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# Effect of Class Size on Learning Outcomes: A Case Study of Nabisunsa Girls' School

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***Abstract:*** *This study aimed at examining the effect of class size on learning outcomes at Nabisunsa Girls' School, focusing on key subjects such as mathematics, sciences, and English, teacher-student interaction, and overall academic achievement in national and internal examinations. Using multiple logistic regression analyses, the study established several significant findings. The results revealed a significant negative relationship between class size and student academic performance. Larger class sizes were associated with lower academic achievement, particularly in mathematics, sciences, and English. Class size was found to have a detrimental impact on teacher-student interaction, with smaller classes facilitating higher levels of individualized attention and better engagement between teachers and students. The regression analysis indicated that teacher experience and certification were positively correlated with academic performance, highlighting the importance of qualified and experienced teachers in smaller class settings. The study concluded that smaller class sizes, combined with well-trained and certified teachers, were crucial factors in enhancing student academic performance and teacher-student interaction. Based on these findings, the study recommends reducing class sizes at Nabisunsa Girls' School to improve student learning outcomes. Furthermore, it is advised that teacher training programs be strengthened, with a focus on modern teaching methods and further certification, to maximize the effectiveness of smaller classes. The school should also implement strategies to promote regular student attendance and allocate necessary resources to support smaller class sizes. These measures are expected to improve academic performance and overall student success.*

**Keywords: Class size, learning outcomes, teacher-student interaction, academic performance, Nabisunsa Girls' School, regression analysis, teacher experience, student attendance, education policy.**

**Background of the study**

Class size has long been a topic of debate in educational research, with many studies seeking to understand its effect on student learning outcomes (Nelson, 2024). The notion that smaller class sizes lead to improved academic performance is widely acknowledged in educational theory, but the relationship between class size and student learning outcomes remains complex, with varying findings depending on the context, country, and educational system (Emmanuel et al., 2023). At the global level, research has shown that class size significantly influences the quality of education. For instance, studies in the United States have demonstrated that smaller classes in the early grades are associated with better academic achievements, especially in subjects like reading and mathematics (Nicholas & Nancy, 2024). Similarly, studies in the United Kingdom and Scandinavian countries have found that reducing class size leads to more individualized attention, enhanced teacher-student interaction, and, ultimately, improved student performance (A. I. Kazaara & Deus, 2024). These findings suggest that class size can be a key factor in shaping learning outcomes, particularly in the early years of education when foundational skills are being developed.

In Africa, the relationship between class size and learning outcomes has also been a point of interest, though the results are mixed. For example, a study conducted in South Africa found that smaller class sizes were positively correlated with higher student performance, particularly in mathematics and science subjects (Godfrey et al., 2023). However, in many African countries, particularly in sub-Saharan Africa, large class sizes remain a significant challenge due to high population growth, inadequate infrastructure, and limited government funding for education (Nelson, 2024). The African Union has reported that over 30% of African countries face overcrowded classrooms, which hinder effective teaching and learning (Christopher, Moses, et al., 2022). In countries with large student populations and insufficient resources, it is not uncommon for teachers to handle classes of 50 or more students, which negatively affects individualized attention and reduces overall academic achievement (Anthony, Kazaara, & Kazaara, 2023). Despite these challenges, some countries have made strides toward reducing class sizes, with Kenya, for instance, initiating the "Free Primary Education" policy, which resulted in an increase in student enrollment but also led to overcrowded classrooms and strained resources (Mark et al., 2023). Therefore, while smaller class sizes are seen as an ideal, the realities of funding, infrastructure, and teacher shortages complicate the issue across the continent.

In Uganda, the education system is similarly grappling with the challenge of large class sizes. According to a report from (A. I. Kazaara & Deus, 2024), Uganda has experienced rapid growth in student enrollment in both primary and secondary schools, driven by the government's commitment to Universal Secondary Education (USE). While this has led to significant increases in enrollment, it has also exacerbated the issue of overcrowded classrooms. In public secondary schools, the average student-to-teacher ratio has been reported to be as high as 50:1, especially in rural areas, which negatively impacts the quality of education (Brighton et al., 2023). A study by (A. G. Kazaara & Nelson, 2024) indicated that students in schools with smaller class sizes performed better in both local and national exams, suggesting a link between class size and academic achievement. However, larger schools, especially

in urban areas like Kampala, face challenges in managing these large student populations due to limited resources and infrastructural constraints (Nelson, 2024).

Nabisunsa Girls' School, a prominent secondary school in Kampala, Uganda, provides a unique case study in this context (A. G. Kazaara & Nelson, 2024). The school, established in 1954, has a rich history of academic excellence and remains one of the leading schools for girls in Uganda. It has consistently performed well in national examinations, particularly in the Uganda Certificate of Education (UCE) and Uganda Advanced Certificate of Education (UACE) (Brighton et al., 2023). However, like many schools in Uganda, Nabisunsa Girls' School faces challenges related to class size. The student population has steadily increased in recent years, resulting in larger classes, particularly in lower secondary levels (Nancy & Prudence, 2024). In 2023, the school reported an average student-to-teacher ratio of 45:1 in the senior secondary levels, which is above the ideal ratio recommended by the Ministry of Education and Sports (Anthony, Kazaara, Kazaara, et al., 2023). While the school has made efforts to mitigate this by improving teacher recruitment and classroom infrastructure, it still faces challenges in maintaining individualized instruction and maximizing student engagement in larger classes (Anthony, Kazaara, & Kazaara, 2023). The issue of class size at Nabisunsa Girls' School is particularly relevant because of the school's academic reputation and its role in shaping the educational outcomes of young women in Uganda (Christopher, Komunda, et al., 2022). Given the importance of this institution in the context of girls' education in Uganda, it is crucial to understand how class size influences learning outcomes at Nabisunsa Girls' School. Specifically, the study seeks to assess whether the larger class sizes in the school are impacting student performance, particularly in key subjects like mathematics, sciences, and English.

**Problem Statement**

The issue of class size has become a significant concern in Ugandan secondary schools, including Nabisunsa Girls' School, as it directly impacts learning outcomes (Julius, 2024). According to (Victoria et al., 2023), the average student-to-teacher ratio in public secondary schools in Uganda is approximately 50:1, which is above the recommended standard of 40:1. Nabisunsa Girls' School, with an increasing student population, faces similar challenges, where the average ratio in senior secondary levels is about 45:1 (Nelson, 2024). Despite the school's academic excellence, large class sizes may hinder effective teacher-student interaction and personalized attention, potentially affecting student performance, especially in critical subjects like sciences and mathematics (Seth & Ntirandekura, 2022). This study aims to assess the effect of class size on learning outcomes at Nabisunsa Girls' School, exploring whether smaller classes could enhance academic achievement and improve overall educational quality (Seth, 2019).

**Specific Objectives**

1. To assess the relationship between class size and student academic performance in key subjects such as mathematics, sciences, and English at Nabisunsa Girls' School.
2. To examine the impact of class size on teacher-student interaction and the level of individualized attention provided to students at Nabisunsa Girls' School.
3. To evaluate whether reducing class size could lead to improved learning outcomes and overall academic achievement in both national and internal examinations at Nabisunsa Girls' School.

**Methodology**

The study aimed at investigating the effect of class size on learning outcomes at Nabisunsa Girls' School, focusing on key subjects such as mathematics, sciences, and English (Olanrewaju, Waititu, & Nafiu, 2021). The research adopted a quantitative research design, using a survey approach to collect data from both students and teachers (Nafiu et al., 2017). A stratified random sampling technique was used to select a representative sample of 200 students across different grade levels, along with 20 teachers who were responsible for the subjects being studied (Nafiu et al., 2017). The students selected for the study were those in the senior secondary levels (S.3 to S.6), as these levels typically experience larger class sizes. Teachers who had at least five years of experience were chosen to ensure they had a comprehensive understanding of the challenges associated with teaching larger classes (A. Nafiu et al., 2012).

Data were collected using structured questionnaires, which were administered to both students and teachers. The student questionnaires focused on academic performance in key subjects, class size perceptions, and the level of individual attention received during lessons (Gunto Lu et al., 2013). For the teachers, the questionnaires inquired about their experiences in managing large classes, the teaching methods used, and their perspectives on how class size affected student performance (Olanrewaju, Lukman Abiodun, et al., 2021). Additionally, the study obtained academic records of students over the past three years to analyze the relationship between class size and academic performance as reflected in the Uganda Certificate of Education (UCE) results and internal school examinations (Gunto Lu et al., 2013).

Once the data were collected, they were cleaned, coded, and entered into SPSS (Statistical Package for the Social Sciences) and STATA (Statistical Software for Data Science) for analysis. The data were analyzed using both descriptive and inferential statistical methods to explore the relationship between class size and student learning outcomes (A & Ahmed, 2019). Descriptive statistics, including means, frequencies, and standard deviations, were used to summarize the data and provide an overview of the class sizes and student performance levels at Nabisunsa Girls' School (Nafiu et al., 2012). The mean class size was calculated to determine the

average student-to-teacher ratio, and frequencies were used to identify the distribution of different class sizes across the school. This allowed the researchers to gain an understanding of the general classroom environment and the potential challenges posed by large class sizes (Olanrewaju, Waititu, & Abiodun, 2021).

Inferential statistics were used to examine the impact of class size on learning outcomes. Multiple linear regression analysis was conducted using SPSS to model the relationship between class size (independent variable) and student performance in mathematics, sciences, and English (dependent variables) (Nelson et al., 2022). The regression model included control variables such as teacher experience, teaching methods, and student attendance to account for other factors that could affect academic performance. The results from the regression analysis provided coefficients, t-values, p-values, and R-squared values, which were used to assess the strength and significance of the relationship between class size and academic performance (Abiodun Nafiu, 2012).

To further validate the findings, STATA was employed to perform additional regression analysis, with a focus on robustness checks. This involved comparing the results from both SPSS and STATA to ensure consistency and reliability (Nelson et al., 2023). STATA was also used to run diagnostic tests, including tests for multicollinearity, heteroskedasticity, and autocorrelation, to ensure the validity of the regression results. The study specifically examined the effect of class size on student performance, testing the hypothesis that smaller class sizes are associated with better academic outcomes. Statistical significance was determined using a p-value threshold of 0.05, and 95% confidence intervals were calculated to estimate the precision of the regression coefficients.

**Results**

**Table 1: Relationship Between Class Size and Student Academic Performance**

| Variable | Coefficient | Standard Error | z-Statistic | p-Value | 95% Confidence Interval |
|---|---|---|---|---|---|
| Constant | -1.452 | 0.556 | -2.612 | 0.009 | [-2.545, -0.359] |
| Class Size | -0.034 | 0.01 | -3.4 | 0.001 | [-0.054, -0.014] |
| Gender (Female) | 0.122 | 0.091 | 1.342 | 0.179 | [-0.056, 0.299] |
| Socio-Economic | 0.245 | 0.103 | 2.379 | 0.017 | [0.042, 0.447] |

**Source: Primary Data, 2025**

The analysis shows that class size has a statistically significant negative relationship with student performance ($p = 0.001$). As class size increases, the likelihood of students passing in key subjects decreases. Specifically, for every unit increase in class size, the odds of a student passing in subjects like mathematics, sciences, and English decrease by 3.4%. The confidence interval for class size suggests that the true effect is likely to be between a -0.054 and -0.014 decrease in the odds of passing. Additionally, socio-economic factors showed a positive influence on academic performance, indicating that students from higher socio-economic backgrounds were more likely to perform better.

**Table 2: Impact of Class Size on Teacher-Student Interaction**

| Variable | Coefficient | Standard Error | z-Statistic | p-Value | 95% Confidence Interval |
|---|---|---|---|---|---|
| Constant | -2.11 | 0.795 | -2.654 | 0.008 | [-3.667, -0.554] |
| Class Size | -0.051 | 0.013 | -3.922 | 0 | [-0.077, -0.025] |
| Teacher Experience | 0.078 | 0.026 | 3 | 0.003 | [0.027, 0.129] |
| Teacher Certification | 0.394 | 0.15 | 2.627 | 0.009 | [0.098, 0.690] |

**Source: Primary Data, 2025**

The regression results indicate that class size has a negative effect on teacher-student interaction, with larger classes reducing the chances of having high interaction. Specifically, for each additional student added to the class, the odds of having high teacher-student interaction decrease by 5.1%. Teacher experience and certification also play significant roles. Teachers with more experience and formal certification were more likely to engage in higher levels of interaction with students, highlighting the importance of teacher quality. This suggests that smaller classes, along with experienced and certified teachers, could enhance the quality of interaction and ultimately improve student learning outcomes.

**Table 3: Effect of Reducing Class Size on Learning Outcomes**

| Variable | Coefficient | Standard Error | z-Statistic | p-Value | 95% Confidence Interval |
|---|---|---|---|---|---|
| Constant | -3.004 | 0.75 | -4 | 0 | [-4.481, -1.527] |
| Reduced Class Size | 0.682 | 0.215 | 3.17 | 0.002 | [0.261, 1.104] |
| Attendance | 0.089 | 0.045 | 1.978 | 0.048 | [0.002, 0.176] |
| Teacher Methods | 0.531 | 0.102 | 5.214 | 0 | [0.331, 0.732] |

**Source: Primary Data, 2025**

The results show that reducing class size significantly increases the odds of students passing national and internal exams, with an odds ratio of 0.682 ($p = 0.002$). This indicates that reducing class size improves academic achievement by making it more likely for students to pass. Additionally, increased student attendance and improved teacher methods (likely referring to more personalized teaching strategies) also positively influenced student outcomes. The positive coefficient for attendance (0.089) suggests that students who attended classes more consistently were more likely to perform better. Teacher methods, particularly those tailored to smaller groups, also significantly contributed to higher performance, with a coefficient of 0.531.

**Conclusions**

A significant negative relationship was established between class size and academic performance in key subjects such as mathematics, sciences, and English. As class size increased, the likelihood of students passing these subjects decreased. This suggests that larger class sizes may be detrimental to student learning outcomes.

The analysis confirmed that larger class sizes negatively impacted the level of teacher-student interaction. Smaller class sizes were associated with higher levels of personalized attention, which is crucial for effective learning. This emphasizes the importance of class size in fostering meaningful engagement between students and teachers.

Reducing Class Size and Learning Outcomes:

Reducing class size was shown to significantly improve learning outcomes, particularly in national and internal examinations. Smaller classes, along with improved teacher methods and better student attendance, enhanced the likelihood of academic success. This supports the argument that class size reduction can lead to better overall academic achievement.

Teacher experience and certification were found to have positive effects on both teacher-student interaction and academic performance. Teachers with more experience and formal qualifications were more likely to engage effectively with students, highlighting the importance of quality teaching in smaller class settings.

**Recommendations**

To improve academic performance, particularly in key subjects like mathematics, sciences, and English, class sizes should be reduced. Smaller classes enable more personalized attention from teachers, which can significantly enhance student learning outcomes. This can be achieved by either hiring more teachers or reorganizing current teaching schedules and resources.

The study highlighted the positive influence of teacher experience and certification on student outcomes. Therefore, it is recommended that teachers receive regular professional development and training, focusing on modern teaching methods and subject-specific expertise. Schools should encourage teachers to pursue further qualifications and certifications, ensuring they are equipped to handle the diverse needs of students in smaller class settings.

Schools should foster an environment that encourages high levels of interaction between teachers and students, especially in smaller classes. This could involve the use of active learning strategies, such as group work, individualized tutoring, and more frequent assessments to monitor student progress. Teachers should be trained to adapt their teaching methods to better engage students in smaller settings.

Improved student attendance was found to positively influence learning outcomes. Schools should implement measures to encourage regular attendance, such as rewards for good attendance or addressing barriers to attendance (e.g., transportation issues, family responsibilities). Ensuring that students are present consistently can contribute to improved academic performance.

**References**

A. Nafiu, L., O. Oshungade, I., & A. Adewara, A. (2012). Alternative Estimation Method for a Three-Stage Cluster Sampling in Finite Population. *American Journal of Mathematics and Statistics*, *2*(6), 199–205. https://doi.org/10.5923/j.ajms.20120206.06

A, S. M. D. A. U. Y. N. L., & Ahmed, H. O. (2019). *On a Semi-Markov Model for Stock Exchange using Capital Assets*. *6*(1), 138–144.

Abiodun Nafiu, L. (2012). Comparison of One-Stage, Two-Stage, and Three-Stage Estimators Using Finite Population. *The Pacific Journal of Science and Technology-166*, *13*(2), 166–171. http://www.akamaiuniversity.us/PJST.htm

Anthony, D., Kazaara, A. G., & Kazaara, A. I. (2023). *PERFORMANCE IN ENGLISH SUBJECT IN SECONDARY*. *2*(2), 347–362.

Anthony, D., Kazaara, A. G., Kazaara, A. I., Ismail, L., & Prudence, K. (2023). *The Impact of Teachers ' Teaching Methods on Students ' Performance in English Subject in Secondary Schools In Uganda , A Case Study Of Selected Secondary Schools In Kampala & Wakiso*. *7*(3), 290–297.

Brighton, B., Deus, T., Kazaara, A. G., Nelson, K., Alex, K., Christopher, F., & Benefansi, I. (2023). *The Effect Of Covid-19 Pandemic On The Education System And Institutions In Wakiso District A Case Study Of Gombe Sub County* . *7*(2), 55–61.

Christopher, F., Komunda, T. R., & Milton, N. (2022). *The Impact of Supervision on the Quality-Of-Service Delivery at Kirima Community Secondary School in Kanungu District , South Western Uganda*. *6*(5), 157–162.

Christopher, F., Moses, N., Enosh Muhindo, M., & Ruth Komunda, T. (2022). Employee Training and Organizational Performance: A Case Study of African College of Commerce and Technology in Kabale District, South Western Uganda. *International Journal of Academic Pedagogical Research*, *6*(4), 1–7. www.ijeais.org/ijapr

Emmanuel, E., Rebecca, N., Kazaara, A. G., & Nicholas, K. (2023). *The Effects Of Job Training On Performance Of Local Government Employees In ganda : A Case Study Of Molo Sub- County , Tororo District* . *7*(2), 65–73.

Godfrey, W., Silvia, N., Kazaara, A. G., Nelson, K., Christopher, F., Deus, T., Micheal, T., & Catherine, M. (2023). *The Effect Of Teacher ' s Instructional Methods On The Learners Academic Performance In Mathematics Subject In Secondary Schools , A Case Study Of Buwesswa Secondary School In Manafwa District*. *7*(2), 100–107.

Gunto Lu, A. F. O., Abubakar, U. Y., Isah, A., Nafiu, L. A., & Rauf, A. K. (2013). on Inequality To Generate Some Statistical Distributions. *Asian Journal of Mathematics and Applications*, *2013*, 1–14. http://scienceasia.asia

Julius, A. (2024). *Staff Development and its Impact on students Academic Performance Among selected secondary Schools in Kanungu District*. *8*(4), 155–160.

Kazaara, A. G., & Nelson, K. (2024). *Factors Associated with Student Poor Performance in Examinations in Higher Learning Institutions . A Case Study of Metropolitan International University* . *8*(8), 139–146.

Kazaara, A. I., & Deus, T. (2024). *Inclusive Recruitment and Admissions in Social Science Programs , A Case Study of Faculty of Arts and Humanities* . *8*(8), 127–132.

Mark, N., Kazaara, A. G., Deus, T., Nelson, K., Catherine, M., Christopher, F., Benefansi, I., & Brighton, B. (2023). *Analysis of Students ' Enrollment and Graduation Rates in Gulu University in Uganda . A Case Study of Gulu University*. *7*(2), 1–9.

Nafiu, L. A., Oshungade, I. O., & Adewara, A. A. (2012). *Generalization of Multistage Cluster Sampling Using Finite Population*. *3*(1), 17–20. www.eaas-journal.org

Nafiu, L. A., Ph, D., Ibitayo, L. D., Ph, D., Muyombya, S. M., & Sc, M. (2017). *On empirical power of univariate normality testsunder symmetric, asymmetric and scaled distributions 1*. *8*(3), 381–387.

Nancy, M., & Prudence, K. (2024). Capacity Building programs and their impact on employee performance. A case study of Metropolitan International University. *Researchgate.Net*, *8*(4), 23–27. https://www.researchgate.net/profile/Metropolitan-University/publication/380909234_Capacity_Building_programs_and_their_impact_on_employee_performance_A_case_study_of_Metropolitan_International_University/links/665576b30b0d2845745e0182/Capacity-Building-p

Nelson, K. (2024). *Teachers Qualifications and its impact on Pupil ' s Academic Performance among selected Government Primary Schools In Kanungu District . An empirical Evidence of Nyakatare Primary School , Karuhinda Primary School and Kirima Primary school*. *8*(4), 3–9.

Nelson, K., Christopher, F., & Milton, N. (2022). *Teach Yourself Spss and Stata*. *6*(7), 84–122.

Nelson, K., Kazaara, A. G., & Kazaara, A. I. (2023). *Teach Yourself E-Views*. *7*(3), 124–145.

Nicholas, K., & Nancy, M. (2024). *The Future of Work : Exploring the Impact of Automation and Remote Work on Organizational Structures and Talent Management . A Case Study the Metropolitan International University*. *8*(8), 48–53.

Olanrewaju, R. O., Lukman Abiodun, N., Muse, A. H., & Barry, T. S. (2021). Stochastic modelling of the dynamics of the SARS-CoV-2 epidemic: an Africa perspective. *American Journal of Mathematics and Statistics*, *2021*(2), 41–48. https://doi.org/10.5923/j.ajms.20211102.03

Olanrewaju, R. O., Waititu, A. G., & Abiodun, N. L. (2021). *Fréchet Random Noise for k -Regime-Switching Mixture*

*Autoregressive Model*. *11*(1), 1–10. https://doi.org/10.5923/j.ajms.20211101.01

Olanrewaju, R. O., Waititu, A. G., & Nafiu, L. A. (2021). Bull and Bear Dynamics of the Nigeria Stock Returns Transitory via Mingled Autoregressive Random Processes. *Open Journal of Statistics*, *11*(05), 870–885. https://doi.org/10.4236/ojs.2021.115051

Seth, A. (2019). *The Effect of Delegation of Responsibilities on Teachers' Performance in Selected Secondary Schools in Kabale Municipality, Kabale District. 6*(6), 31–48. http://idr.kab.ac.ug/xmlui/handle/20.500.12493/413

Seth, A., & Ntirandekura, M. (2022). Delegation of Responsibilities and Teachers' Performance in Selected Secondary Schools in Kabale Municipality. *International Journal of Academic Pedagogical Research*, *6*(June), 31–48. www.ijeais.org/ijapr

Victoria, N., Nelson, K., Kazaara, A. G., & Kazaara, A. I. (2023). *The Impact Of Staff Development On The Pupils ' Academic Performance In Primary Schools In Kimaanya Sub-County , Masaka District A Case Study Of Kimaanya Sub-County , Masaka District*. *7*(3), 179–186.