INTERNATIONAL JOURNAL OF CONTEMPORARY ISSUES IN INTEGRATED SCIENCE EDUCATION (IJCIISE)

ISSN: 3043-6397

IJCIISE

IJCIISE, Vol. 1, No. 1, 2025

CALL FOR PAPERS
INTERNATIONAL JOURNAL OF CONTEMPORARY ISSUES IN INTEGRATED SCIENCE EDUCATION (IJCIISE)

NOTE TO CONTRIBUTOR

International Journal of Contemporary Issues in Integrated Science Education (IJCIISE) is an annual publication of Integrated Science Educators' Association of Nigeria (ISEAN). The Journal aims at improving the quality of academic and research manuscripts submitted by scholars and researchers, through peer review process, and disseminate the publications through open access to practitioners, educators, educationists, academia, researchers, curriculum planners and policy makers. The manuscripts can have different approaches which are quantitative as well as qualitative.

IJCIISE is an annual and peer - reviewed Journal.

Manuscript submitted to IJCIISE should:

1. have a strong introduction that clearly states the organizing points of the study, acquaints the readers to what is ahead, and makes a direct link between theory, questions and research design
2. have focused literature review that clearly establishes why the topic/problem warrants discussion
3. be prepared according to the style prescribed by the 6th or 7th edition of publication manual of American Psychological Association.

Guidelines for Paper Submission

* Articles should not be longer than 15 A4 - sized pages using Time New Roman, font size of 12. Longer articles will attract additional publication fee.
* Reference style should conform to the American Psychological Association format (6th or 7th Edition). This should be arranged in alphabetical order according to the surname of the authors.
* Footnotes are not allowed.
* Manuscripts' cover should include the title of the paper, author(s) name(s), institution affiliation, contact and E-mail address (es).
* Abstract should not be more than 250 words.
* Articles can be submitted electronically via e-mail to ijisn.2023@gmail.com
* Publication fee of ₦40,000, is a condition for publication that a manuscript submitted to International Journal of Contemporary Issues in Integrated Science Education (IJCIISE) has not been published and will not be simultaneously submitted or published elsewhere.

  All fees must be paid into Integrated Science Educators' Association of Nigeria (ISEAN) Account.

Bank Name: **Polaris Bank**
Account Name: **Integrated Science Educators' Association of Nigeria**
Account Number: **1140280168**

* Submissions are published at the editor's exclusive discretion. Submission that does not conform to these guidelines may not be considered for publication.

EDITORIAL

Dear Readers,

We are excited to announce the launch of International Journal of Contemporary Issues in Integrated Science Education (IJCIISE). This Association Integrated Science Educators' Association of Nigeria (ISEAN) play a vital role in promoting scientific advancement, supporting science education, informing science policy, recognizing science excellence and fostering community engagement. The desire to float this journal was borne out of the passion to organize a yearly conference of Integrated Science by the Integrated Science Educators' Association of Nigeria, of which selected scholarly articles will be published after a thorough review. The journal dedicated to advancing knowledge and fostering dialogue within. Our mission is to publish high-quality research, innovative ideas, and critical analyses that contribute to the understanding and development of Integrated Science. At IJCIISE, we believe in the power of interdisciplinary collaboration and inclusivity. We welcome contributions from scholars, practitioners, and thought leaders worldwide, providing a space for diverse perspectives and groundbreaking work. As we embark on this journey, we invite you to submit your research, engage with our content, and join us in creating a vibrant academic community. Together, we can push the boundaries of knowledge and inspire future generations. Thank you for your support as we launch this exciting new endeavour.

This edition moves around issues that border on **"Enhancing Quality Assurance in Integrated Science in Nigeria."** It is believed that diverse contributions from scholars and researchers expressed in this edition will provoke the understanding of issues that could foster education for societal transformations on a global scale
We look forward to your contributions!

For further information on future conference activities, visit **http://ijciise.org/index.php/ijciise**

Warm regards,
Professor O. S. Agboola
President, Integrated Science Educators' Association of Nigeria (ISEAN)

TABLE OF CONTENTS

ASSESSMENT OF CLASSROOM SIZE IN THE TEACHING OF MATHEMATICS IN SELECTED SECONDARY SCHOOLS IN AKURE NORTH LOCAL GOVERNMENT AREA, ONDO STATE

Kehinde Oluwaseun AKEREYENI,
E-mail: akereyeniko@fceiwo.edu.ng
Phone Number: +2348060853198

Fatai Oluseyinde AJAYI
E-mail: ajayifo@fceiwo.edu.ng
Phone Number: +2347068419530

&

Badirat Aduke JIMOH
Department of Mathematics Education,
Federal College of Education, Iwo
E-mail: jimohba@fceiwo.edu.ng
Phone Number: +2348169454842

Abstract
The study investigated the class size in the teaching of mathematics in selected junior secondary schools in Akure North local government area. The study espoused descriptive research of survey type. The sample consisted of 35 mathematics teachers and 150 junior secondary school students randomly selected within the seven selected schools in Akure North local government area. Two research instruments used for data collection are; Teachers' Classroom Size Questionnaire and Students' Classroom Size Questionnaire*. Data collected were evaluated using frequency, percentage and mean. Furthermore, the result revealed that teachers agreed that large class or overcrowded classroom affects the teaching of mathematics with cluster mean of 4.20 was found to be above the criterion mean of 3.50 and most students were affirmative that class size affects the learning of mathematics in junior secondary schools with cluster mean of 4.45 was found to be above the criterion mean of 3.50. Furthermore, the result showed that most teachers were affirmative about the possible causes of large class size with cluster mean of 4.15 was found to be above the criterion mean of 3.50 and most students were affirmative about the possible causes of large class size in junior secondary schools with cluster mean of 4.34 was found to be above the criterion mean of 3.50. It is recommended that government should build more classrooms in Nigerian schools in order to curb the negative effects of class size on the teaching and learning of mathematics in Nigerian secondary schools.*
Keywords: Class Size, Enrollment, Learning, Mathematics, Teaching,

Introduction

Mathematics has been one of the most important subjects in science. Mathematics is said to be a subject of logic, numbers, measurements, data, and also shapes. The concepts and theories of mathematics are applicable in many disciplines like engineering, economics, finance, and geography among other disciplines. According to Aithal (2019), mathematics is a way of thinking, a way of life, and a language that is accepted globally and thus considered an important part of life in a rapidly changing world. It is a major component of society, individuals, the scientific research community, and technological advancement. For this purpose, Tourangeau et al. (2015) asserted that mathematics is a crucial topic both on its own and in light of its important connections to other subjects such as natural science, social science, engineering, and medicine, among others. Mathematics and its concepts are not only just applicable to the field of studies but also real-life problems. Mathematics has contributed to the establishment and development of our society in so many ways. The importance of Mathematics cannot be over-emphasized because it cuts across virtually all spheres of life, from basic counting and recording of things, measurement, and checking time, and mathematics knowledge has led to technological advancements and development in many areas (Adeniyi et al., 2014). According to Ndidi and Effiong (2020) in a research work, it was stated that mathematics plays an important role in actualizing national development goals and changes in the economy, politics, and technological growth of a nation.

The subject "Mathematics" remains a very compulsory and must-pass subject for students to gain admission into the university or any other tertiary institution in Nigeria but the issue of many students failing this subject across different stages of education has been a course of concern in Nigeria. This issue has been tagged with many factors such as students' hatred for the subject, poor teaching techniques by the teacher, inadequate provision of instructional material like textbooks, laziness on the part of the students and the teachers, learning and teaching environment, time scheduled for the subjects on schools time table and so many more (Laju, 2015). According to Karjanto (2017), many students have always disregarded the subject Mathematics even though they know it to be an important subject. Most students will say that if it is possible to drop the subject, they will gladly do so and continue with their other subjects. This made many students develop negative attitudes towards the subject which has in most cases affected their performance (Sule *et al.* 2016). It will be difficult to understand and get what is being taught in the subject because they have developed a wrong attitude towards the subject. According to the International Mathematics Union (IMU) (2020), it was reported that primary and secondary level mathematics education is weak in most African countries, reducing the potential population of talented students who choose mathematics majors at the university level".

However, Ndidi and Effiong (2020), asserted that mathematics is so important that it is almost crucial at all levels of education, from children in Nursery classes who were taught basic things in Mathematics like counting, addition, and

subtraction to pupils in primary schools where they are taught more basic things to prepare them for secondary school where they will learn advanced topics in the subject, up to the students in the tertiary institutions. Mathematics is an important subject, compulsory, and must be passed by every student across all levels of education in Nigeria. Factors that influence students' performance in mathematics have been well studied, and this subject area remains a research priority, especially in countries like Nigeria where students' failure rates in the subject remain high. Recent Nigerian studies have identified non-conducive learning environment, poor teacher-student relations, and non-application of instructional materials in teaching mathematics as factors that may be causally related to mathematics phobia and poor students' performance in mathematics (Olaniyan & Salman, 2015; Nwoke & Ugwuegbulam, 2016). Another study in the country found a shortage of well-trained mathematics teachers, inadequate teaching facilities, large classes, mathematics phobia, and unavailability of laboratories and libraries associated with poor student performance in mathematics (Sa'ad et al., 2014).

Nevertheless, classroom size has been identified as one of the factors that influence students' performance in mathematics (Adamu, 2020). According to Adimonyemma et al. (2018), it has been recorded that one big problem in the educational sector in Nigeria is the problem of large classroom sizes or overcrowded classrooms which has had effects on students' academic performance as captured by the West African Senior School Certificate Examination (WAEC, 2016). A report stated that the inadequacies of the classroom in Nigerian public schools contribute remarkably to poor learning outcomes reflected by high failure rates in Mathematics. The Nigerian National Policy on Education (2014) stipulated 1 to 30 students as the average number of students per class in secondary schools to create a conducive and better learning environment for the students and to foster a good student-teacher relationship between the teacher and the students.

Hence, Kiwanuka et al. (2015) reported that class size has been recognized as an important component in the performance of students in mathematics. In a large class, due to the large number of students, monitoring students' performance and giving personal advice to students based on their performances will become stressful for the teacher; this will reduce the quality of feedback (Nair et al., 2019; Roger, 2020). This is a serious case because the process of learning mathematics requires full attention and active and complete involvement of the student in the class. Shamaki (2015), mentioned that, among many factors causing low performance of students in mathematics, overcrowded classroom is a key factor. There are other factors affecting the performance of students but the class size is believed to be the key factor whereas other factors could be due to the size of the class. Roger, (2020) backed this by saying that teachers in large classes will not be effective in their classroom work, instead, they will confuse the learners more. Adamu (2020) also claimed that the increase in the population of students in a class tends to affect the performance of the students.

Furthermore, Ndidi and Effiong (2020) reported that teachers in small classes manage to reach students who need help and give adequate help to them.

Normally, the number of students in a class will increase the amount of time and effort a teacher spends on achieving a sound and positive class meanwhile, this is reduced in a smaller size class. In reality, teachers in smaller classes will be able to reach out and help each student because of the size of the workload; to do this in a large class will be very stressful and time-consuming. In large classes, teachers are faced with issues of classroom management, student control, marking of class exercises, planning for the class, and assessing the class. Teachers when faced with large classes are under much tension, but in smaller classes, teachers can easily detect a problem and quickly provide a solution to such problem. A large class also promotes truancy among the students most especially in public secondary schools.

The findings of Correa et al., (2017) and Dela Fuente (2021), showed that an overcrowded class makes students uncomfortable and become restless. When this happens, their attention and interest becomes so little. When it is the subject matter of this project (Mathematics), the learner must be comfortable, 100% attentive, and interested in the topic to get the best out of the subject. Most schools on their timetable fix Mathematics to be taught in the morning because it is believed that the learners' minds are more comfortable at that time of the day. This shows that for a student to learn mathematics, the student must be comfortable in the class. Jamba and Norbu (2023), also pin out the fact that issues of bullying, truancy, indecent dressing, and so many uncultured behaviours are common attributes of large classes. In most cases, this set of students who engage in such behaviours as mentioned above, distract other students in the process, and not just the students alone but also interrupt the flow of the lesson.

However, some people and researchers believed otherwise. They believed that reducing the classroom size does not guarantee the student's success in mathematics. Haunshek (2003), recorded that just 15% of studies observed that decreasing class size has a positive impact on the performance of the students while 72% showed that reducing class size has no visible significant impact on the academic success and performance of students. However, Bruhwiler and Blatchford (2011) concluded that an improvement in students' performance cannot be achieved with class size reduction alone but improvement could come as a result of many factors. Some other factors are parental involvement, teaching method, time allocated for the teaching of the subjects and so many more. The effects of class size on the performance of students have been researched by numerous researchers, and the issue is still an ongoing issue in different countries including Nigeria. The class size issue in Nigeria keeps aggravating because of the increase in the number of enrolled students across all levels of education in the country, especially in public schools, and the structures and materials needed to facilitate this increase are not provided. Some researchers agreed that class size plays a major and crucial role in the success of the students while some concluded that the effect of class size on the performance of students is minimal. Furthermore, researchers such as George *et al.*, (2017) and Nisar *et al.*, (2019) have investigated effective classroom management and students' academic performance elsewhere and have proved successful. Hence,

this study seeks to examine the influence of class size on the teaching of mathematics in Akure north local government area of Ondo State.

Objectives of the Study

Two objectives were raised to guide the study.

1. To investigate the influence of class size on the teaching and learning of mathematics in junior secondary schools; and
2. To assess the possible causes of large classroom sizes in junior secondary schools.

Research Questions

The following research questions were raised to guide the study:

1. Does class size have any influence on the learning of mathematics in junior secondary schools?
2. What are the possible causes of large class sizes in junior secondary schools?

Methodology

The research design adopted is the descriptive study of survey type. The population of the study comprised all mathematics teachers and junior secondary school students offering Mathematics in Akure North's local government area of Ondo State. The sample consisted of 35 mathematics teachers and 150 junior secondary school students selected using a simple random sampling technique. One local government area was randomly selected from the state using a simple random sampling technique. From the selected local government, seven schools were selected using simple random sampling technique. From each school, five teachers and one intact class of junior secondary school students were selected using purposively sampling technique based on their availability in the schools. Two self-designed research instruments were used in this research study. The instruments are titled "Teachers' Classroom Size Questionnaire" (TCSQ) and "Students' Classroom Size Questionnaire" (SCSQ). The TCSQ was divided into two parts; Part 1 contained items on effects of class size on teaching of Mathematics while Part 2 contained items on causes of large size in mathematics class in secondary schools. The SCSQ was divided into two parts; Part 1 contained items on effects of class size on teaching of Mathematics while Part 2 contained items on causes of large size in mathematics class in secondary schools. Both TCSQ and SCSQ were five-point Likert rating scale ranging from "Strongly Agree" to "Strongly Disagree", they were used to determine respondents' feelings on each question. The reliability of each instrument was determined by administering the questionnaire to some sample of teachers and students who were not within the scope of the study. Cronbach Alpha method was used to calculate the reliability coefficient of the instrument. For TCSQ, a reliability coefficient of 0.85 was obtained and for SCSQ, a reliability coefficient of 0.88 was obtained. It was concluded that the questionnaires were reliable. The data collected were analysed using descriptive statistics of frequency counts, percentage, mean,

and standard deviations.

Results

Research Question One: Does class size have any effect on the teaching of mathematics in junior secondary schools?

Table 1: Descriptive analysis of effects of class size on teaching of Mathematics

S/N	Survey Questions	SA ∫(%)	A ∫(%)	U ∫(%)	D ∫(%)	SD ∫(%)	Mean (x̄)
1	I enjoy teaching in a large mathematics class than in a small class size.	1 (2.86)	4 (11.43)	0	11 (31.43)	19 (54.28)	*1.77*
2	Students learn mathematics better in smaller classes than larger ones.	20 (57.15)	13 (37.14)	0	0	2 (5.71)	*4.40*
3	Teaching mathematics becomes enjoyable in a less distracted environment.	18 (51.43)	16 (45.71)	0	0	1 (2.86)	*4.43*
4	Large class size affects the distribution of mathematical instructional resources and facilities.	15 (42.86)	17 (48.57)	2 (5.71)	0	1 (2.86)	*4.29*
5	In large mathematics classes, students don't pay attention leading to poor performance in the subject.	20 (57.15)	15 (42.85)	0	0	0	*4.57*
6	There are always disputes to settle as a result of bullying, stealing, quarrels in a large class.	16 (45.71)	17 (48.57)	1 (2.86)	1 (2.86)	0	*4.37*
7	Some students take advantage of the large class and become truants because they are not easily identified in a large class.	15 (42.85)	18 (51.43)	1 (2.86)	1 (2.86)	0	*4.34*

S/N	Survey Questions	SA ∫(%)	A ∫(%)	U ∫(%)	D ∫(%)	SD ∫(%)	Mean (x̄)
8	Feedback is usually delayed and sometimes doesn't happen at all in a large mathematics class.	15 (42.85)	17 (48.57)	1 (2.86)	2 (5.71)	0	*4.29*
9	Large class size makes it difficult to manage and control students in a mathematics class.	19 (54.28)	14 (40.00)	1 (2.86)	1 (2.86)	0	*4.46*
10	Effective teaching of mathematics cannot be achieved in classes where student population is very high and it does not allow teachers' delivery to be effective.	22 (62.86)	12 (34.28)	0	1 (2.86)	0	*4.57*
	Cluster Mean						**4.20**

(Criterion Mean = 3.50)

Table 1, showed that 2.86% of the teachers strongly agreed that teaching a large mathematics class is more enjoyable than a smaller mathematics class, 11.43% of the teachers agreed, 31.43% of the teachers disagreed and 54.28%of the teachers strongly disagreed that teaching large mathematics class is more enjoyable than a smaller mathematics class;57.15% of the teachers strongly agreed that students learn mathematics better in smaller classes than larger ones, 37.14% of the teachers agreed and 5.71% of the teachers strongly disagreed; 51.43% of the teachers strongly agreed that teaching mathematics becomes enjoyable for them in a less distracted environment, 45.71% of the teachers agreed and 2.86% of the teachers strongly disagreed; 42.86% of the teachers strongly agreed that large class size affects the distribution of mathematical instructional resources and facilities, 48.57% of the teachers agreed, 5.71% of the teachers were unsure, and 2.86% of the teachers strongly disagreed; 57.15% of the teachers strongly agreed that in large mathematics classes, students do not pay attention leading to poor performance in the subject and42.85% of the teachers agreed; 45.71% of the teachers strongly agreed that there are always disputes to settle as a result of bullying, stealing, quarrels in a large class, 48.57% of the teachers agreed, 2.86% of the teacher were unsure and 2.86% of the teacher disagreed that there are always disputes to settle as a result of bullying, stealing, quarrels in a large class; and 42.85% of the teachers strongly agreed that some students take advantage of the large class and become truants because they are not easily identified in a large class, 51.43% of the teachers agreed, 2.86% of the teachers were unsure, and 2.86% of the teachers disagreed.

Furthermore, 42.85%of the teachers strongly agreed that feedback is usually delayed and sometimes does not happen at all in a large mathematics class, 48.57% of the teachers agreed, 2.86% of the teachers were unsure, and 5.71% of the teachers disagreed;54.28% of the teachers strongly agreed that large class size makes it difficult to manage and control students in a mathematics class, 40.00% of the teachers agreed, 2.86% of the teachers were unsure, and 2.86% of the teachers disagreed that large class size makes it difficult to manage and control students in a mathematics class;62.86%of the teachers strongly agreed that effective teaching of mathematics cannot be achieved in classes where student population is very high and it does not allow teachers' delivery to be effective, 34.28% of the teachers agreed, and 2.86% of the teachers disagree. Moreover, the cluster mean of 4.20 was found to be above the criterion mean of 3.50 disagreed. This implied that most teachers were affirmative that class size has effects on the learning of mathematics in junior secondary schools.

Table 2: Descriptive analysis of effects of class size on teaching of Mathematics (Students)

S/N	Survey Questions	SA ∫(%)	A ∫(%)	U ∫(%)	D ∫(%)	SD ∫(%)	Mean (x̄)
1	There are too many students in my mathematics class	79 (52.67)	52 (34.67)	6 (4.00)	11 (7.33)	2 (1.33)	*4.30*
2	I think I can do better in mathematics in a class with few students	95 (63.33)	49 (32.67)	1 (0.67)	5 (3.33)	0.0	*4.56*
3	There is less distraction when students are few in the class	95 (63.33)	45 (30.00)	1 (0.67)	6 (4.00)	3 (2.00)	*4.48*
4	Mathematics lesson is more interesting when students are few	91 (60.67)	47 (31.33)	1 (0.67)	8 (5.33)	3 (2.00)	*4.43*
5	Small class will make me comfortable to learn mathematics effectively without having to share desk with any other person	99 (66.00)	38 (25.34)	2 (1.33)	6 (4.00)	5 (3.33)	*4.46*
6	Mathematics becomes boring and confusing when the class is overcrowded	106 (70.67)	33 (22.00)	1 (0.67)	8 (5.33)	2 (1.33)	*4.46*

S/N	Survey Questions	SA f(%)	A f(%)	U f(%)	D f(%)	SD f(%)	Mean (x̄)
7	Mathematics teachers do not spend enough time on revision and remedial because of the large number of students in the class.	35 (23.33)	47 (31.33)	12 (8.00)	50 (33.34)	6 (4.00)	*4.55*
8	Because of a large class size, some students become truants because they will not be easily identified.	89 (59.34)	54 (36.00)	5 (3.33)	2 (1.33)	0.0	*4.53*
9	Disturbance from unserious students affects learning in mathematics classes.	102 (68.00)	42 (28.00)	1 (0.67)	4 (2.66)	1 (0.67)	*4.60*
10	Mathematics becomes more difficult because of disturbances around.	69 (46.00)	70 (46.67)	4 (2.66)	6 (4.00)	1 (0.67)	*4.33*
	Cluster Mean						**4.47**

(Criterion Mean = 3.50)

Table 2 showed that 52.67% ofthe students strongly agreed that there were too many students in their mathematics class, 34.67% ofthe students agreed, 4.00%of the students were unsure, 7.33% of the students disagreed while 1.33 of the students strongly disagreedagreed that there were too many students in their mathematics class; 63.33% of the students strongly agreed that they can do better in mathematics in a class with few students, 32.67% of the students agreed, 0.67% of the students were unsure and 3.33% of the students disagreed;63.33% of the students strongly agreed that there is less distraction when students are few in the class, 30.00% of the students agreed 0.67% of the students were unsure, 4.00% of the students disagreed and2.00%strongly disagree; 60.67% of the students strongly agreed that mathematics lesson becomes more interesting when students are few in the class, 31.33% of the students agreed, 0.67% of the students were unsure, 5.33% of the students disagreed and2.00% of the studentsdisagreed;66.00% of the students strongly agreed that small class will make them comfortable to learn mathematics effectively without having to share desk with any other person, 25.34% of the students agreed, 1.33% of the students were unsure, 4.00%of the students disagreed and 3.33% of the students strongly disagreed;70.67% of the students strongly agreed that mathematics becomes boring and confusing when the class is overcrowded, 22.00% of the students agreed, 0.67% of the students were unsure, 5.33% of the students disagreed and 1.33% of the students strongly disagreed.

Furthermore, 23.33% of the students strongly agreed that mathematics teachers do not spend enough time on revision and remedial because of the large number of students in the class, 31.33% of the students agreed, 8.00% of the students were unsure, 33.34% of the students disagreed and 4.00% of the students strongly disagreed;59.34% of the students strongly agreed that because of a large class size, some students become truants because they will not be easily identified, 36.00% of the students agreed, 3.33% of the students were unsure, and 1.33% of the students disagreed; 68.00% of the students strongly agreed that disturbances from unserious students affect learning in mathematics classes, 28.00% students agreed, 0.67% of the students were unsure, 2.66% of the students disagreed and,0.67% strongly disagreedthat disturbances from unserious students affect learning in mathematics classes;46.00% of the students strongly agreed that mathematics becomes more difficult because of disturbances around, 46.67% of the students agreed, 2.66% of the students were unsure, 4.00% of the students disagreed,0.67% of the students strongly disagreed.Moreover, the cluster mean of 4.45 was found to be above the criterion mean of 3.50. This implied that most students were affirmative that class size affects the learning of mathematics in junior secondary schools.Finally, the result revealed that both the teachers and students of the selected schools agreed that large class or overcrowded classroom affects the teaching of mathematics as revealed in Table 1 and Table 2 with table means of 4.20 and 4.45 respectively.

Research Question Two: What are the possible causes of large class sizes in Secondary Schools?

Table 3: Descriptive analysis of causes of large class sizes in secondary schools (Teachers)

S/N	Survey Questions	SA f(%)	A f(%)	U f(%)	D f(%)	SD f(%)	Mean (x̄)
1	One major thing that causes large class size is the rapid growth in population.	4 (11.43)	28 (80.00)	0.0	2 (5.71)	1 (2.86)	*3.91*
2	Introduction of social intervention programmes like free basic education caused the increase in the number of enrolled students.	11 (31.43)	22 (62.86)	0.0	2 (5.71)	0.0	*4.20*
3	Inadequate number of classrooms causes large class size because there are not enough rooms to occupy the high number of enrolled students in the school.	24 (68.57)	9 (25.71)	1 (2.86)	1 (2.86)	0.0	*3.91*

S/N	Survey Questions	SA f(%)	A f(%)	U f(%)	D f(%)	SD f(%)	Mean (x̄)
4	Popularity of a school can increase the number of student's enrollment and thereby causing large class size in the school	24 (68.57)	8 (22.86)	2 (5.71)	1 (2.86)	0.0	*4.57*
	Cluster Mean						**4.15**

(Criterion Mean = 3.50)

Table 3 showed that, 11.43% of the teachers strongly agreed that one major thing that causes large class size is the rapid growth in population, 80.00% of the teachers agreed,5.71% of the teachers disagreed and 2.86% of the students strongly disagreed;31.43% of the teachers strongly agreed that the introduction of social intervention programmes like free basic education, caused the increase in the number of enrolled students, 62.86% of the teachers agreed, and 5.71% of the teachers disagreed;68.57% of the teachers strongly agreed that inadequate number of classrooms causes large class size because there are not enough rooms to occupy the high number of enrolled students in the school, 25.71% of the teachers agreed, 2.86% of the teachers were unsure, and 2.86% of the teachers disagreed;68.57% of the teachers strongly agreed that popularity of a school can increase the number of student's enrollment and thereby causing large class size in the school, 22.86% of the teachers agreed, 5.71% of the teachers were unsure, and 2.86% of the teachers disagreed. Moreover, the cluster mean of 4.15 was found to be above the criterion mean of 3.50. This implied that most teachers were affirmative about the possible causes of large class sizes in junior secondary schools.

Table 4: Descriptive analysis of causes of large class sizes in secondary schools (Students)

S/N	Survey Questions	SA f(%)	A f(%)	U f(%)	D f(%)	SD f(%)	Mean (x̄)
1	Introduction of social intervention programs like free education increases the number of enrolled students thereby causing large class size.	43 (28.67)	92 (61.34)	8 (5.33)	5 (3.33)	2 (1.33)	*4.13*
2	Many classes are large in size because there are no enough classrooms to house the number of students enrolled in the school.	94 (62.67)	49 (32.67)	5 (3.33)	2 (1.33)	0.0	*4.56*

S/N	Survey Questions	SA ∫(%)	A ∫(%)	U ∫(%)	D ∫(%)	SD ∫(%)	Mean (x̄)
3	Popularity of a school can increase the number of students enrolled and thereby causing large class size in the school	71 (47.34)	66 (44)	5 (3.33)	8 (5.33)	0.0	*4.33*
	Cluster Mean						**4.34**

(Criterion Mean = 3.50)

Table 4 showed that 28.67% of the students strongly agreed that one of the things that cause large class size is the introduction of social intervention programs like free education which increases the number of enrolled students thereby causing large class size, 61.34% of the students agreed, 5.33% of the students were unsure, 3.33%of the students disagreed and 1.33% of the students strongly disagreed;62.67% of the students strongly agreed that many classes are large in size because there are no other classrooms to house the number of students enrolled in the school, 32.67% of the students agreed, 3.33% of the students were unsure, and 1.33% of the students disagreed;47.34% of the students strongly agreed that popularity of a school can increase the number of students enrolled and thereby causing large class size in the school, 44.00% of the students agreed, 3.33%of the students were unsure, and 5.33% of the students disagreed. Moreover, the cluster mean of 4.34 was found to be above the criterion mean of 3.50. This implied that most students were affirmative about the possible causes of large class sizes in junior secondary schools.

Discussion of Findings

The result revealed that large classes or overcrowded classrooms had influence on students' academic performance in Mathematics. Teaching mathematics is only effective if the entire environment of teaching is made healthy and upgraded through effective classroom management. Teachers' ability to coordinate the classroom and control their students' actions is crucial for achieving a positive result. Increasing classroom management and practices have been associated with student outcomes. The findings are consistent with Correa *et al.,* (2017) & Dela Fuente (2021) as they reported that effective classroom management creates an appropriate environment so that learners can achieve meaningful learning and enhance learner's moral and social growth in the school. It was found that effective classroom management significantly increases the academic achievement of students and decreases behavioural problems of the students like in government schools (George *et al.*, 2017; Nisar *et al.*, 2019). Furthermore, George *et al.*, (2017) and Nisar *et al.*, (2019) also found that very little learning occurs in disorganized and chaotic classrooms coupled with poor academic results. In a small class size it has been documented that there was a significant increase in students' engagement, a reduction in disruptive and aggressive behavioural problems, and improved academic performance in students (Gage *et al.,* 2018; Nair *et al.*, 2019; Roger, 2020).

Finally, the result showed that most students and teachers were affirmative about the possible causes of large class sizes in Mathematics classes in junior secondary schools. The findings add credence to George *et al.* (2017) that teachers can intellectually and professionally deal with disruptive behaviours in the classroom and reduce them to the minimum through effective classroom management so that successful learning can take place. Patrick (2016) has observed that effective classroom management strengthens the instructional process and makes it more productive, effective, and successful. In addition, it has been learned that very little or no learning takes place in chaotic and disorganized classrooms (Nair *et al.*, 2019; Roger, 2020).

Conclusion

The study revealed that both teachers and students of the selected schools agreed that large classes or overcrowded classrooms affect the performance of students in Mathematics and the teaching of Mathematics. It was further concluded that most teachers and students were affirmative about the possible causes of large class sizes in Mathematics classes in Junior Secondary Schools.

Recommendations

From the conclusion above, it is hereby recommended that policy-makers in educational settings should be encourage and mandate a maximum of 20 to 40 students per class in Nigerian secondary schools in order to facilitate effective teaching of Mathematics. Furthermore, government should build more buildings and classrooms in Nigerian schools in order to curb the effects of class size on the teaching and learning of Mathematics in Nigerian secondary schools. Lastly, the government should provide in-service training for teachers who are already in service to equip them with the necessary skills they need to manage the large class size during the teaching of Mathematics.

References

Adamu, G. (2020). Effect of class size on the performance of mathematics students in Makurdi metropolis, Benue State, Nigeria. *International Journal of Mathematics and Statistics Invention*, *8*(7), 01-07.

Adimonyemma, N. R., Akachukwu, E. E. & Igboabuchi, N. A. (2018). Impact of class size on students' academic performance in Biology in Idemili north local government area of Anambra State. *International Journal of Education and Evaluation*,*4*(8), 22-32.

Bruhwiler, C. & Blatchford, P. (2011). Effects of class size and adaptive teaching competency on classroom processes and academic outcome. *Learning and Instruction*, 21, 95-108.

Correa, R., Lara, E., Pino, P. & Vara, T. (2017). Relation between group seating arrangement in the classroom and student participation in speaking

activities in EFL classes at a secondary school in Chile. Primer semester de, pp. 15-158.

Dela Fuente, J. A. (2021). Contributing factors to the performance of pre-service physical science teachers in the Licensure Examination for Teachers (LET) in the Philippines. *Journal of Educational Research in Developing Areas*, *2*(2), 141-152. https://doi.org/ 10.47434/JEREDA.2.2.2021.141

Federal Republic of Nigeria (2014). *National Policy on Education (Revised Edition)*. NERDC Press.

George, I. N., Sakirudeen, A.O., & Sunday, A.H. (2017). Effective classroom management and students' academic performance in secondary schools in Uyo local government area of Akwa Ibom State. *Research in Pedagogy*, *7*(1), 43-56.

International Mathematics Union (2019, March 14). *Mathematics is everywhere: Proclamation by UNESCO of March 14 as the International Day of Mathematics*. Press information. https://www.mathunion.org/fileadmin/IMU/

Jamba, N. & Norbu, L. (2023). Effective classroom management and students' academic performance: A study in one of the middle secondary schools in Bumthang district. *Polaris Global Journal of Scholarly Research and Trends*, *2*(1), 11-25.

Kariuki, M. R., & Guantai, L. (2005). *Class size: Effect on achievement in east and southern Africa*. Paper presented at the International Invitational Education Policy Research Conference. Paris. France.

Karjanto, N. (2017). Attitude toward mathematics among the students at Nazarbayev University foundation year programme. *International Journal of Mathematical Education in Science and Technology*,*48*(6), 849-863.

Kiwanuka, H. N., Van Damme, J., Noortgate, W. V. D., Anumendem, D. N. & Namusisi, S. (2015). Factors affecting Mathematics achievement of first-year secondary school students in Central Uganda. *South African Journal of Education*,*35*(3), 16. https://doi.org/10.15700/saje.v35n3a1106

Laju I. (2015) why students fail mathematics.

Ndidi, M. A. & Effiong, I. E. (2020). Influence of classroom environment on senior secondary school students' academic achievement in mathematics in Calabar Nigeria. *Educational Research and Reviews*, *15*(8), 495-503. https://doi.org/: 10.5897/ERR2020.3983

Nisar, M., Khan, I.A., & Khan, F. (2019). Relationship between classroom management and students' academic achievement. *Pakistan Journal of Distance & Online Learning*, 5(1), 209-220.

Nwoke, B. I. & Ugwuegbulam, C. N. (2016). Causes and solutions of mathematics phobia among secondary school students. *Research on Humanities and Social Sciences, 6*(20), 105-109.

Olaniyan, M. O. & Salman, M. F. (2015). Causes of mathematics phobia among senior school students: Empirical evidence from Nigeria. *The African Symposium, 15*(1), 50-56.

Rogers, K. (2020). The effects of classroom seating layouts on participation and assessment performance in a fourth grade classroom. *Journal of Learning Spaces*, *9*, (2), 34-42.

Sa'ad T. U., Adamu A, Sadiq A. M. (2014). The causes of poor performance in mathematics among public senior secondary school students in Azare metropolis of Bauchi State, Nigeria. *Journal of Research and Method in Education*, *4*(6), 32-40.

Shamaki, T. A. (2015). Influence of learning environment on students' academic achievement in Mathematics: A case study of some selected secondary schools in Yobe State, Nigeria. *Journal of Education and Practice*, *6*(34), 40-44.

Sule, B., Hussaini, M. M., Bashir, U. S. & Garba, A. (2016). Mathematics phobia among senior secondary school students: Implication for manpower development in science education in Nigeria. *International Journal of Education and Evaluation*, *2*(8), 16-21.