Faculty of Natural and Applied Sciences Journal of Mathematics and Science Education
Print ISSN: 2814-0885 e-ISSN: 2814-0931
www.fnasjournals.com
Volume 6; Issue 1; September 2024; Page No. 58-64.

Investigating the Correlation between Class Attendance and Mathematics Performance among Junior Secondary School Students in Bayelsa State

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Abstract
The research investigated how student attendance in Mathematics is related to their academic performance. Given the current worries about educational results in Nigeria, this investigation is especially important as Mathematics is commonly seen as a difficult topic for students. This research utilized a descriptive survey design. The study focuses on all JSS 2 students in Sagbama Local Government Area of Bayelsa State, Nigeria. 267 JSS 2 students were randomly chosen from five secondary schools in Sagbama Local Government Area, Bayelsa State, Nigeria for the sample. Two instruments were utilized in gathering data for this research: a roster documenting attendance and a set of 20 multiple-choice questions on Mathematics. The Mathematics test was constructed by the researcher, and validated by two experts in Mathematics, and Educational Measurement and Evaluation. The reliability of the Mathematics questions was determined using the Cronbach alpha technique, resulting in a reliability coefficient of 0.76, indicating that the Mathematics test is dependable. The analysis of the data was performed with SPSS version 22.0, utilizing descriptive statistics (mean and standard deviation) to address the research questions and inferential statistics (Pearson Product Moment Correlation) to test the hypothesis at a significance level of 0.05. The research discovered, among other things, that there is a strong positive correlation between attending classes and academic performance in Mathematics for junior secondary school students in Sagbama Local Government Area, Bayelsa State. The study recommends that Mathematics teachers should utilize various teaching methods to increase student participation in class, in order to boost their Mathematics achievement.

Keywords: Class Attendance, Correlates, Mathematics, Performance, Bayelsa State

Introduction

One of the most important subjects for students pursuing a career in science, technology, engineering, and mathematics (STEM) sectors is mathematics, which serves as a foundation for many other disciplines and is also critical thinking and problem-solving skills development. According to the National Council of Teachers of Mathematics (NCTM), a solid understanding of mathematics is crucial for students to succeed in a rapidly changing world where mathematical literacy is increasingly important (NCTM, 2000, 2014). Over the years, Nigerian students have continuously performed poorly in mathematics. WAEC reports show an alarming trend: a sizable portion of candidates do not receive the required credit level in mathematics. For example, assessments of mathematics exam scores from 2010 to 2023 in WAEC showed that there was no significant improvement in students' mathematical performance and that the disturbingly high failure rates persisted. According to the Chief Examiners' reports, a lot of candidates had trouble understanding basic mathematical ideas, which caused their total performance to go down year after year (Awofala & Fatade, 2023). A number of intricate interrelated factors, including students' attendance in mathematics classes, have an impact on how well Nigerian students score on mathematics examinations.

The act of showing up for class, an event, or a meeting is known as attendance. Students have to maintain their attendance in schools in accordance with a predetermined standard (Teachmint, 2020). As per the National Center for Education Statistics (2006), students miss out on learning opportunities while they are absent from school. The poor attendance rate in mathematics classrooms is one of the main issues junior secondary schools are dealing with. According to research, a large proportion of students skip a significant number of classes over the academic

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year, making absenteeism a serious problem (Keppens, 2023). Students find it challenging to stay up to date with the curriculum and comprehend mathematical ideas, which disturbs the learning process. Chronic absenteeism is linked to worse academic performance and greater dropout rates (National Center for Education Statistics, 2006). Attendance in class is essential to the learning process. Students who attend class regularly are more likely to participate in class discussions, experience the curriculum, and take part in cooperative learning activities. Studies have indicated that students who consistently attend class are more likely to outperform their peers academically (Ancheta et al., 2021; Kassarnig et al., 2017; Romero & Lee, 2007). Being in attendance gives students the opportunity to get one-on-one instruction, concept clarification, and prompt feedback from teachers-all of which are critical for learning complex topics like mathematics.

Multiple factors contribute to student absences, such as physical illness, mental health struggles like depression, family problems, work obligations, uninspiring teaching methods or instructors, inconvenient class times (like early mornings), and the lack of mandatory attendance rules (Sabado, 2024). For instance, research conducted by Mooney et al., (2023) showed that students from disadvantaged socio-economic backgrounds tended to have inconsistent attendance, leading to negative impacts on their academic achievements. Frequently missing classes can result in knowledge gaps. This could lead to students experiencing stress and anxiety, which may result in them skipping even more classes. Consistently attending classes is crucial for academic success. Gaining insight into the factors linked to attending class and performing well in mathematics can be helpful for teachers and government officials. Targeted interventions can be created to improve educational results by identifying particular factors related to attendance that impact student performance. Improving mathematics performance in regions like Bayelsa State is especially important as it can impact students' future academic and career prospects significantly. Numerous research studies have investigated the relationship between attending class and academic success in mathematics. An example is research conducted by Kassarnig et al., (2017), which showed that attending classes was a major factor in determining students' grades in a mathematics course at a university level. Likewise, research carried out in Nigeria by Adetunji and Oladeji (2007) showed that students' presence in mathematics classes was linked to their success in mathematics tests. Sabado (2024) investigated the elements influencing the participation of students at Bintawan National High School **(**BNHS). The research employed a quantitative methodology to examine the factors reported based on demographic characteristics. The research showed that participants agreed on the impact of institutional factors, such as school atmosphere and transportation, with personal factors like motivation and social interactions also playing a critical role. The study concludes that the perceived determinants impacting school attendance are not significantly impacted by demographic differences in strands, age, or gender. In 2023, Byiringiro investigated how students' academic performance in mathematics is impacted by attending classes in public day schools in Rwanda. This research utilized a mixed-methods research design incorporating both quantitative and qualitative approaches for descriptive purposes. The focus of this study was on educational practitioners in the district, which encompassed students, teachers, head teachers, and sector education officers in the district. Therefore, the overall population consisted of 1600 individuals. The researchers utilized a random sampling method to select 320 participants for the study. Descriptive statistics was used to analyze quantitative data. Content analysis was used to analyze qualitative data. Data analysis was supported by the use of SPSS version 21, with results being transferred to Microsoft Word in the form of pie charts and tables for reporting. The study's results indicated that there is a strong and significant positive relationship between students' academic performance and their class attendance ($r = 0.814$, $p = 0.000$).

Ojo (2021) studied how students' attendance and focus during mathematics class lectures at the Federal College of Education (Special), Oyo, affected 100-level mathematics students. The study utilized MAT 111, also known as "Algebra," a crucial course in the Mathematics NCE programs. Data was collected through lecture attendance and a structured questionnaire created by the researcher and verified by mathematics education experts to gather responses from the participants. A single hypothesis was developed and examined at a significance level of 0.05. The research showed that students' success in mathematics is closely linked to how much they attend class and focus on the subject. Noh et al., (2018) investigated how students' classroom participation during one semester at UiTM Kuala Terengganu relates to their final exam scores in a statistics course, including Diploma of Computer Science (CS110) and Bachelor of Business Computing (CS244) students from the Faculty of Computer Science and Mathematics. The research revealed a positive correlation indicating a direct link between attending classes and achieving higher final exam scores. The research categorized the students into two groups based on the '80% rule'. An independent t-test was conducted, revealing a mean difference between the two groups. Students with over 80% attendance achieved higher scores compared to those with less than 80% attendance.

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In a study conducted by Likita (2023) on the management of public secondary schools in Maiduguri and Biu Education Zones, Borno State, Nigeria, from 2015-2019, it was found that in 2015, only 31.52 percent of students who enrolled on mathematics passed, with a standard deviation of 30.446, while 68.49 percent failed. In 2016, 38.54 percent of students passed the subject; in 2017, the percentage dropped to 31.51 percent; in 2018, the pass rate increased to 44.14 percent in both zones; and in 2019, the majority of students passed with a performance percentage of 53.78. This indicates that mathematics scores were highest in 2019 and lowest in 2015. Furthermore, Maliki et al., (2009) discovered that student achievement in mathematics in the junior secondary school examination for 2006 in Bayelsa State was strong.

Statement of the Problem

The connection between attending class and academic achievement is especially noticeable in mathematics, a subject that demands consistent practice and accumulated comprehension. Students who often skip math classes tend to have difficulties with the subject, resulting in lower grades and reduced chances of pursuing STEM studies in the future (Kassarnig et al., 2017). The issue does not just affect academics; it also impacts students' future job opportunities and overall educational success. There is a notable lack of research on the precise factors related to attendance in class and achievement in mathematics among junior high school students. Although there have been studies on the connection between attendance and academic performance, further research is necessary to specifically examine the factors influencing mathematics education (Ancheta et al., 2021; Romero & Lee, 2007). It is crucial to tackle this research gap in order to create specific interventions and policies that can effectively enhance attendance and academic performance in mathematics.

Research Objectives

This study aims to:

1. Ascertain the average of attendance of the junior secondary school students two (JSS2) in Mathematics classes in Sagbama Local Governmnet Arae, Bayelsa State.
2. Ascertain the average performance of the junior secondary school students two (JSS2) in Mathematics classes in Sagbama Local Governmnet Arae, Bayelsa State
3. Investigate the correlation between class attendance and mathematics performance among junior secondary school students.
4. Identify factors influencing attendance patterns in mathematics classes.

Research Questions

The following research questions guided the study:

1. What is the average attendance of the junior secondary school students two (JSS2) in mathematics classes in Sagbama Local Government Area, Bayelsa State?
2. What is the average performance of the junior secondary school students two (JSS2) in mathematics classes in Sagbama Local Government Area, Bayelsa State?
3. Is there a relationship between class attendance and mathematics performance among junior secondary school students in Sagbama Local Government Area, Bayelsa State?
4. What are the factors influencing attendance patterns in mathematics classes?

Hypothesis

The following hypothesis was tested at a 0.05 significance level:

1. There is no significant relationship between class attendance and mathematics performance among junior secondary school students in Sagbama Local Government Area, Bayelsa State.

Methodology

This research utilized a survey design by observing real-time attendance in mathematics classes. The study included 267 JSS 2 students from the five chosen secondary schools in Sagbama Local Government Area of Bayelsa State, Nigeria. Two research instruments were utilized in gathering data for this study. The attendance register included columns and rolls for student names, gender, and identification numbers. A multiple-choice mathematics achievement test with 20 items was given to the JSS2 students, with a total mark of 100. The mathematics teachers took attendance of every student in every class session. At the conclusion of the initial semester (2022/2023 school year), the mathematics teachers determined the attendance rate per student by dividing the total number of students present during teaching periods and multiplying by 100. This information is then entered in correlation with their individual mathematics test results. The mathematics test items were constructed by the researcher and validated by two experts in mathematics and educational measurement and evaluation. The Cronbach alpha method was employed to determine the mathematics questions' reliability,

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resulting in a reliability coefficient of 0.76, indicating the mathematics test's reliability. Data was evaluated with SPSS version 22.0, utilizing both descriptive and inferential statistics. Descriptive statistics (mean and standard deviation) were employed to address the research questions, while inferential statistics, specifically the Pearson Product Moment Correlation statistics, were utilized to test the hypothesis at a significance level of 0.05.

Results

Research Question One: What is the average of attendance of the junior secondary school students two (JSS2) in Mathematics classes in Sagbama Local Government Area, Bayelsa State?

Table 1: Mean and Standard Deviation of Attendance of the Students

Variable	N	Mean	Standard Deviation
Attendance Score	267	73.82	4.39

The findings from Table 1 indicate that the average attendance score of JSS2 students in mathematics classes in Sagbama Local Government Area, Bayelsa State, is 73.82. The average attendance of junior secondary school students in mathematics classes at the JSS2 level in Sagbama Local Government Area, Bayelsa State, is good and higher than the criterion mean of 50.

Research Question Two: What is the average performance of the junior secondary school students two (JSS2) in Mathematics classes in Sagbama Local Government Area, Bayelsa State?

Table 2: Mean and Standard Deviation of Performance of the Students

Variable	N	Mean	Standard Deviation
Mathematics Score	267	52.82	7.21

The data in Table 2 revealed that the average performance score of junior secondary school students in JSS2 Mathematics classes in Sagbama Local Government Area, Bayelsa State, is 52.82. The average score of 52.82 for JSS2 students in mathematics in Sagbama Local Government Area, Bayelsa State, exceeds the expected mean of 50, indicating their performance is above average.

Research Question Three: Is there a relationship between class attendance and Mathematics performance among junior secondary school students in Sagbama Local Government Area, Bayelsa State?
Research question 3 is hypothesized as hypothesis 1:

Hypothesis One: There is no significant relationship between class attendance and Mathematics performance among junior secondary school students in Sagbama Local Government Area, Bayelsa State.

Table 3: Pearson Product Moment Correlation of Class Attendance and Mathematics Performance among Junior Secondary School Students in Sagbama Local Government Area, Bayelsa State

Variable	N	r	p-value
Attendance Score	267	0.867	0.000
Mathematics Performance Score			

$\alpha = 0.05$

Table 3 displays the connection between attending class and mathematics achievement among junior high school students in Sagbama Local Government Area, Bayelsa State. An r-value of 0.867 was obtained, indicating a strong positive relationship between school attendance and mathematics performance in junior secondary students in Sagbama Local Government Area, Bayelsa State. Table 3 presents a p-value of 0.000, indicating that the hypothesis is tested at an alpha level of 0.05 where the p-value (0.000) is lower than the alpha value of 0.05. This results in the rejection of the null hypothesis. Hence, it can be inferred that there exists a significant correlation between attending classes and excelling in mathematics for junior secondary school students in Sagbama Local Government Area, Bayelsa State.

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Research Question Four: What are the factors influencing attendance patterns in Mathematics classes?

Table 4: Students' Perception of the Factors Influencing Attendance Patterns in Mathematics Classes

Factors influencing attendance patterns in Mathematics classes	Mean	Standard Deviation
Personal Factors		
1. Personal health issues have affected my attendance in Mathematics classes.	3.64	0.68
2. Family responsibilities impact my ability to attend Mathematics classes.	3.91	0.29
Teachers' Attributes		
1. The Mathematics teacher demonstrates a strong mastery of Mathematics content.	3.82	0.53
2. The teaching style of the Mathematics teacher keeps me engaged in the class.	3.87	0.50
Subject's Characteristics		
1. I find the Mathematics course relevant to my future career goals.	3.44	0.75
2. The difficulty level of the Mathematics course affects my attendance.	2.78	0.89
Environmental Factors		
1. The classroom environment (e.g., noise level) affects my attendance.	3.53	0.75
2. The time of the Mathematics class impacts my ability to attend.	3.18	0.93
Student's Motivation		
1. I believe attending Mathematics classes is crucial for my academic success.	3.45	0.75
2. My friends influence my decision to attend Mathematics classes.	3.66	0.70
Grand Mean	**3.53**	**0.68**

Table 4 displays the junior secondary school students' opinions on the factors affecting their attendance in mathematics classes in Sagbama Local Government Area, Bayelsa State. All items listed in Table 4 exceed the criterion mean of 2.5. Additionally, the overall average exceeds the criterion mean of 2.5, indicating that junior secondary school students in Sagbama Local Government Area, Bayelsa State, acknowledge that various factors such as personal, teachers' qualities, subject attributes, environmental aspects, and students' drive affect their attendance in mathematics classes.

Discussion

Results from the first research question showed that the mean attendance of JSS2 students in mathematics classes in Sagbama LGA, Bayelsa State, is satisfactory. This indicates that the majority of JSS2 students in Sagbama Local Government Area, Bayelsa State, attend mathematics classes. The results of this research align with the results of Noh et al., (2018), who investigated how students' classroom participation relates to their final exam scores. The research discovered that students who had an attendance rate exceeding 80% received higher grades compared to students with an attendance rate below 80%. Results from the second research question showed that the academic performance of JSS2 students in mathematics classes in Sagbama Local Government Area, Bayelsa State, is satisfactory. The results of this study align with the results of Maliki et al. (2009), who discovered that student achievement in mathematics in the junior secondary school exam in Bayelsa State in 2006 was strong. This research also discovered that JSS 2 students in Sagbama Local Government Area, Bayelsa State believe that personal, teachers' attributes, subject characteristics, environmental factors, and students' motivation are the factors affecting attendance in Mathematics classes. The results of this research align with Sabado's (2024) study, which identified factors that impact Senior High School (SHS) Students' attendance at Bintawan National High School (BNHS), including institutional factors (school environment, transportation), personal factors, and social interactions.

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The results of the first hypothesis showed a positive significant correlation between attendance in class and academic achievement in Mathematics for junior secondary school students in Sagbama Local Government Area, Bayelsa State. This indicates that consistent participation in Mathematics classes enhances students' Mathematics performance. The results of this study are consistent with the results of Adetunji and Oladeji (2007), who found a positive relationship between students' attendance in Mathematics classes and their performance in Mathematics exams.

Conclusion

Based on the findings, the study concludes that there is a significant positive relationship between class attendance and mathematics performance among junior secondary school students in Sagbama Local Government Area, Bayelsa State.

Recommendations

Based on the conclusion, the study recommends that:

1. Mathematics teachers need to use a variety of teaching techniques to increase student participation in their classes, leading to better mathematics performance.
2. Classrooms need to have good ventilation and be large enough for comfortable accommodation.
3.

References

Adetunji, A., & Oladeji, O. (2007). The effect of class attendance on student performance in a first-year mathematics course. *Journal of Educational Research and Development*, *2*(1), 15-21.

Ancheta, R. F., Daniel, D., & Ahmad, R. (2021). Effect of class attendance on academic performance. *European Journal of Education Studies*, *8*(9), 1-17.

Awofala, O. A., & Fatade, O. A. (2023). Nigerian students' poor performance in Mathematics: Who do we blame? *Nigerian Online Journal of Educational Sciences and Technology*, *5*(1). Retrieved from *http://nojest.unilag.edu.ng/article/view/1713*

Byiringiro, E. (2023). Effect of class attendance on the academic performance of students in Mathematics in public day schools in Musanze District. *International Journal of Research and Innovation in Social Science.* Retrieved from *https://rsisinternational.org/journals/ijriss/articles/effect-of-class-attendance-on-the-academic-performance-of-students-in-mathematics-in-public-day-schools-in-musanze-district/*

Kassarnig, V., Bjerre-Nielsen, A., Mones, E., Lehmann, S., & Lassen, D. D. (2017). Class attendance, peer similarity, and academic performance in a large field study. *PLoS ONE*, *12*(11), e0187078.

Keppens, G. (2023). School absenteeism and academic achievement: Does the timing of the absence matter?. *Learning and Instruction*, *86*, 101769. *https://doi.org/10.1016/j.learninstruc.2023.101769*

Likita, M. (2023). Analysis of student's performance in National Examinations Council (NECO) on the management of public secondary schools, in Borno State. *International Journal of Library Science & Education Research, 29*(8), 111-124.

Maliki, A., Ngban, A. & Ibu, E. J. (2009). Analysis of students' performance in junior secondary school Mathematics examination in Bayelsa State of Nigeria. *Studies on Home and Community Science*, *3*(2), 131-134.

Mooney, A., Redmond, G., & Kaambwa, B. (2023). Does socioeconomic status impact the relationship between school absence and outcomes?. *The Australian Educational Researcher*, *50*(3), 941-964.

National Center for Education Statistics (NCES). (2006). *Chronic Absenteeism in the Nation's Schools*. Retrieved from NCES website.

National Council of Teachers of Mathematics (NCTM). (2000). *Principles and Standards for School Mathematics*. Reston, VA: NCTM.

National Council of Teachers of Mathematics (NCTM). (2014). *Principles to Actions: Ensuring Mathematical Success for All.* Reston, VA: NCTM.

Noh, N., Yusoff, S., Hassanuddin, N. & Sukri, N. (2018). *Class attendance and its impact on students' performance.* International Academic Conference.

Ojo, F. A. (2021). Investigating the impact of classroom attendance and concentration at lecture on the academic achievement of students in algebra in Federal College of Education (Special), Oyo. *Abacus (Mathematics Education Series), 46*(1), 152-159.

Romero, M., & Lee, Y. (2007). A *National Portrait of Chronic Absenteeism in the Early Grades*. National Center for Children in Poverty.

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Oribhabor C. B., & Adesanya L. O. (2024). Investigating the correlation between class attendance and mathematics performance among junior secondary school students in Bayelsa State. *FNAS Journal of Mathematics and Science Education, 6*(1), 58-64.

Sabado, K. (2024). Unraveling perceived factors affecting the school attendance of senior high school students in Bintawan National High School. *Psychological Education, 18*(2), 111-122.

Teachmint (2020). Importance of having an effective student attendance management system. Retrieved from https://blog.teachmint.com/importance-of-having-an-effective-student-attendance-management-system/

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