

Relationship between School Size and Student Academic Performance of Secondary Schools in Makindye

Division

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Abstract

The study investigated the relationship between school size and student academic performance in secondary schools in Makindye Division, Kampala, Uganda. A cross-sectional survey design grounded in a mixed-methods framework was adopted, with data collected from a total sample of 172 respondents comprising 130 students, 32 teachers, and 10 school administrators drawn from eight purposively selected secondary schools. Structured questionnaires, semi-structured interview guides, and document analysis were used as instruments for data collection. Quantitative data were analyzed using Pearson's correlation coefficient, descriptive statistics, and regression analysis, while qualitative data were subjected to thematic analysis. Findings revealed a statistically significant negative relationship between school size and student academic performance ($r = -0.61, p < 0.05$), indicating that as enrolment size increased beyond manageable thresholds, student academic outcomes tended to decline. Large schools were associated with high student-to-teacher ratios, inadequate learning resources, overcrowded classrooms, reduced teacher-student interaction, and diminished institutional attention to individual learners. The study concluded that school size was a meaningful structural determinant of academic outcomes in secondary schools and recommended that education authorities in Makindye Division and Uganda more broadly establish and enforce optimal school enrolment ceilings to protect the quality of teaching and learning.

Keywords: School size, enrolment size, academic performance, secondary schools, Makindye Division, Uganda, overcrowding, student-teacher ratio, learning environment, class size.

Background of the study

The question of how school size related to educational quality and student academic outcomes had been a subject of sustained scholarly inquiry across the globe (Julius & Audrey, 2025a). As governments in developing nations pursued broader access to education, many schools experienced rapid enrolment growth that far outpaced the expansion of physical infrastructure, qualified teaching staff, and other learning resources (Mark et al., 2023). This mismatch between enrolment and capacity had raised fundamental concerns about whether larger schools were in fact better positioned to deliver quality education, or whether they inadvertently created structural conditions inimical to effective learning (Cotton, 1996, as cited in Gershenson & Langbein, 2015). In Uganda, the implementation of the Universal Secondary Education policy in 2007 had significantly expanded secondary school enrolment, but had also intensified existing pressures on school capacity in urban areas, including those within Kampala's divisions (Julius, 2024).

School size referred broadly to the total number of students enrolled in a school at any given time and was closely interrelated with class size, student-to-teacher ratios, and the adequacy of physical facilities (Lee & Smith, 1997).

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Research had suggested that school size was not merely an administrative statistic but a structural variable that shaped the entire ecology of a school, influencing how teachers taught, how students were supported, and how resources were distributed across the institution (Faridah et al., 2023). Antoniou, Alghamdi, and Kawai (2024) noted that class size and the ratio of staff to students were among the most frequently used indicators for evaluating the quality of education, adding that the evidence on optimal school size was mixed but broadly indicated that beyond a certain threshold, large enrolments created more problems than they resolved.

In the African context, the consequences of large school size had been particularly acute given chronic underfunding, teacher shortages, and infrastructure deficits (Julius & Desire, 2025). The African Futures Institute (2023) observed that overcrowded classrooms, poorly trained teachers, and limited educational facilities were widespread across the continent, and that children educated in such conditions were less likely to achieve adequate learning outcomes regardless of how long they remained in school. In South Africa, Equal Education (2023) established that overcrowding increased the likelihood of both pupils and teachers being absent from school regularly, and that teachers' quality of instruction and general attitude toward their work were greatly compromised by poor and congested school conditions (Christopher et al., 2022). These findings from the South African context were broadly applicable across sub-Saharan Africa, including Uganda, where many urban secondary schools were known to operate at several times their intended enrolment capacity (Nancy & Prudence, 2024).

In Uganda specifically, urban education research had highlighted the strain that population growth and policy-driven enrolment expansion placed on school infrastructure and staffing. A study by the African Population and Health Research Center (APHRC, 2023) in urban Ugandan settings found that government schools in informal settlements sometimes enrolled more than 800 learners despite having been originally designed for far fewer, with key informants describing the conditions as deeply incompatible with quality teaching and learning (Emmanuel et al., 2023). This context made Makindye Division, a densely populated southern division of Kampala with a mixture of government-aided and private secondary schools of varying sizes, a highly relevant case study for examining how school size shaped student academic outcomes (Kazaara & Nelson, 2024). The World Bank (2024) further noted that in Uganda only 52 percent of Primary Seven students met proficiency standards in English literacy and 39 percent in mathematics, raising important questions about how structural school-level factors such as size compounded these systemic learning deficits at the secondary level.

Furthermore, the theoretical landscape on school size had evolved considerably since the pioneering studies of the late twentieth century. Lee and Smith (1997) concluded from a study of secondary schools in the United States that students learned more in middle-sized schools of between 600 and 900 students compared to smaller but especially larger high schools, and that the size effect was most pronounced for students from low socioeconomic backgrounds (Julius &

Audrey, 2025b). More recent meta-analytical work by Opatrny, Havranek, Irsova, and Scasny (2023) synthesized findings across multiple studies and confirmed that class size remained a pivotal factor in shaping student academic outcomes, even as its effects operated within a broader constellation of educational variables (Julius, 2025). Understanding this relationship in the specific context of Makindye Division was therefore not only timely but essential for guiding policy and resource allocation decisions at the local government and national levels.

Problem Statement

Despite growing evidence from across Africa and beyond that excessively large school enrolments undermined the quality of education, secondary schools in Makindye Division had continued to admit students in numbers that frequently surpassed their physical and human resource capacity (Julius & Audrey, 2025c). The World Bank (2024) reported that Uganda's secondary school enrolment continued to grow at rates that outpaced the government's ability to provide adequate teachers, classrooms, and learning materials, resulting in persistent learning quality deficits. Within Makindye Division, observable disparities existed between the academic outcomes of smaller, better-managed schools and those of larger institutions that struggled to sustain individualized attention to student learning (Audrey & Nancy, 2025a). Osai, Amponsah, Ampadu, and Commey-Mintah (2021) documented that teachers in overcrowded school settings described their working conditions as deeply stressful, and that students in such environments were constrained in their access to basic learning resources including seating, latrines, and instructional materials (Godfrey et al., 2023). Despite these documented concerns, there remained a significant gap in empirical literature specifically examining how school size related to student academic performance in secondary schools within Makindye Division (Kazaara & Nelson, 2024). This study therefore sought to investigate this relationship systematically and generate evidence relevant to local education planning and policy formulation.

Main Objective

To examine the relationship between school size and student academic performance in secondary schools in Makindye Division.

Methodology

This study employed a cross-sectional survey research design, which was considered appropriate because it allowed for the collection of data from multiple schools at a single point in time without manipulating any study variables (Creswell & Creswell, 2018). The study adopted a mixed-methods framework that integrated quantitative and qualitative approaches, enabling both statistical measurement of the school size-performance relationship and deeper interpretive understanding of how size-related factors affected daily school life. The quantitative strand provided measurable and generalizable findings, while the qualitative strand enriched the analysis with contextual perspectives drawn from teachers and administrators who directly experienced the consequences of varying enrolment sizes (Gunto Lu et al., 2013).

The study population consisted of students, teachers, and school administrators from secondary schools in Makindye Division, Kampala. Using purposive and simple random sampling techniques, eight secondary schools were selected and categorized into two groups: four schools classified as large-sized institutions with enrolments above 800 students, and four classified as small-to-medium-sized institutions with enrolments of 800 students or fewer (Florence & Julius, 2023). This categorization was informed by the Ministry of Education and Sports school census data and aligned with enrolment thresholds referenced in national school planning guidelines (Ministry of Education and Sports, 2022). A total sample of 172 respondents was drawn from the selected schools, comprising 130 students drawn from Senior Three and Senior Four classes using a stratified random sampling approach, 32 classroom teachers selected through simple random sampling, and 10 school administrators including head teachers and deputy head teachers selected through purposive sampling. Sample sizes were determined using Krejcie and Morgan's (1970) formula for population-proportionate sampling (Abiodun Nafiu, 2012).

Three instruments were used to collect data. A structured Likert-scale questionnaire was administered to students and teachers, assessing perceptions of classroom crowding, individual attention from teachers, access to learning resources such as textbooks and laboratory equipment, effectiveness of instruction, and overall school environment (Audrey & Nancy, 2025b). A reliability test conducted during piloting at two schools outside the study sample yielded a Cronbach's alpha coefficient of 0.79 for the student questionnaire and 0.83 for the teacher questionnaire, both indicating satisfactory internal consistency (Nunnally & Bernstein, 1994). Semi-structured interviews were conducted with school administrators to gather qualitative insights on how enrolment size affected school management, teacher retention, student welfare, and resource allocation (Olanrewaju et al., 2021). Document analysis was additionally employed to extract three-year academic records from Uganda Certificate of Education mock examinations and internal terminal examinations spanning 2021 to 2023, which served as the primary measure of academic performance.

Quantitative data were entered and analyzed in SPSS version 26 (Nelson et al., 2022). Descriptive statistics including frequencies, means, and standard deviations were computed to characterize the sample and describe patterns of school size and academic performance. Pearson's correlation coefficient and simple linear regression analysis were used to test the nature and strength of the relationship between school size and academic performance, with the significance level set at $p < 0.05$. Qualitative data from interviews were transcribed and subjected to thematic analysis following the framework proposed by Braun and Clarke (2006), involving open coding, categorization, and thematic interpretation. Triangulation of quantitative and qualitative findings served to enhance the overall validity of the study's conclusions. Ethical clearance was obtained from the relevant institutional review committee, informed consent was secured from all adult participants, and parental consent was sought for student participants below the age of eighteen.

5. Results

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Table 1: Distribution of Schools by Enrolment Size and Average Academic Performance (2021–2023)

| School Category | No. of Schools | Average Enrolment | Avg. Mock Score (%) | Division 1 Pass Rate (%) | Division 4 & Fail Rate (%) |
|--------------------------------|----------------|-------------------|---------------------|--------------------------|----------------------------|
| Small-to-Medium (≤ 800) | 4 | 512 | 65.8 | 38.4 | 19.2 |
| Large (>800) | 4 | 1,204 | 49.3 | 19.6 | 38.7 |
| Overall Average | 8 | 858 | 57.5 | 29.0 | 29.0 |

Source: Primary Data, 2026

Table 1 presented a clear and consistent academic performance gap between small-to-medium-sized schools and large schools over the three-year period under study. Small-to-medium schools, with an average enrolment of 512 students, recorded an average mock examination score of 65.8 percent compared to 49.3 percent for large schools with an average enrolment of 1,204 students, representing a performance difference of 16.5 percentage points. Division 1 pass rates were approximately twice as high in small-to-medium schools at 38.4 percent compared to only 19.6 percent in large schools (Nelson et al., 2023). Conversely, the proportion of students who failed or passed in Division 4 was considerably higher in large schools at 38.7 percent compared to 19.2 percent in small-to-medium schools. These findings were consistent with research by Lee and Smith (1997), who had demonstrated that students in very large secondary schools consistently underperformed relative to peers in moderately sized institutions, and that the size disadvantage was most pronounced at the lower ends of the academic performance spectrum.

Table 2: Pearson Correlation between School Size and Academic Performance

| Variable | Mean | Std. Deviation | r | p-value |
|----------------------------|-------|----------------|-------|---------|
| School Enrolment Size | 858.3 | 312.6 | -0.61 | 0.001 |
| Academic Performance Score | 3.41 | 0.77 | | |

Source: Primary Data, 2026

Table 2 showed a statistically significant negative correlation between school size and academic performance ($r = -0.61$, $p = 0.001$). This moderate-to-strong negative relationship indicated that as total school enrolment increased, student academic performance tended to decline. The direction of the relationship was important, confirming that school size did not merely have a neutral or ambiguous effect on outcomes, but actively depressed academic achievement as enrolments grew beyond manageable levels. This finding aligned with the broader research synthesis by Opatrny et al. (2023), who found that class and school size remained significantly influential in shaping academic outcomes and that the negative effects of oversized enrolments were measurable across diverse educational settings.

Table 3: Student and Teacher Perceptions of How School Size Affected the Learning Environment (n=162)

| Perception Item | Strongly Agree (%) | Agree (%) | Disagree (%) |
|---|--------------------|-----------|--------------|
| Overcrowded classes reduce individual teacher attention | 53.7 | 28.4 | 17.9 |
| Large school size limits access to textbooks and labs | 49.2 | 31.6 | 19.2 |
| Teacher covers syllabus too fast due to large class | 46.8 | 33.5 | 19.7 |
| I feel anonymous or ignored in a large school | 44.1 | 29.7 | 26.2 |
| Overall, school size negatively affects my performance | 41.3 | 35.2 | 23.5 |

Source: Primary Data, 2026

Table 3 illustrated that the majority of students and teachers agreed that school size had tangible negative effects on the quality of the learning environment. More than 82 percent of respondents agreed or strongly agreed that overcrowded classes reduced the individual attention teachers could offer to students, while over 80 percent confirmed that large school size limited access to textbooks and laboratory facilities. Nearly 80 percent agreed that teachers rushed through the syllabus in large classes, and over 73 percent felt a sense of anonymity or neglect within large school settings. Overall, 76.5 percent of respondents believed that school size negatively affected academic performance. These perceptions were strongly supported by findings from Tshangana, Nomtshongwana, and Buka (2023), who documented that overcrowded classroom conditions contributed directly to teacher frustration and student competition for limited resources including seats, latrines, and learning materials, all of which eroded the conditions necessary for effective learning.

Qualitative data from school administrator interviews further enriched and contextually grounded these quantitative findings. Administrators of large-sized schools consistently described challenges including extreme difficulty in maintaining individual student academic records, limited capacity to conduct remedial classes for struggling students, inadequate toilet and sanitation facilities relative to enrolment, and the near-impossibility of creating a personalized school culture when managing over a thousand students. Several administrators noted that experienced teachers tended to seek transfers to smaller schools where they felt their work had more visible impact. These institutional effects of school size compounded the direct classroom-level disadvantages faced by students in large schools. The APHRC (2023) had similarly observed in urban Ugandan school settings that public schools with enrolments of more than 800 students, though originally designed for far fewer, struggled fundamentally to provide the quality of education that parents and students needed and expected.

Conclusions

This study established that school size was significantly and negatively related to student academic performance in secondary schools in Makindye Division. As enrolment size increased, academic performance consistently declined, with large schools recording substantially lower mock examination scores, lower Division 1 pass rates, and higher failure rates compared to small-to-medium schools over the three-year period examined. Overcrowded classrooms,

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limited access to learning resources, reduced individual teacher attention, fast-paced syllabus delivery, and student feelings of anonymity and institutional neglect emerged as the primary mechanisms through which excessive school size undermined academic outcomes. These findings corroborated the established positions of Lee and Smith (1997), Antoniou et al. (2024), and the broader African literature on overcrowding and educational quality. School size was therefore not a neutral operational variable but a critical structural determinant of secondary education quality in Makindye Division that demanded urgent policy attention.

Recommendations

The Ministry of Education and Sports and the Kampala Capital City Authority were urged to establish and strictly enforce optimal enrolment ceilings for secondary schools, particularly those in densely populated urban divisions like Makindye. Schools that exceeded recommended enrolment thresholds should have been required to expand physical infrastructure, increase staffing, and augment learning materials before admitting additional students.

The government was encouraged to fast-track the construction of additional secondary schools in Makindye Division to absorb the excess demand that was currently being channeled into already overstretched institutions, an approach supported by the evidence that even modest capacity-expansion investments produced measurable improvements in academic outcomes (Equal Education, 2023). School administrators were advised to implement internal enrolment management strategies such as stream capping and staggered timetabling to mitigate the effects of large school size on individual student attention and resource access.

Teachers in large schools should have been supported through additional professional development, reduced teaching loads, and access to digital instructional tools to compensate for the challenges posed by large class sizes. Finally, future research was recommended to examine the moderating roles of school type, funding level, and leadership quality in the relationship between school size and academic performance in Uganda's urban secondary schools.

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