research design. This research design approach is concerned with drawing up a set of questions on various subjects or on various aspects of a subject to which selected members of a population are requested to react (Enebe 2012).

Area of the Study

The area of study selected by the researcher includes all the public/government owned secondary schools in Enugu North Local Government Area. The schools according to the data released by the Post Primary School Management Board (PPSMB 2015) include;

1. Queens Sch. Enugu
2. C.S.S Iva Valley
3. Urban G.S.S Enugu
4. Metro. G.S.S Enugu
5. City Girls S.S Enugu
6. New Layout S.S Enugu
7. Day S.S Independence L/O
8. Government S.S Enugu
9. Coal Camp S.S Enugu

Population of the Study

The population of this study consists of teachers in public secondary schools in Enugu North Local Government Area. The population, according to the census figure released by the Post Primary School Management Board (PPSMB) in 2015 is given as, nine (9) secondary schools in Enugu north LGA, seven hundred and sixty one (761) teachers. (PPSMB 2015).

Sample and sampling Techniques

The sample size of this study is one hundred and twenty (180) respondents. The study adopted the simple sampling technique which was applied by sampling 20 teachers each from nine (9) secondary schools.

Instrument for Data Collection

The instrument used for data collection was questionnaire. It was constructed based on the research questions which guided the study. The questionnaire items were constructed using four point Likert rating scale of: strongly agreed (SA), agree (A), disagree (D), and strongly disagree (SD).

Validation of Instrument

The instrument used was validated by one expert in Measurement and Evaluation at Chukwuemeka Odimegwu Ojukwu University, Uli and two experts in the Department of Educational Foundation. The experts critically examined the items and made corrections where necessary. The instrument was finally rewritten by the researcher by integrating the suggestions and corrections pointed out by the experts.

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Reliability of the Instrument

For the reliability of this study, the researcher employed a Test-Retest method. A pilot study was conducted in three secondary schools in Enugu East local government area which were not part of the sample used in the study. The researcher after sharing out the questionnaires to the respondents to elicit their responses at two different occasions collected it from them. The data obtained was used to compute the reliability coefficient using the Pearson Product moment coefficient which gave a result of 0.87. This indicates that there is a high degree of association between the two results.

Method of Data Collection

The instrument was personally distributed and collected after short-time interval. 200 copies of the questionnaire was distributed. The total number of 180 copies of questionnaire that was properly filled and retuned was used by the researcher for the analysis

Method of Data Analysis

Mean statistics were used to answer the research questions. The formula for mean is given as:

$$\bar{x} = \frac{\Sigma fx}{n}$$

$\bar{x}$ = Mean
X = Nominal value
n = Total Number
Σ = Summation

The purposes of using mean score point value was to determine the yardstick for evaluating the responses to the question items posed to the respondents. Nominal value was assigned to the different scaling items as follows:

Strongly Agreed (SA) = 4 points
Agree (A) = 3 points
Disagree (D) = 2 points
Strongly Disagree (SD) = 1 point

The yardstick mean is calculated as:

$$\bar{x} = \frac{\Sigma fx}{n}$$

$$= \frac{4+3+2+1}{4}$$

$$\bar{x} = 2.50$$

The decision rule was that any mean up to 2.50 is termed "Agreed".

Analysis and Data Presentation

Research Question One

To what extent does class size affect the use of instructional materials in secondary school classes in Enugu North Local Government Area of Enugu State?

Table 1: Mean Reponses on the extent does class size affect the use of instructional materials in secondary school classes in Enugu North Local Government Area of Enugu State. N=180

S/n	Items	Mean	Decision
1	It is very hard for the teacher to show students how the instructional material especially those at the back.	2.65	Agreed

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2	The teacher always get tired after walking around the class once, Inability to get individual attention.	2.73	Agreed
3	Classroom management is always hard. Students not getting feedback on their assignments**.**	2.90	Agreed
4	Instructional materials is always achieved with projector.	3.11	Agreed
5	Uses of diagrams are not necessary because students sitting at the back will not be able to see it, Inability to read from the board, Inadequate seating and writing places in the classroom.	3.17	Agreed
	Grand Mean	2.91	Agreed

Source: Researchers Computation 2018

The table one above devised strategies which can be adopted to improve academic performance among secondary school students in Enugu North Local Government Area. The analysis yielded a positive result with the following mean scores 2.65, 2.73, 2.90, 3.11 and 3.17 for items 11-15 respectively. These implies that instructional materials are not used properly in a large class size because, It is very hard for the teacher to show students how the instructional material especially those at the back, The teacher always get tired after walking around the class once, Classroom management is always hard, Instructional materials is always achieved with projector, inadequate learning environment and class size, teachers with proper and relevant qualification should be considered for employment.

Summary of the Findings

The following were summarized from the findings above;

1. In ascertaining the extent class size affect the use of instructional materials in secondary school classes in Enugu North Local Government Area of Enugu State. It was discovered that instructional materials are not used properly in a large class size because, It is very hard for the teacher to show students how the instructional material especially those at the back, The teacher always get tired after walking around the class once, Classroom management is always hard, Instructional materials is always achieved with projector, inadequate learning environment and class size, teachers with proper and relevant qualification should be considered for employment.

Conclusion

The study concludes that class size has significant impact on the appropriateness of teachers' instructional strategies. With respect to the psychological impact of class size on students' performance, it was revealed that students' feel shy to speak in large class size and also find it really hard to express themselves in a large class; also, the atmosphere becomes noisy and stressful, thereby breeding the opportunity to miss lessons without the notice of the teacher in large class size. There is therefore enough reason to agree that large class size has

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psychological impacts on students' academic performance.

Recommendations

From the conclusion above, the study recommends that where the class size cannot be reduced in a given time due to challenges beyond the control of the school authorities, it is recommended that teachers and management of the school should employ rotational students' group formation and study. These groups could identify common challenges and present it to teachers for support. Furthermore, as seen from the findings that some students who sit at the back of the class find it difficult to see what the teacher writes on the board, the use of technologies such as projectors are encouraged to address the issue. As a long term measure, Government should increase budget allocation to improve schools infrastructural facilities.

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