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The Influence of Large Class Size on Academic Performance of Science Students in Public Senior Secondary Schools in Obio- Akpor Local Government Area, Rivers State.

Jessey Ilama Obunge

Department Of Science Education, Faculty Of Education, Rivers State University
Email: obungeji@gmail.com

ABSTRACT

This research investigated the influence of large class size on the academic performance of science students in public senior secondary schools in Obio/Akpor local government Area, Rivers State. Descriptive survey design was adopted. Multistage sampling technique was employed in this study. Two research questions guided the study. Target population of the study was all science students and all science teachers in Obio/Akpor public senior secondary schools.. One hundred and Eight (108) SS2 science students and twelve (12) science teachers from 4 schools in the study area formed the sample size of the study. The instrument used for the study was a questionnaire titled influence of large class size in learning of science (ILCSLS). The instrument was content and face validated by experts in science education and research methods. The reliability of the instrument was obtained using Pearson Product Moment Correlation formula which gave a coefficient of 0.82. Mean was the statistical tool used to analyse the data. The study found out that (i) large class size influences the academic performance of science students in public senior secondary schools adversely, (ii) free education, few schools serving big communities, urbanization, lack of infrastructure, inadequate number of teachers, and inadequate implementation of government policies, are the main causes of large class size in public senior secondary schools in Obio-Akpor local government area.

Key Words: Influence, Large Class Size, Academic Performance, Science Students, Public Schools.

INTRODUCTION

Academic performance of students especially at the secondary school level is not only a pointer to the effectiveness of schools but also a major determinant of the future of youths in particular and the nation in general. Learning outcomes have become a phenomenon of interest to all and this accounts for the reason scholars have been working hard to unravel factors that militate against good academic performance, one of them being class size (Nwankwo, Matthew & Christiana, 2019).

According to Adams and Hayes (2010), academic performance really means three things; The ability to study and remember facts, Being able to study effectively and see how facts fit together to form larger patterns of knowledge and being able to think for oneself in relation to facts and thirdly, Being able to communicate knowledge verbally or in writing.

Class size as defined by Adeyemi (2018), is an educational tool that can be described as an average number of students per class in a school, while Hoffman (2016) described it as the number of students per teacher in a class. Class-size has been identified as one of the determinants of academic performance of students. It has become a phenomenon often mentioned in the educational literature as an influence on a student's performance and achievement, on administration, quality and school budgets. As school population increases, class sizes also increases, and the performances of students become an issue. According to Cakmak (2012) Class size affects classroom management, classroom instruction, and the academic achievement of the students, larger classes are often cited as being harder for the teachers to maintain student discipline, resulting in the focus of the classroom environment being more on student behaviour than on student academic performance. Class size directly affects classroom instruction due to larger class sizes requiring teachers to utilize class time for management tasks rather than for instruction. Also, class size 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 (Blatchford, Edmonds & Martin, 2013; Cakmak, 2012).

Large class sizes in public schools, especially in developing countries, result from global initiatives for universal education and rapid population growth (Benbow, 2007). In Rivers State, student-teacher ratios in public secondary schools exceed the National Policy on Education's (NPE) recommendation of 1:40, with actual ratios reaching 1:114 to 1:122. This overcrowding creates instructional and management challenges, making continuous assessment difficult and reducing teacher-student interaction (Taiwo, 2014). Larger class sizes lead to increased student misbehavior, reduced instructional time, and

limited space for non-traditional teaching methods (Blatchford et al., 2013). Teaching strategies like field trips, projects, and demonstrations—essential for science education—are also hindered (Joof & Amadi, 2017). Overcrowded classrooms force students to stand by windows to receive lessons, causing stress and distraction for both teachers and students (Osorntu, 2012). Addressing this issue requires adequate teacher recruitment, improved teaching spaces, and adherence to the NPE's stipulated class size for effective learning (FRN, 2013).

There has been a lot of arguments on the impact of class size on performance of science students, some pointing at over-bloated class size as the main factor responsible for falling standard of education, most especially in the elementary and secondary level of education in Nigeria, however, others see this as mere coincidence seeing other factors as being responsible (Blatchford et al., 2013). It is therefore necessary to carryout this study to ascertain the influence of class size on the academic performance of science students in public senior secondary schools in Obio-Akpor local government area of Rivers State.

PURPOSE OF THE STUDY

I. To assess the influence of large class-size on academic performance of science students in public senior secondary schools in Obio/Akpor local government area.

2. To investigate the reasons for large class-size in public senior secondary schools in Obio/Akpor local government area.

RESEARCH QUESTIONS

I. What is the influence of large class size on the academic performance of science students in public secondary schools in Obio- Akpor local government area.?

2. What are the reasons for large class size in public senior secondary schools in Obio- Akpor local government area?

METHODOLOGY

This study adopted a descriptive survey design, This method was adopted for this study because it is the most suitable for data collection drawing up a set of questions on various subject to which selected members from the population are requested to react (Enebe, 2012).

The area of study was Obio/Akpor local government area of Rivers State. The selection of this area was purposive due to its high concentration of schools and large students enrollment, making it an ideal location for this study. Specifically, the area comprises twenty-seven (27) public senior secondary schools with a total of 34,087 science students and teachers (Source: Rivers State Senior Secondary School Board, 2021/2022). This substantial population ensures adequate data collection for the research. Additionally, the choice of this area was influenced by convenience and the limited availability of similar studies in the area. The target population of this study was all 34,087 science students and teachers in the public senior secondary schools in Obio/Akpor local government area of Rivers State. Multistage (convenience, purposive and random) sampling technique was employed. A sample of one hundred and eight (108) science students and twelve (12) science teachers participated in the study. The instrument for data collection was a well-structured questionnaire titled influence of large class size in learning of science (ILCSLS) administered face to face to the respondents by the researcher. The questionnaire was face and content validated by an experts in science education and research methodology who ascertained its clarity and relevance. A pilot study was conducted with a subset of science students and teachers who were not part of the main study, twice in two weeks interval. Data from the pilot study was analyzed using Pearson Product Moment Correlation Formula and a reliability coefficient of 0.82 was obtained.

The data obtained from the study was analyzed using mean to answer the research questions[1]

RESULTS

Research Question 1: What is the influence of large class size on the academic performance of science students in public senior secondary schools in Obio/Akpor local government area?

Table 1: Analysis of Teachers and students View on Influence of Large Class size on Academic Performance of students.

S/N	ITEMS	SA	A	D	SD	Mean	Decision
1	Malpractice is encouraged during class exercises, test and examination in large classes.	60 (50%)	30 (25%)	20 (17%)	10 (8%)	3.16	Agree

[1] The use of mean is too elementary and as a result, we cannot rely on the findings of your study to a large extent. You may consider using regression or correlation analysis to determine the influence of large class size on the performance of the students.
Descriptive survey research focuses on collecting and summarizing data without making predictions or establishing causal relationships. Descriptive statistics such as mean, Standard deviation, etc, help describe and organize the data collected from the survey. This study describes the situation and do not analyze relationships or associations, as reflected in the questionnaire.

2	Students hardly see writings on the board, and hardly hear the teacher when seated at the back in a large class.	45 (37%)	40 (33%)	20 (17%)	15 (13%)	2.95	Agree
3	The teaching of practical science skills like showing the different bones on a dummy skeleton is easy in large class.	20 (17%)	15 (13%)	55 (45%)	30 (25%)	2.20	Disagree
4	Audio/visual aids in a large class would enhance lessons.	36 (30%)	66 (55%)	10 (8%)	8 (7%)	3.08	Agree
5	Students don't have any issue concentrating in a noisy and stressful atmosphere in a large class.	20 (17%)	10 (8%)	60 (50%)	30 (35%)	2.16	Disagree
6	Less crowded classrooms are easily managed by teachers.	55 (45%)	46 (39%)	11 (9%)	8 (7%)	3.23	Agree

Grand Mean = 2.79 (Agree)

The result presented in Table 1 showed the responses of the participants on the influence of large class size on academic performance of science students. The influence of large class size in learning of science (ILCSLS) questionnaire was administered to the participants (science teachers and Students). Four (4) point Likert scale was used in response to the questions. The maximum score for any items is 4, while the minimum is 1. The mean of this scale is therefore 2.5. Based on this value, any item with a mean score above the value 2.5 is regarded as an influence of large class size in learning of science as perceived by the participants while any item with a mean score below 2.5 is not regarded as an influence of large class size in learning science. It was revealed in table 1 that, most of the participants agreed that: large class size affects students' academic performance adversely with mean score of above 2.5 for items 1, 2, 4 and 6 (Malpractice is encouraged during class exercises, test and examination in large classes, Students hardly see writings on the board or hear the teacher when seated at the back in a large class, the use of audio/visual aids in a large class would enhance lessons in class and less crowded class is better managed by the teachers). On the other hand, with a mean less that 2.5, participants disagreed to items 3 and 5 (the effective teaching of practical science skills is easy in a large class, and Students don't have any issue concentrating in a noisy and stressful atmosphere in a large class).

A Grand Mean of 2.79 achieved as shown from table 1, it is affirmed that large class size has a negative influence on science student's academic performance.

Research Question 2: What are the reasons for large class size in public senior secondary schools in Obio Akpor Local Government Area?

Table 2: Analysis of teachers and students responses on the reasons for Large class size in public senior secondary schools in Obio/Akpor Local Government Area.

S/N	ITEMS	SA	A	D	SD	Mean	Decision
1	Free education is responsible for large class size.	65 (54%)	35 (29%)	15 (13%)	5 (4%)	3.33	Agree
2	Inadequate staff numbers is responsible for large class size.	66 (55%)	46 (38%)	5 (4%)	3 (3%).	3.45	Agree
3	Urbanization is an influential factor of large class size.	45 (38%)	55 (46%)	16 (13%)	4 (3%)	3.17	Agree
4	few schools serving big communities	40 (33%)	40 (33%)	22 (18%)	18 (15%)	2.85	Agree
5	Lack of infrastructure such as classrooms causes over crowded classrooms.	62 (52%)	42 (35%)	10 (8%)	6 (5%)	3.33	Agree
6	Inadequate planning and implementation of government policies guiding	78 (65%)	35 (29%)	5 (4%)	2 (2%)	3.57	Agree

number of admissions in

public secondary schools.

Grand Mean = 3.28 (Agree)

The result from Table 2 shows, mean and percentages of participants responses on the reasons for large class size in public senior secondary schools in Obio/Akpor local government area. All the items in the instrument had a mean rating of above 2.5 that means, the decision for all six items (free education, few schools serving big communities, urbanization, Lack of infrastructure, inadequate staff members and inadequate planning and implementation of government policies) are agreed as reasons for large class size in public senior secondary schools. as presented by the respondents in this study. This is affirmed by a Grand mean of 3.28.

DISCUSSION OF FINDINGS

The first thing sought in this study was to determine the influence of large class size. The results obtained after data analysis as shown in Table 1 indicated that, there is a strong reason to conclude that large class size negatively affects the academic performance of science students in various ways: malpractice during class exercises, tests and examinations, Students hardly seeing the board or hearing the teacher when seated at the back or standing around the class in a large class, difficulty in teaching practical science skills in a large class. The use of audio/visual aids in large classes would make lessons more effective, and minimize distraction to teachers and students, audio visual aids will also reduce the noise and stress level in the classroom environment, but these materials are not available in the public school system for effective teaching. The finding is in agreement with those of Okpobiri (2010), Gabriel (2011) and Anyanwu (2020). They all reported that the above factors, especially noise, are major features of large classes. They also reported that because of the rowdiness of classes in public schools, it is often difficult to use instructional materials in teaching as well as conducting class exercises and tests. They further reported that large sized classes have negative impact on the academic performance of students. Their study also concluded that class size has significant impact on the appropriateness of teachers' instructional strategies.The actual performance of the students would not be ascertained or reflected in their class scores and this could subsequently affect their performance adversely in any external examination. There is enough reason to agree that large class size has psychological impacts on students' academic performance. This is confirmed in the study carried out by Gabriel (2011) who found that Students often get distracted with noise, and do not get opportunity to approach the teacher for help. The results further confirmed the study by (Azigwe, Kyriakides, Panayiotou, & Creemers, 2016) which indicated that in a large class, the teacher finds it difficult to teach effectively and efficiently leading to students not being able to also learn effectively since low participation in class activities is inevitable.

The second research question sought to identify the reasons for large class sizes in public senior secondary schools. Table 2 presents an analysis of the data collected, revealing several contributing factors, including population explosion due to urbanization, the declaration of free education by the federal government of Nigeria, a limited number of schools serving large communities, lack of infrastructure, inadequate number of teachers, poor planning and implementation of laws governing student admissions into public secondary schools.

These findings are both expected and revealing, particularly concerning the impact of free education. Ordinarily, free education is intended to promote educational access for all members of society. However, instead of achieving this goal, it has led to overcrowded classrooms. This outcome highlights the inefficacy of educational policy planners and administrators in providing infrastructure that aligns with the implementation of free education in Nigeria. The present findings are consistent with previous research. Anyanwu (2020) attests that rapid population growth and urban migration have significantly increased student enrollment without a corresponding expansion of educational infrastructure, leading to overcrowded classrooms. Similarly, (Jacob, Edinoh, Kingsley, and Okpunukpang, 2024) emphasized that while the Nigerian government's introduction of free education aimed to enhance educational accessibility, inadequate planning and resource allocation have inadvertently resulted in overcrowded classrooms. Furthermore, the shortage of infrastructure remains a critical issue. Barde, Ahmed, Mohammed, Bizi, Ibrahim, and Uzoma (2021) noted that many schools lack the necessary facilities to accommodate the growing student population. This deficiency includes inadequate classroom space, insufficient instructional materials, and a lack of basic amenities, all of which contribute to overcrowded learning environments. Another significant factor affecting class size is the imbalance between the number of students and available teachers. Finally, while policies exist to regulate student admissions and maintain optimal class sizes, enforcement remains weak. Olubunmi (2023) highlighted the challenges in policy implementation, which further exacerbate the problem of large class sizes in Nigerian public secondary schools.

CONCLUSION

The problems of large class size cannot be over-emphasized educationally. The study revealed that large class-size significantly influences the academic performance of students in public senior secondary schools adversely. The implication is that teachers of large classes are unable to communicate lessons effectively to students, and the students in large classes are also unable to effectively participate in class. To ensure a more meaningful academic performance among the students, small class size is needed to improve the interaction between teachers and students. It is therefore pertinent that the management of public senior secondary schools pay attention to the class size in their schools to ensure good academic performance of students in the sciences like Biology, Chemistry, Mathematics, Physics and others.

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