

## The Impact of Class Size on Academic Achievement in Secondary School Examinations for Students in Delta State

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### ABSTRACT

The study investigated the impact of class size on student's performance in internal school examinations among secondary school students in Delta State. Purpose of the study was to evaluate the impact of class size on student's performance during school examinations using evaluation techniques. Three research questions and three hypothesis guided the study. The design of the study was ex-post-facto which used a descriptive survey. A sample of 12 secondary schools were drawn from the three senatorial districts in Delta State with a total number of 1,187 students. Simple random sampling of the balloting method was used to select the schools. Data collection was based on the student's results from promotion examinations of 2018/2019 session conducted in their various schools. The tests were already validated by experts in measurement and evaluation before it was administered. The data (results) collected were analyzed using mean, standard deviation, Pearson's and t-test analysis. The findings of the study revealed that there is significant relationship between student's class size and student's performance, significant differences between students in large and small class sizes and no significant differences between male and female student's performance in school examinations. It was concluded that class size has impact on student's performance, that students' performance in examination is not based on the size of the class or their sex but on readiness to study and write during examination. Based on these findings, conclusions, recommendations were made: that placement of students into various classes should be based on their suitability and readiness to study, the school authorities should work with measurement and evaluation experts in issues pertaining to student's assessment in examinations, students should be allowed to select their best subjects especially in the senior classes irrespective of their gender differences.

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### INTRODUCTION

The concept of evaluation is used in the field of measurement and evaluation, psychological practice for quality control in our educational system. It is used to measure the learner's learning progress, feedbacks and outcome especially at the end of the course. In educational measurement and evaluation, the interest, attitude, ideas, mental ability, behaviors and social adjustment of students are tested and judged both quantitatively and qualitatively according to specific rules. Evaluation is to judge the worth or quality of

some attributes or performance by comparing data to a standard unit. Such judgements are made within some frames of references.

The main purpose of evaluation is for grading, selection, and prediction, diagnostic and for proper guidance in schools and educational programs. Basically there are four types of evaluation: placement, formative, diagnostic and summative evaluation. Placement evaluation is designed to access the entry behaviour of students and their suitability or readiness for a program. Formative evaluation is used to provide feedback on the

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learner's learning progress while diagnostic is designed to find out the cause of learning difficulty in the learner before summative evaluation that comes at the end of a specific period of training for certification and judgement on student's performance.

Evaluation plays key roles in issues pertaining to class size and academic performance of students during examinations. It enables instructors to measure the effectiveness of their teaching by linking student's performance to specific learning objectives. Based on this, teachers are able to institutionalize effective teaching choice and revise ineffective ones. Evaluation focuses on grades and might reflect classroom component other than course content and mastery level. It can be used as a final review to gauge the quality of instruction. It is product oriented or judgmental.

Secondary schools in Nigeria conducts examination every term and at the end of the third term students are evaluated, graded and placed in their various classes according to their performances. This is done after teaching and learning, before continuous assessment and examination are conducted as required according to the federal ministry of education and technology (1985) handbook for continuous assessment. Continuous assessment is formative in nature and examination is summative. According to Nwagwa, Igabari & Osadebe (2022) who carried out a study on evaluation of continuous assessment practices among secondary schools revealed that continuous assessment involves examining and recording of total learning experiences, achievement of students through their educational career. Students are assessed effectively in a well-organized and conducive classroom. Effective and meaningful assessment should be based on the three domain of learning.

Aransi Waliyi Olayemi (2017) acknowledged that some of the yardstick commonly used by school authorities and management of senior secondary schools in the placement of students into classrooms which stimulates classroom discussion, depends on three key factors which are previous academic achievements i.e. students grade in junior school examination result, interest of the

students and guidance towards the class and availability of the class of interest in the school to place a student. In addition, Aransi (2017) is of the view that gender (male and female) is a range of physical, biological, mental and behavioral characteristics pertaining to and differentiating the feminine and masculine population. He carried out a study on the effect of class classification, class size and gender on academic performance Fatima high students in Osun state and gave an evidence from England which shows that there is gender gap in English language in favor for female students with an average of 12 percent points and a range of 6 to 18 percent points. Hshetv (2015) in a study carried out on gender disparity analysis in academic achievement reveal that the gender gap observed in Mathematics, English language and aptitude test was in favour of male students. Ariz and Farah (2017) in a study on learning styles, gender and academic performance on postgraduate management student reported mixed outcome in which the male students performed better in Finance and Marketing disciplines and female performed higher in Human Resources and International Business Discipline in which students applied to. These factors when taken into cognizance form the bases upon which students seeking admission into any grade in senior secondary school level are Science and Pure Science. At this point in time students are faced with the challenges of which of these classes they belong. So the issue of gender may set in on what stream of classes to belong. It becomes very important to put into consideration the gender factor when determining the suitable class to place a student (Areinsi, 2017).

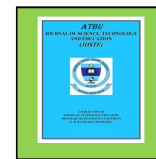
Further, Ajayi, Audu and Ajayi (2017) sees class size as the number of students per teacher in a class. The issues pertaining to class size have been a thing of concern among educational researchers for a long time. Some are of the view that class size is an instrument that can be used to measure the performance of our educational system. Adimonyemma, Akachukwu and Igboabuchi (2018) are of the view that credence should be given to fewer students in a class in order to promote learning experiences that promotes collaboration and communication among students provide helpful learning opportunity and faster student's mental

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skill through the development of information discovering and help seeking behaviours.

Amadahe (2016) emphasizes the importance of assessment and evaluation of students as the most essential part of the teaching and the learning process, that large classes requires large number of marking to be done and feedback given to students. This is a very big challenge especially in some government secondary schools with large population. Despite the large classes, teachers are faced with overloaded work and are not able to assess the students effectively. Marking of tests, assignments and examination becomes cumbersome and this leads to delay in giving feedback to students. Examination is a way of using measuring instruments like tests, questionnaires, observation, interview, rating scales to collect data pertaining to student academic performance in the domain of cognitive, affective and psychomotor.

In a class size that is large, students find learning more difficult and the teacher will not also be able to teach the students and assess them in the three domain efficiently. This invariable affects their performance during examination, leading to poor performance because the class size is large. According to Kushi and Manful (2019) in a study on the impact of class size and academic performance of students, the finding revealed based on statistical evidence shows that students in all level of small class size performed better academically than their counterpart in a very large class. This implies that tutors in large classes are unable to communicate lessons effectively to ensure a more meaningful academic performance among students, small classes are needed to improve the interactions between teachers and students.

The Federal Ministry of Education guideline (1975) in collaboration with the National policy on Education NPE, (2013) and UBEC (2010) specified the minimum standard required for class size. For proper functioning of the school for secondary school, teacher-student ratio was specified as 1:40 in the senior secondary and 1:35 for junior secondary school. It implies that any class size above this benchmark is considered large for a teacher. From observation, many public secondary schools in Nigeria are over populated with

students as stipulated in the National policy of Education according to the minimum standard. This has affected the performance of the students because they are loaded in a class to write examinations. According to Adimonyemmia, et al (2018), many studies in large class size have been investigated by different researchers and only very few found reduction in class size to significantly explain improved academic achievement.

In addition, Aturupane, Glewwe, Wisniewski (2013) reviewed 96 literatures that tries to link various educational inputs to student's performance in developing countries and found out that almost one-third of Literature reviewed specifically considered the effect of pupil-teacher ratio. From the research, only eight found reduction in class size to significantly explain improved academic achievement. This implies that student's learning and academic performance will increase when class size is small and evaluating, the students becomes easier as value judgement regarding their performance becomes more valid and reliable. Validity in the sense that the test items which the teacher administer to the students is expected to measure what it is designed to measure. While reliability will measure the constituency of the student's performance in the test or examination.

Azigwe, Kyriakides, Panayiot and Creemers (2016), reviewed a study on the link between student engagement and class size and revealed that student's engagement behaviour and retention are affected seriously by the class size. The study indicated that when students are placed in smaller classes they become more engaged academically and socially. Also, with strong social academic engagement, academic attachment will improve. In a study carried out by Olapade (2021) on the implication of large class size in teaching and learning of Business education in Ekiti state, it revealed that large class size affects the academic performance of students negatively in tertiary institutions. Teaching and learning becomes difficult and reduces seriousness among students. Also, Liz and Lisa (2022) review a study on class size, student's behaviour and educational outcomes and concluded that many schools use large classes

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to respond to inadequate resources. Student's involvement and teacher's interaction are found as influential factors on student's learning outcomes and satisfaction regardless of class size. However, the students result indicates students perceive lower levels of teacher's interaction and satisfaction in large classes. In conclusion, to offer large classes without satisfactory quality of education, they suggested that faculties should create more opportunities to encourage more student-teacher interaction, such as using student response technologies (SRS).

The control of students becomes more difficult when the class is large because adequate attention are not given to the slow learners and the resultant effects is low academic achievement after examinations and the educational goals not been met. This is what prompted the researcher to carry out this study. Therefore, the problem of this study is to evaluate the effect of class size on student's academic performance in examination among secondary schools in Delta State.

#### **Purpose of the Study**

The general objective of the study is to evaluate the impact of class size on the performance of students in examinations in conformity with the minimum standard. The specific objectives are:

- i. To examine how class size affects student's performance in examinations.
- ii. Investigate the relationship between class size and student's academic performance in examinations.
- iii. To evaluate the differences between large class size and small class size on student's academic performance in examination.

#### **Research Questions**

This study was guided by the following research questions:

1. What is the effect of class size on student's performance in school examinations?
2. Is there any difference between the performance of students in large class size and small class size in school examinations?

3. Is there any difference between male and female student's performance in school examination?

#### **Research Hypothesis**

The following null hypothesis were tested at 0.05 level of significance.

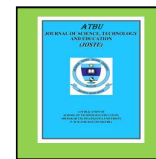
1. There is no significant relationship between class size and student's performance in examinations.
2. There is no significant differences between the performance of students in large class size and small class size in school examination performance.
3. There is no significant relationship between male and female performance in examinations based on class size.

#### **METHODOLOGY**

The design of the study is an ex-post-facto research design that used the descriptive survey to examine the extent to which class size affects student's performance in examinations as well as examining the relationship and differences that exist between large class and small class size, male and female in academic performance. The population of the study consist of all senior secondary school two SS (II) students in Delta state. A sample of twelve (12) secondary schools was drawn, four (4) from each senatorial district. Two from the urban schools and two from the rural schools with a total number of 1,187 students. Simple random sampling of the balloting method was used to select the schools in collecting the data, the researcher only used the results (outcome) of the students from the terminal examinations conducted in their various schools under the supervision of the Post Primary Education Board (PPEB, 2019/20 academic session) the test were already validated before administered to the students, these results were analyzed using the mean, standard deviation, Pearson's and T-Test analysis.

#### **PRESENTATION OF RESULTS**

**Research Questions 1:** What is the effect of class size on students' performance in secondary school examinations?



**Table 1:** Mean analysis of class size and student performance in school examinations

Variables	N	Mean(x)	SD	Bench mark	Evaluation
Class size	1,187	48.13	17.84	Above 40	High
Student's performance		8.22	4.51	Below 40	Low

Table 1 shows the total number of students as 1,187 used in the study with a mean score of 48.13, SD 17.84, student's performance, with a mean score of 8.22, SD= 4.51 and the bench mark of 40 in a class, a mean score of 40 and above is considered high and below 40 is low. Evaluation here from the

table shows that the class size of a Mean of 48.13 is high.

**Research Question 2:** Is there any difference between the performance of students in large class size and small class size in secondary school examinations?

**Table 3:** Mean Analysis of Large and small class size in school examinations.

Class size	N	Mean(x)	SD	Bench mark	Evaluation
Large	907	8.16	4.49	Above 40	Low
Small	279	8.42	4.58	Below 40	high
Total	1,187				

Table 3 shows that the mean score of 8.16 for large class size is lower than 8.42 for small class size. This implies that any class size above the bench mark of 40 and a mean score below 8.20 is regarded as large class size and below 40 and above the mean score of 8.20 is considered high. From the table, evaluation

result shows that students in the small class size performs better in school examinations.

**Research Question 4:** Is there any difference between male and female student's performance in secondary school examinations?

**Table III:** Mean analysis of difference between male and female student's performance in secondary school examinations.

Gender	N	Mean(x)	SD	Evaluation
Male	549	8.12	4.45	Low
Female	597	8.32	4.10	High
Total	1,146			

Table III shows that number of female students is 597 with a mean score of 8.32, standard deviation (SD) = 4.10. While that of the male is 549 with the mean(x) score of 8.12, SD = 4.45. The mean score indicates that the male students performed less than the female students. From the table, evaluation results show that the female students perform better in

school examinations among secondary school students.

## RESEARCH HYPOTHESIS

**Research Hypothesis 1:** There is no significant relationship between class size and student performance in secondary school examinations.

**Table 1:** Pearson's analysis of the relationship between class size and student performance in secondary school examinations.

Variables	N	Mean	SD	r	r <sup>2</sup>	r <sup>2</sup> %	p	Remark/Evaluation
Class size	1,187	48.13	17.84	-0.105	0.011	1.1	0.000	significant
Student performance		8.22	4.51					

Alpha level = 0.05

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Result in Table 1 shows a calculated value - 0.105 and a P value of 0.000, testing at an alpha level 0.05. P value is less than the alpha level. Therefore, the hypothesis that, there is no significant relationship between class size and student performance in school examination is rejected and the alternative accepted that there is significant relationship

between class size and student performance in examination among secondary school students.

**Research Hypothesis 2:** There is no significant difference between the performance of students in large class size and small class size in school examination.

**Table 2:** t-test analysis of the difference between the performance of students in large class size and small class size during school examination.

Class size	N	Mean	SD	df	t	p	Remark/Evaluation
Large	907	8.16	4.49	1,184	0.806	0.421	Not significant
Small	279	8.42	4.58				

Alpha level = 0.05

Result in table 2 shows a calculated t value of 0.806, degree of freedom of 1,184 and a p-value of 0.421 testing at alpha level of 0.05, since the p - value is higher than the alpha level of 0.05, therefore, the null hypothesis is accepted that there is no significant difference between the performance of students in large class size and small class size in school

examinations. This means that the performance of students in examination is not based on class size.

**Research Hypothesis 3:** There is no significant difference between male and female student's performance in school examinations based on class size.

**Table 3:** t-test analysis of the difference between male and female academic performance in school examinations based on class size.

Gender	N	Mean	SD	df	t	p	Remark/Evaluation
Male	549	8.12	4.45	1,144	0.805	0.421	Not significant
Female	597	8.32	4.10				

Result in Table 3 shows a calculated t-value of 0.805, degree of freedom (df) of 1,144 and p value of 0.421 at alpha level of 0.05. Since p value of 0.421 is greater than the alpha level of 0.05, the null hypothesis is accepted that there is no significant difference between male and female performance in school examination and the alternative is rejected. It implies that student's performance in school examination is not based on gender.

counterpart in a very large class size. This finding is also agrees with the work Amadahe (2016) on a study in assessment and evaluation of students, that large class size requires large number of marking to be done by the teacher and feedback given to the students. Large class is a challenge to the teacher because of overloaded work and the teacher finds it difficult to assess the students effectively.

The result from hypothesis two shows that there is no significant difference between the performance of students in large class size and small class size. This finding disagree with some previous findings, like Aturupane et al (2013) reviewed 96 students who try to link various educational inputs to student's performance in developing countries and discovered that almost one third of the reviews considered the effect of pupil-teacher ratio on class size and discovered and found out from

## DISCUSSION OF FINDINGS

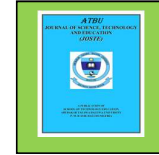
The findings from hypothesis one revealed that there is significant relationship between class size and performance of students in school examinations. This finding is in agreement with the findings of Kushi & Manful (2019) that statistical evidence shows that students of all levels of small class size performed better academically than their

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their research that only eight of them sees reduction in class size to significantly explain academic achievement. Furthermore, Olapade (2021) in a study on implication of large class size in teaching and learning of business education in Ekiti state, reveals that large class size affects academic achievements of students. This finding also disagrees with the finding of this hypothesis two. Liz and Lisa (2022) also review a study on class size, student behaviour and educational outcomes their result indicate students perceive lower levels of teacher's interaction and satisfaction in large classes. In conclusion to offer large class without sacrificing quality education, they suggested that faculty should create more opportunities to encourage more student-teacher interactions.

Adimonyemmu et al (2018) views are not in tandem with this finding. They are of the view that credence should be given to fewer students in a class in order to promote learning experiences faster student's mental skills through the development of information discovering and help seeking behaviour.

The result from hypothesis three revealed that there is no significant difference between male and female performance in school examinations. This value is contrary to the view of Aransi (2017) in a study on effect of class classification, class size and gender on academic performance and gave evidence from England which shows that there is gender gap in English language in favor of female students. This is also in tender with Asetu (2015) that gender gap in Mathematics, English and Aptitude test was in favor of male students. Ariz and Farah (2017) studied on learning styles, gender and academic performance on post graduate management student reported mixed outcome in which the male students performed better in finance and marketing disciplines while females performs higher in human resources and international business disciplines. The finding of this study is in conformity with the study conducted by Aransi (2017) that gender and class size have insignificant influence on academic performance of students in Mathematics and English language.

#### CONCLUSION:

Based on the empirical findings of the study, it was concluded that class size has significant impact on student's performance in school examinations. Secondly, on class size it was discovered that students performed better when the class size is reduced following the stipulated rules of the Federal National Policy on education for students-teacher ratio. Large class size was highly discouraged for both the teacher and the students' effectiveness and efficiency. On issues pertaining to male and female students, their performance do not depend really on gender, because each student has an area where they perform better. On this, was concluded that on gender, students' performance is not based on their sexes rather it depends on the individual level of intelligence and mental abilities.

#### RECOMMENDATIONS:

Based on the findings of this study, the following recommendations were made:

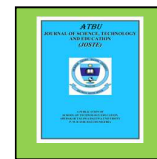
1. Placement of students into their various classes should be based on their suitability and readiness to learn.
2. School authorities should allow students irrespective of their sex differences to select their subjects irrespective of whether they are science or art based subjects.
3. There should be adequate use of class rooms to avoid over crowdedness.
4. The issue of student-teacher ratio should be strictly adhered to, to avoid overcrowded classes.
5. Examinations should be conducted in well conducive environment
6. Measurement and evaluation experts should be allowed to work with the school authorities in students' assessment.
7. Teacher should employ the formative and diagnostic methods of evaluation, by engaging students in test, assignments, class work doing instructions to ensure that the students are already acquired with the type of questions they will answer during examinations.
8. Schools should be provided with well-equipped class room for the purpose quality assurance, quantitative and qualitative assessments in examinations.

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