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Effect of Class Size on Quality of Education in Public Secondary Schools in Temeke Municipality, Tanzania

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Abstract: This study aimed to investigate the effect of class size on the quality of education in secondary schools in Temeke Municipality, Tanzania. Using a mixed-methods approach with a convergent design, data were collected from a diverse sample comprising 225 students, 48 teachers, one district education officer, and heads of schools. Participants were selected using purposive, stratified, and simple random sampling methods. The study employed both qualitative and quantitative approaches, utilizing questionnaires and a semi-structured interview schedule as data collection instruments. Findings revealed that class sizes in secondary schools within Temeke Municipality were notably large, presenting significant challenges for both teachers and students. Teachers expressed concerns about their ability to engage effectively with each student, provide personalized attention, and manage classroom activities in such settings. Specifically, the challenges identified included difficulties in offering individualized support, managing classroom activities, and delivering timely feedback on assignments and tests. The study concluded that efforts are needed to address these challenges posed by large class sizes in Temeke Municipality. Various strategies were proposed to mitigate the problem, including constructing additional classrooms, hiring more teachers, maintaining an optimal teacher-student ratio, ensuring the availability of adequate teaching materials, and providing training for managing large classes.



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INTRODUCTION

Education plays a crucial role in the development of individuals and societies by fostering knowledge, skills, and social values. It prepares individuals to contribute meaningfully to societal growth and national development. In the context of developing countries, education serves as a critical tool for reducing poverty, improving health, and promoting gender equality. The global emphasis on education is reflected in the Sustainable Development Goals (SDGs), specifically SDG 4, which seeks to ensure inclusive and equitable quality education for all by 2030 (UNESCO, 2016). Central to achieving this goal is the provision of quality education, particularly in public schooling systems that serve the majority of children in many developing nations.

One of the key factors influencing the quality of education is class size. Class size refers to the number of students assigned to a class or to a teacher, and it has long been a subject of debate among educators, policymakers, and researchers (Adeyemi, 2008). The relationship between class size and educational outcomes has been extensively studied, with evidence suggesting that large class sizes often pose significant challenges to effective teaching and learning. Large classes can result in reduced student engagement, limited individual attention from teachers, and increased difficulties in classroom management, all of which contribute to poorer educational outcomes (Finn et al., 2003). In Tanzania, the government has made significant strides toward increasing access to education. The Education and Training Policy of 2014, followed by Circular No. 5 of 2015, introduced fee-free basic education, which abolished school fees for primary and secondary education in public schools. While this policy has dramatically increased enrollment, it has also exacerbated the problem of overcrowded classrooms, particularly in urban areas like Temeke Municipality, where the influx of students has outpaced the available infrastructure and teaching resources (BEST, 2022).

According to Temeke Municipality's 2022 education report, secondary schools in the region have seen a sharp rise in student enrollment, resulting in class sizes that frequently exceed 80 students per class—far above the recommended teacher-student ratio of 1:45 (URT, 2001). These overcrowded conditions hinder teachers' ability to offer individualized instruction, conduct meaningful assessments, and manage classroom activities effectively. Studies have consistently shown that such high teacher-student ratios can adversely affect the quality of education, as teachers struggle to meet the diverse learning needs of students within large groups (Hattie, 2009).

Despite the known challenges posed by large class sizes, there is limited empirical research specifically examining the impact of this phenomenon on the quality of education in Tanzanian secondary schools, particularly in Temeke Municipality. The few studies that exist tend to focus broadly on the relationship between class size and academic performance but do not explore the specific challenges teachers face or the nuanced ways in which class size affects both teaching effectiveness and student outcomes. As Osaki (2009) points out, quality education is not just a matter of curriculum design and policy but also hinges on the classroom environment, teacher capacity, and student engagement—factors that are all impacted by class size.



Moreover, while global literature offers valuable insights into the effects of class size in other educational contexts (Finn et al., 2003; Hoxby, 2000), there is a critical gap in localized studies that address how urban overcrowded classrooms affect teaching and learning processes in Tanzania's public secondary schools. In Temeke, where the implementation of fee-free education has resulted in an 8.8% increase in student enrollment from 2020 to 2022, these challenges are particularly pronounced (ESPR, 2022).

This study, therefore, sought to fill this research gap by investigating the impact of class size on the quality of education in secondary schools in Temeke Municipality. By focusing on the specific challenges teachers face in overcrowded classrooms and exploring the strategies employed to mitigate these challenges, this research provides a comprehensive understanding of how class size affects educational outcomes in Tanzanian public schools. Such insights are critical for informing policy interventions, including resource allocation, teacher training, and classroom management practices that can improve educational quality in overcrowded urban settings.

Statement of the Problem

The introduction of fee-free basic education in Tanzania in 2015 was a landmark policy designed to improve access to education, particularly for children from low-income families. While the policy has succeeded in significantly increasing student enrollment, it has also created a critical issue of overcrowded classrooms, particularly in urban areas like Temeke Municipality. In some public secondary schools, class sizes have ballooned to 90 students per class, far exceeding the recommended ratio of 1:45 (SLO Report, 2022). This overcrowding has strained the already limited resources, such as inadequate classroom infrastructure, a shortage of teaching materials, and overstretched teachers. Teachers in these environments face significant challenges, including the inability to give personalized attention to students, difficulty managing large groups, and limited opportunities for interactive and student-centered teaching methods. These conditions inevitably degrade the overall quality of education, despite the improvements in access. Research has shown that large class sizes can reduce student engagement, limit opportunities for meaningful teacher-student interactions, and negatively impact learning outcomes, making it harder for students to excel academically (Hattie, 2009). Moreover, the stress and workload associated with managing large classes can lead to teacher burnout, further diminishing teaching quality.

Despite the recognized link between class size and educational quality, empirical research in Tanzania, particularly in urban secondary schools, remains limited. Most studies have focused on primary education or broader national trends, without addressing the specific dynamics of urban environments like Temeke Municipality, where high student-teacher ratios and limited resources are most acute. The lack of localized data makes it difficult for policymakers to design effective interventions that address the real challenges faced by teachers and students in these overcrowded classrooms. The

absence of practical solutions for managing large class sizes is particularly concerning given the government's commitment to improving education quality through its Education and Training Policy 2014. Without a clear understanding of the impact of class size on teaching effectiveness and student achievement, coupled with a lack of strategies for mitigating these issues, the gains made in educational access may be overshadowed by declining quality. This study sought to address this gap by investigating how large class sizes in Temeke Municipality's secondary schools affect educational quality and exploring remedies to improve the situation. The findings provides critical insights to inform policy reforms and resource allocation aimed at ensuring that students not only gain access to education but also receive the high-quality education they deserve.

Specific Research Objectives

1. To examine the status quo of class sizes in public secondary schools in Temeke Municipality.
2. To investigate the challenges encountered by teachers due to class size in public secondary schools in Temeke Municipality.
3. To explore remedies for the challenges faced by teachers due to class size in public secondary schools in Temeke Municipality.

Literature Review

The relationship between class size and the quality of education has attracted substantial scholarly interest, with numerous studies conducted across diverse international, regional, and local contexts. Although these studies provide valuable insights, their varying scopes, methodologies, and contextual differences often limit the generalizability of their findings, especially to Tanzanian secondary schools. This section synthesizes international and regional literature on class size, critically assessing their relevance to the educational setting in Temeke Municipality while identifying gaps and opportunities for further research.

Internationally, Wu et al. (2022) examined pupil-teacher ratios in the United States through spatial analysis and regression techniques, revealing disparities in educational resource distribution. However, their emphasis on quantitative spatial data within a U.S. context limits the applicability of their findings to Tanzanian secondary schools, where educational systems, cultural dynamics, and policy frameworks differ considerably. Similarly, studies by Joseph and Philiias (2011) and Adeyemi (2008) in Nigeria found correlations between smaller class sizes and improved academic outcomes but overlooked important moderating factors such as teaching quality, instructional resources, and subject-specific demands — particularly in subjects like mathematics and science, which typically require individualized attention. Kalemba (2022) identified similar effects in Zambia but likewise failed to consider teacher experience and the availability of educational resources.

Within East Africa, Chepsiror et al. (2020) established a negative relationship between large class sizes and English language performance in Kenyan primary schools,

although they did not explore the instructional and managerial mechanisms behind these outcomes. Likuru and Mwila (2022) similarly reported adverse effects of overcrowded classrooms on the implementation of competence-based curricula in Tanzanian secondary schools, yet without providing practical solutions. Muthanje (2023) demonstrated benefits of lower pupil-teacher ratios in Kenyan early childhood education, but the limited scope of this study reduces its relevance to secondary education. In Tanzania, Bakar and Mwila (2022) documented the negative consequences of high teacher-student ratios in Ubungo Municipality, though they did not analyze coping strategies or broader policy implications. Nzemo (2013) recommended community engagement and increased teacher recruitment in Tanzanian primary schools as potential solutions but did not include qualitative data on classroom interactions and teaching practices. Collectively, these studies underscore a need for more holistic, context-specific research within Tanzanian secondary schools, incorporating both quantitative and qualitative perspectives and addressing subject-specific, instructional, and classroom management issues.

A growing body of literature has also focused on teachers' attitudes and perceptions toward class size, further enriching this discourse. Wang and Calvano (2022) assessed the effects of class size on academic and social engagement in U.S. business classes but excluded teachers' perspectives and the particular challenges of secondary school settings. Laitsch et al. (2021) emphasized improved teacher-student interactions and individualized instruction in smaller classes in British Columbia, although their broad analysis limits applicability to Tanzanian secondary schools. Almulla (2019) found that large classes led to more teacher-centered instruction in Saudi primary schools, but did not consider student outcomes or secondary school dynamics.

Similarly, Watson et al. (2017) revealed that Australian teachers widely support smaller class sizes, particularly for younger and diverse learners, but failed to examine how teachers manage large classes and how these circumstances affect student performance. Bilali et al. (2016) reported that overcrowded classrooms in Albanian secondary schools negatively impacted classroom management, teaching effectiveness, and teacher workload, though cultural and systemic differences limit the transferability of these findings to Tanzania. Almullah (2015) confirmed the effects of class size on instructional methods in Saudi primary schools, while Mamman et al. (2015) demonstrated similar issues in Nigerian secondary business studies classrooms. However, both studies neglected other subjects and broader educational implications.

In the Tanzanian context, Peter and Ligembe (2022) investigated class size effects in Kwimba District, finding that both small and large class sizes influenced student performance. Nevertheless, the study did not sufficiently address teachers' views or classroom management strategies. To address these limitations, the present study in Temeke Municipality focuses on secondary school teachers' perspectives across a range of subjects, examining how class size affects teaching practices, classroom management,

student academic outcomes, and teacher morale, while offering context-sensitive, practical recommendations.

A related dimension of the literature focuses on remedies for managing large class sizes. Osaki (2000) proposed interactive teaching methods such as field visits, group work, debates, and participatory lessons to improve student engagement and learning outcomes in large classes. While insightful, this study did not address the particular challenges faced by secondary teachers in Temeke. Xu and Harfitt (2019) identified strategies for coping with large tertiary English classes in China, such as group work, technology-assisted feedback, peer assessment, and student-led assessment roles, but these are only partially applicable to Tanzanian secondary schools due to contextual differences.

At the tertiary level in Ghana, Wuttur (2022) found that large classes hindered effective student-lecturer interactions and critical thinking, recommending personalized instruction and reduced group sizes, although the focus on higher education limits its relevance to secondary education in Tanzania. Mugabe and Ndayambaje (2021) proposed increasing academic staff, integrating ICT, and using cost-effective pedagogical approaches to enhance student engagement in large university classes in Rwanda, but these suggestions require adaptation for Tanzanian secondary schools. Kiogolo and Mtana (2022) conducted a relevant study in Morogoro Municipality, Tanzania, emphasizing the positive effects of effective classroom management strategies on student performance. They recommended improving school infrastructure, increasing resources, and offering in-service teacher training. While relevant, their findings may not fully capture the unique challenges of Temeke's educational environment.

The present study addresses these limitations by collecting localized data from secondary school teachers in Temeke Municipality. It identifies context-appropriate remedies for managing large class sizes and improving educational quality, reflecting the lived experiences of teachers in this specific setting. By integrating teachers' perspectives, subject-specific variations, instructional methods, classroom management strategies, and qualitative classroom interactions, this study fills critical gaps in the literature and contributes valuable evidence to inform educational policy and practice in Tanzanian secondary schools.

METHOD

This study employed a case study design to explore the effects of class size on educational quality in public secondary schools within Temeke Municipality, Tanzania. A mixed-methods approach was adopted, integrating both quantitative and qualitative data to capture a well-rounded perspective of the issue. Quantitative data were gathered through structured questionnaires administered to 223 students and 48 teachers, while qualitative data came from interviews with three heads of schools and one District Education Officer (DEO). The research targeted a total population of 13,533 individuals across public secondary schools, with the sample selected using a combination of purposive and stratified random sampling techniques to ensure diverse and

representative viewpoints. Data collection tools were rigorously tested for validity through expert review and pilot testing, while reliability was established using the test-retest method. Ethical considerations, including informed consent, confidentiality, and voluntary participation, were carefully observed throughout the research process.

Data collection involved distributing questionnaires and conducting in-person interviews, following formal approval from relevant authorities. Quantitative data were analyzed using SPSS version 20, generating frequencies, means, and percentages, while qualitative data were coded and thematically analyzed to uncover key patterns and insights. The selected study area, Temeke Municipality, was chosen for its urban diversity and concentration of public secondary schools, offering a rich context for examining the challenges of overcrowded classrooms. The study's methodology was designed to address gaps in existing literature by capturing the lived experiences and administrative perspectives of students, teachers, school leaders, and education officials. Ultimately, this multi-layered approach provided a comprehensive understanding of how class size affects teaching, learning, classroom management, and policy implementation in an urban Tanzanian context.

RESULT AND DISCUSSION

The Status Quo of Secondary School Class Size in Temeke Municipality

The first objective of this study was to determine the current status of class sizes in secondary schools within the Temeke municipality. Data addressing this objective were collected from 48 teachers, who were asked to indicate the number of students in their respective classes. The information gathered was organized using descriptive statistics to generate the mean, maximum, and minimum number of students per class, as presented in Table 1.

Table 1. Teachers' Responses on Class Size

| Statistics | Value |
|--------------------------------------|-------|
| Maximum number of students per class | 90 |
| Minimum number of students per class | 54 |
| Mode | 71 |
| Mean | 73 |

Source: Field data (2023)

The data presented in Table 1 indicate that the maximum number of students per class in public secondary schools in Temeke municipality is 90. This finding reveals that some classes are significantly overcrowded, exceeding the recommended class size guidelines of 40 to 45 students. Additionally, the maximum class size is 90 students, the minimum is 54, the mode (most frequent class size) is 71, and the mean (average) is 73 students per class. Such high class sizes suggest that the learning environment may be challenging for both teachers and students. This aligns with observations made by Wu et

al. (2022) in their U.S. study, where they found that some states faced a high teacher turnover due to the spatial imbalance of the pupil-teacher ratio. Similarly, Muthanje (2023) reported that public primary schools in Kenya experienced pupil-teacher ratios exceeding the recommended 25:1 ratio.

The implications of large class sizes in Temeke municipality may include limited individual attention to students, reduced teacher-student interactions, and compromised instructional quality. The mode class size of 71 students, though not the maximum, still surpasses recommended guidelines. This suggests that many students in the municipality experience overcrowded classrooms, which can hinder effective teaching and learning. Kalemba (2022) found that a high pupil-teacher ratio in Zambia's public secondary schools negatively affected student performance. Bakar and Mwila (2022) also reported overcrowding in Tanzanian secondary schools due to high teacher-student ratios, raising concerns about the ability of teachers to meet diverse student needs in large classes.

The mean class size of 73 students further confirms that class sizes in Temeke municipality exceed recommended limits. This is well above the ideal range of 40 to 45 students, which is considered optimal for effective teaching and learning. Likuru and Mwila (2022) found similar issues in Tanzania's Ilemela municipality, where overcrowded classrooms hindered the implementation of competence-based curricula and classroom management practices. Muthanje (2023) also emphasized the need for more teachers in Kenya to reduce high pupil-teacher ratios. The high average class size in Temeke suggests that urgent action is needed to address overcrowding and improve educational quality.

Overall, the data show that class sizes in public secondary schools in Temeke municipality consistently exceed recommended guidelines, with maximum, mode, and mean class sizes all indicating significant overcrowding. This overcrowding likely has negative effects on both teaching and learning.

Teachers were also asked if the available infrastructure was sufficient for the number of students in their classes. All 48 teachers responded "No," implying that the infrastructure is inadequate for the large class sizes. This aligns with Wu et al. (2022), who found that overcrowded classrooms and limited infrastructure negatively impacted the teaching and learning process. Insufficient space and resources can lead to reduced teacher-student interactions and hinder instructional quality. Overcrowded classrooms with inadequate seating, learning materials, and limited space make it difficult to maintain a conducive learning environment. Addressing these infrastructure issues is essential for improving the overall learning experience in Temeke's public secondary schools.

In addition, teachers were asked to suggest their preferred class size and explain their reasoning. Over 70% of the teachers indicated that a class size of 40 to 45 students would be ideal. They explained that such a size would facilitate effective interaction between teachers and students, simplify classroom management, and create an environment conducive to participatory teaching methods. This preference is supported by Bakar and Mwila (2022), who recommended smaller class sizes to enhance teacher-student interactions and promote student-centered learning. The preference for class

sizes of 40 to 45 students aligns with broader research, emphasizing the benefits of smaller class sizes in improving educational quality in public secondary schools in Temeke municipality.

During interviews with heads of the sampled schools, the issue of overcrowded classes was also a point of concern, as one of the heads of schools stated the following:

Well, we are facing a big challenge with the large number of students in our classes. We strive every day to provide them with a good education, but the large number of students makes it difficult for teachers to give individual instruction to each student. We need to build more classes so that congestion is reduced and the learning experience is improved. (Head of school A).

Another head of school B, explained that, the challenge of big number of students in class is ineffectiveness of teaching and learning process. This also makes possibility of poor performance in examinations; He said that,

It is true; we see a large number of students in our classes. This causes a great challenge for teachers to teach effectively and provide each student with appropriate support. We recognize the importance of reducing the number of students in the class to raise achievement levels and ensure that every student get intended learning outcome..

The head of another secondary school (Head of school C) also stated the following:

Yes, we have a big challenge with the large number of students in our classes. The teachers are trying to do a good job, but the large number of students makes it difficult to provide detailed instruction and monitor the progress of each student. We need to take urgent measures to address this situation to increase teaching effectiveness and improve student outcomes.

The data from interviews with the heads of all three schools reveal a common and significant challenge: the large number of students in their classrooms. Despite efforts to provide quality education, the overwhelming student population makes it difficult for teachers to deliver personalized instruction and effectively monitor individual progress. The school heads recognize the urgent need to address this issue by building more classrooms, reducing congestion, and improving the overall learning experience. They emphasize that reducing the student-teacher ratio is essential for enhancing teaching effectiveness and ultimately improving academic achievement. These findings underscore the importance of implementing measures to alleviate the burden of large class sizes, enabling teachers to give more focused attention to each student and ensuring better educational outcomes.

Data from teachers, school heads, and previous studies collectively demonstrate that large class sizes in public secondary schools in Temeke municipality pose a significant

challenge to the quality of education. Overcrowded classrooms hinder effective teaching, limit individual attention to students, and compromise instructional quality. Addressing this issue by building more classrooms and reducing class sizes is crucial for improving teaching effectiveness and enhancing student outcomes. Smaller class sizes create a more conducive learning environment, fostering better teacher-student interactions, personalized instruction, and increased student engagement. Prioritizing class size reduction in educational policy and planning is essential for delivering quality education and supporting the academic success of students in the municipality.

Attitudes of Teachers Toward Class Size in Secondary Schools in Temeke Municipality

The second objective of this study was to assess the attitudes of secondary school teachers in Temeke municipality regarding class size. Teachers were provided with a Likert scale containing six statements and were asked to indicate their level of agreement or disagreement with each statement. The responses to this question are presented in Table 2.

Table 2. Teachers Towards on Class Size

| Statement | SA | | A | | N | | D | | SD | |
|--|----|------|----|------|---|-----|----|------|----|------|
| | f | % | f | % | f | % | f | % | f | % |
| The students-teacher ratio is the one recommended by the ministry of education which is 1:40 per class | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 16 | 33.3 | 32 | 66.7 |
| Students participate well in the class management of the class is poor | 3 | 6.3 | 5 | 10.4 | 2 | 4.2 | 15 | 31.3 | 23 | 47.9 |
| The students are given assignment soon after teaching and learning process | 18 | 37.5 | 24 | 50.0 | 0 | 0.0 | 4 | 8.3 | 2 | 4.2 |
| The feedback of the assignment given to students after teaching is taking long time | 13 | 27.1 | 18 | 37.5 | 3 | 6.3 | 9 | 18.8 | 5 | 10.4 |
| Monitoring of students attendance is difficult | 17 | 35.4 | 19 | 39.6 | 1 | 2.1 | 8 | 16.7 | 3 | 6.3 |
| | 24 | 50.0 | 17 | 35.4 | 2 | 4.2 | 8 | 16.7 | 7 | 14.6 |

Source: Field data (2023)

The data presented in Table 2 show that a significant proportion of teachers (66.7%) strongly disagree with the statement, "*The student-teacher ratio is the one recommended by the Ministry of Education, which is 1:40 per class.*" This indicates that most teachers believe the current class size exceeds the recommended ratio and is too large to manage effectively. This perception is consistent with findings from Wang and Calvano (2022) in the USA, where both faculty and students viewed large classes as an impediment to effective learning. Similarly, Peter and Ligembe (2022) in Tanzania found that large class sizes negatively impact student performance by contributing to inadequate resources and ineffective classroom instruction. These findings suggest that teachers in

Temeke municipality are dissatisfied with the large class sizes, perceiving them as barriers to delivering high-quality education and personalized attention to students.

Regarding the statement, "*Students participate well in class,*" a considerable number of teachers (47.9%) agreed or strongly agreed. This suggests that, despite the challenges posed by large class sizes, teachers still perceive students as being actively engaged in classroom activities. This may reflect the efforts of both teachers and students to adapt to the overcrowded environment. However, active participation does not necessarily equate to an optimal learning environment. Almulla (2019) in Saudi Arabia found that both small and large class sizes impact teaching practices, with large classes posing unique challenges, yet teachers continue to find ways to foster student engagement. In the case of Temeke, despite the overcrowded classrooms, it appears that students remain involved in learning activities, though this does not negate the broader challenges faced in such environments.

In contrast, when asked about class management, a substantial majority of teachers (87.5%) either agreed or strongly agreed with the statement, "*Management of the class is poor.*" This overwhelming response underscores the difficulties teachers face in managing large classes. Ineffective class management can result from the inability to provide adequate individual attention to students, maintain discipline, or manage classroom dynamics. This is consistent with findings from Peter and Ligembe (2022) in Tanzania, which revealed that large class sizes lead to significant challenges in classroom management, resulting in disruptions to the learning process. Similarly, Wang and Calvano (2022) found that students in large classes experience lower levels of teacher interaction and satisfaction, which can exacerbate management difficulties. These findings highlight the negative impact that overcrowded classrooms can have on both teaching efficacy and the overall classroom environment in Temeke municipality.

Overall, the data indicate that most teachers in Temeke municipality are dissatisfied with the large class sizes, viewing them as obstacles to effective teaching and learning. They feel that the current student-teacher ratios exceed recommended guidelines, making it difficult to manage classes and ensure quality education. However, despite these challenges, many teachers still observe active student participation in the learning process, suggesting resilience and adaptability among students. These findings are consistent with prior studies conducted in various contexts, emphasizing the significant impact of class size on educational outcomes. Addressing class size concerns should be prioritized to improve teaching quality and learning outcomes in Temeke municipality, as smaller classes could foster better interactions, more personalized instruction, and more effective classroom management.

Relationship Between Class Size and Quality of Education

The third objective of this study was to examine the relationship between class size and the quality of education. To explore this, students were provided with six statements

and asked to indicate their level of agreement or disagreement with each statement. The responses from the students are summarized in Table 3.

Table 3. Students' Responses on the Relationship between Class Size and Quality Education

| Statement | SA | | A | | N | | D | | SD | |
|---|----|------|----|------|----|------|----|------|----|------|
| | f | % | f | % | f | % | f | % | f | % |
| The class facilities such as desks, tables, and chairs satisfy the number of students in your class | 10 | 8.5 | 20 | 16.9 | 25 | 21.2 | 30 | 25.4 | 33 | 28.0 |
| All students in your class get equal opportunity to participate in the lesson | 15 | 12.7 | 25 | 21.2 | 30 | 25.4 | 25 | 21.2 | 23 | 19.5 |
| Students are given time/opportunity to ask questions for clarifications during lessons | 18 | 15.3 | 30 | 25.4 | 32 | 27.1 | 20 | 16.9 | 18 | 15.3 |
| You are comfortable with your class size | 20 | 16.9 | 28 | 23.7 | 22 | 18.6 | 24 | 20.3 | 24 | 20.3 |
| Teachers give exercises and assignments in each lesson they teach | 22 | 18.6 | 25 | 21.2 | 28 | 23.7 | 20 | 16.9 | 23 | 19.5 |
| Teachers mark the exercises and assignments given to you | 25 | 21.2 | 23 | 19.5 | 30 | 25.4 | 20 | 16.9 | 20 | 16.9 |

Source: Field data (2023)

The data presented in Table 3 demonstrate significant concerns among students regarding the impact of class size on the quality of education. When asked about the adequacy of classroom facilities such as desks, tables, and chairs, only 8.5% of students expressed strong agreement that these facilities are sufficient for the number of students. Meanwhile, 16.9% agreed, 21.2% were neutral, 25.4% disagreed, and the largest group, 28%, strongly disagreed. This suggests that 66.7% of students are dissatisfied with the available resources in relation to the large class sizes. This finding is supported by Shen and Konstantopoulos (2022) in the USA, who found that reducing class sizes is linked to improved academic performance, particularly in core subjects such as reading and mathematics. It underscores the importance of adequate facilities in creating a conducive learning environment, especially in overcrowded classrooms.

When considering equal opportunities for participation during lessons, only 12.7% of students strongly agreed that all students have an equal chance to participate in class activities. Another 21.2% agreed, while 25.4% were neutral, 21.2% disagreed, and 19.5% strongly disagreed. This means that nearly half of the students (47.9%) perceive a lack of equal participation opportunities, which is likely influenced by the size of their classes. These results align with findings from Etim et al. (2020), which indicate that larger class sizes negatively impact school performance and reduce opportunities for active participation, especially in elementary and middle schools. This suggests that larger

class sizes may present challenges in fostering an inclusive environment where all students can engage equally.

Concerning the time and opportunity for students to ask questions during lessons, 15.3% of students strongly agreed that they have sufficient time for questions and clarifications, while 25.4% agreed. A sizable portion (27.1%) remained neutral, but 16.9% disagreed and 15.3% strongly disagreed, indicating that 50% of students feel that larger class sizes limit their ability to seek personalized support. The challenges in getting individualized attention in overcrowded classrooms are consistent with findings from Garba et al. (2023) in Nigeria, who observed a negative correlation between large class sizes and academic performance, particularly in subjects that require significant teacher-student interaction, such as chemistry. This highlights the need for increased opportunities for personalized learning support in larger classrooms.

In terms of student comfort with class sizes, 16.9% of students strongly agreed that they were comfortable, and 23.7% agreed. However, 18.6% were neutral, while 20.3% disagreed, and another 20.3% strongly disagreed. This indicates that 37.5% of students feel uncomfortable with the current class size, which can negatively impact their overall learning experience. Research by Okechukwu and Oboshi (2021) in Nigeria similarly points out that class size is a key factor in determining student comfort and academic achievement. The discomfort expressed by students in Temeke suggests a need for more manageable class sizes to create a more conducive and engaging learning environment.

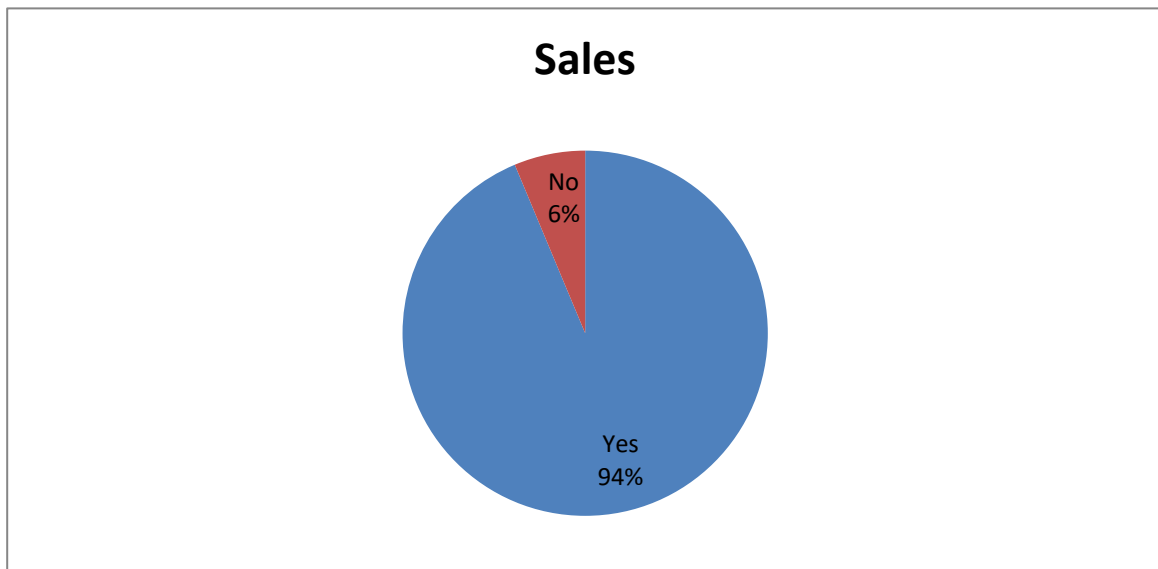
Regarding teachers assigning and evaluating student work, 18.6% of students strongly agreed that teachers effectively give exercises and assignments, and 21.2% agreed. Meanwhile, 23.7% were neutral, 16.9% disagreed, and 19.5% strongly disagreed. This indicates that 35.4% of students feel there are challenges with managing assignments in large classes. Laitsch et al. (2021) also noted that smaller class sizes tend to provide more benefits, particularly in terms of teachers' ability to manage assignments and provide detailed feedback. In larger classes, these tasks may become overwhelming, reducing the quality of instruction and student engagement.

In terms of marking exercises and providing feedback, 21.2% of students strongly agreed that teachers effectively assess student work, and 19.5% agreed. However, 25.4% remained neutral, while 16.9% disagreed, and an equal percentage strongly disagreed. With 33.3% of students expressing concerns about the timeliness and quality of feedback, it becomes clear that larger class sizes may compromise teachers' ability to provide prompt and constructive assessments. Almulla (2019) supports this finding, noting that teachers face increased difficulties in providing individualized feedback in large classes. Effective assessment is crucial for student progress, and large class sizes may hinder this important aspect of education.

Overall, the data from students' responses, combined with previous research, illustrate that class size significantly influences the quality of education. Facilities, opportunities for participation, personalized support, student comfort, assignment management, and feedback are all aspects of the educational experience affected by class

size. Addressing these challenges by reducing class sizes could lead to a more conducive learning environment, enabling teachers to better manage classrooms and foster more meaningful interactions with students.

Additionally, teachers were asked to provide their views on the relationship between class size and the quality of teaching and learning in their schools. This was a simple Yes/No question, and the responses are summarized in Figure 1.



Source: Field data (2023)

Figure 1.
Teachers' Responses to the Relationship Between Class Size and Quality Education

The data from teachers regarding the relationship between class size and the quality of teaching and learning show that an overwhelming 94% believe that class size plays a critical role in influencing educational outcomes in public secondary schools in Temeke municipality. This significant majority suggests that teachers perceive manageable class sizes as essential for delivering high-quality instruction, which in turn can lead to better performance in examinations. A smaller, more manageable class size increases the likelihood that teachers can provide individualized attention, effectively monitor student progress, and deliver comprehensive feedback—all of which contribute to enhanced learning.

Only 6% of teachers reported that they do not see a relationship between class size and the quality of education. Despite this minority view, the overwhelming consensus highlights the challenges associated with large class sizes and the importance of addressing these issues to improve the educational environment.

Teachers' perceptions align with findings from studies conducted in various international contexts. For instance, Xu and Harfitt (2019) in China found that large class

sizes limit teachers' ability to focus on individual students, resulting in diminished opportunities for personalized instruction and feedback. Similarly, Wuttor's (2022) research in Ghana demonstrated the negative impact of large class sizes on the development of employable skills among university students. Large class sizes not only hinder practical learning experiences but also reduce the scope for engaging students in meaningful, interactive learning. Mugabe and Ndayambaje (2021) further highlighted the challenges large classes pose to active learning at the University of Rwanda's College of Education, revealing how student engagement and participation are compromised in such settings.

These studies consistently indicate that larger class sizes present significant obstacles to effective teaching, personalized learning, and student engagement. The findings from teachers in Temeke municipality are in line with these global perspectives, reinforcing the notion that reducing class sizes is a necessary step to improving the quality of education. Addressing this issue would allow for more focused teaching and improve academic performance across schools in the region. Consequently, these insights emphasize the need for targeted interventions to reduce class sizes, providing teachers with better conditions to enhance student learning and educational outcomes.

The heads of schools also acknowledged the existence of a relationship between class size and the quality of teaching and learning in secondary schools in Temeke municipality. One of the heads of schools said:

Yes, there is a strong relationship between class size and the quality of teaching and learning. Since we have many students in one class, teachers are faced with the challenge of using participatory teaching strategies. Additionally, teachers have a heavy burden of marking students' work, which can affect their effectiveness.

Another head of school added

In fact, the large number of students in the class puts us in a difficult time to monitor the progress of each student and know the challenges they face in learning. It is difficult for teachers to provide personal help to each student when they need it. Additionally, class management becomes a challenge, as the teacher may not have the opportunity to reach all sides of the class and give personal advice to the students.

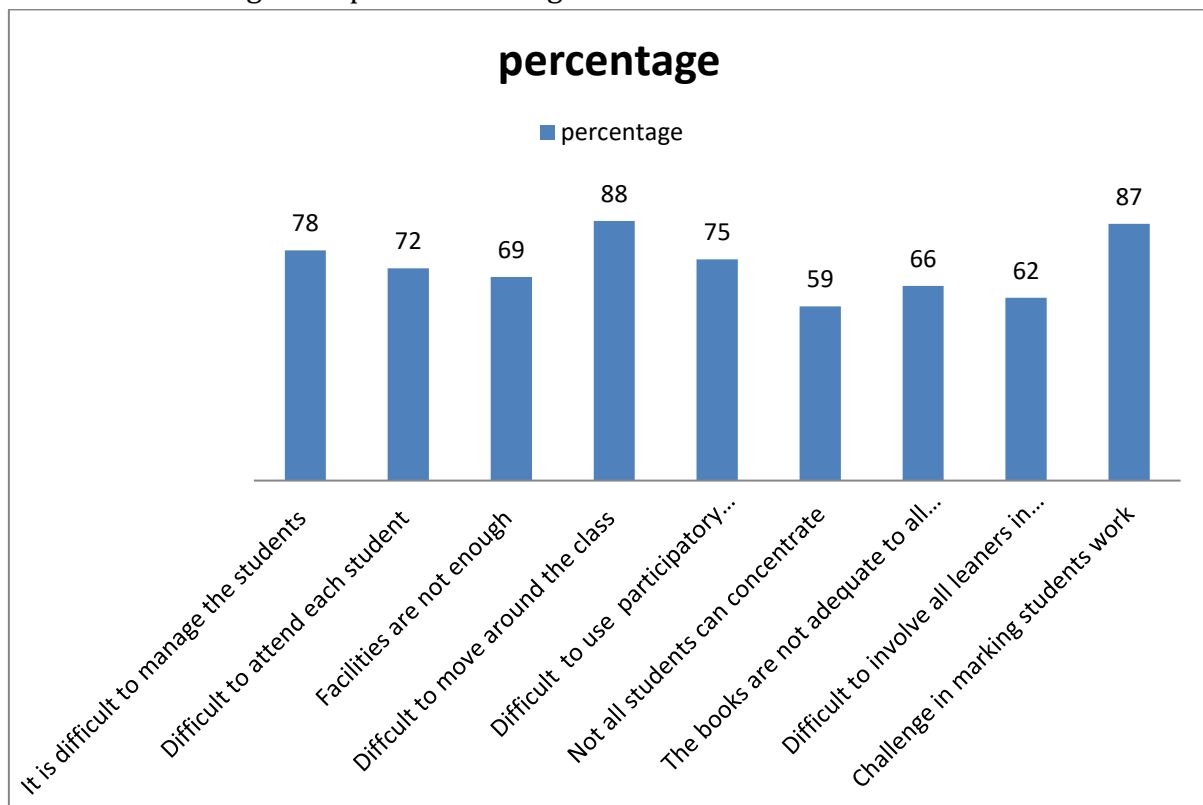
The head of the other school also said the following:

It is true that the large number of students puts us in a difficult time to conduct tests and provide feedback to students in a timely manner. Marking the tests of many students requires much time, which can affect teachers' balance in teaching. Additionally, identifying the challenges and needs of each student becomes difficult because of their large number in the classroom.

The heads of schools show that there is a unanimous acknowledgement of the existence of a relationship between class size and the quality of teaching and learning in secondary schools in Temeke municipality. The heads of schools expressed concerns regarding the challenges posed by large class sizes. They pointed out that having many students in one class makes it difficult for teachers to effectively use participatory teaching strategies and provide personalized attention to each student.

Challenges Encountered by Teachers Due to Class Size in Temeke Municipality

The fourth objective of this study was to determine the challenges that teachers face due to class size in secondary schools within Temeke University. Teachers were provided with an open-ended question and requested to write the challenges they faced. Their responses were quantified to identify the major challenges. Since it was a multiple response question, it was possible for one teacher to indicate more than one challenge, and it was possible for one challenge to be listed by more than one teacher. The major identified challenges are presented in figure2.



Source: Field data (2023)

Figure 2.
Teachers' Responses to Challenges Encountered Due to Class size

Based on the data presented in Figure 2, one of the primary challenges faced by teachers due to class size in Temeke Municipality is "Difficult to move around the class," with a substantial 88% of teachers reporting this issue. This high percentage indicates

that overcrowding and limited physical space in the classroom significantly hinder teachers' ability to navigate and manage the classroom effectively. The implication of this challenge is that larger class sizes restrict teachers' mobility, which can negatively affect classroom management, student engagement, and overall teaching effectiveness. This finding is consistent with Alsadi and Silman's (2023) study in Libya, which highlighted that preservice teachers faced similar challenges related to classroom management and the difficulties of managing large classes effectively.

The second major challenge identified by 87% of teachers is "Difficulty in marking students' exercises." This suggests that a large number of teachers find it challenging to handle and assess students' work efficiently in larger classes. The implication is that the substantial volume of work associated with larger class sizes can overwhelm teachers, making it difficult to provide timely and constructive feedback. This finding aligns with Peter and Ligembe's (2022) research in Tanzania, which also emphasized the challenges of managing large class sizes, including difficulties in effective instruction and assessment.

The third most significant challenge reported by 78% of teachers is "It is difficult to manage the students." This indicates that a considerable number of teachers struggle with maintaining discipline and controlling the classroom in larger classes, which can lead to disruptions and difficulties in behavior management. This finding is supported by Wu et al. (2022) in the US, which explored how higher pupil-teacher ratios affect classroom management and teacher-student interactions.

Additionally, 75% of teachers reported "Difficult to use participatory methods" as a challenge. This implies that many teachers find it difficult to incorporate interactive and participatory teaching methods in larger classes, potentially impacting student engagement and active learning. Yonas et al. (2023) in Tanzania found that challenges in classroom management and a shortage of instructional materials contribute to difficulties in using participatory methods, which supports this finding.

Difficulty attending to each student was indicated by 72% of teachers, suggesting that many teachers struggle to provide individualized attention in larger classes. This aligns with Kalemba's (2022) research in Zambia, which identified high pupil-teacher ratios as negatively impacting academic performance and the quality of teaching and learning.

The challenge of "The books are not adequate for all students" was reported by 69% of teachers, indicating that many face difficulties in ensuring that all students have access to sufficient learning resources. Muthanje's (2023) study in Kenya supports this finding, highlighting that high pupil-teacher ratios correlate with compromised teaching and learning processes.

Difficulty involving all learners in the lesson was reported by 62% of teachers. This suggests that engaging all students in the learning process becomes challenging in larger classes. Likuru and Mwila's (2022) research in Tanzania found that overcrowded classrooms negatively affect classroom management and curriculum implementation, which supports this observation.

Finally, 59% of teachers reported "Not all students can concentrate" as a challenge, indicating that maintaining students' focus and attention in larger classes is problematic. Saleem's (2022) study in Pakistan identified overcrowded classrooms as a factor leading to difficulties in classroom management, which aligns with this finding.

In addition to these challenges, interviews with the heads of schools confirmed that large class sizes are a significant issue. All three heads of schools indicated that large class sizes pose substantial challenges for teachers, affecting their ability to deliver effective instruction and manage the classroom. One of the heads of school noted:

Large class sizes create considerable challenges for our teachers in maintaining a positive teacher-student relationship, which is essential for effective learning. It becomes harder for teachers to establish meaningful personal connections with each student and truly understand their unique needs, strengths, and weaknesses.

Another head of school added:

One of the most significant challenges that arises from large class sizes is the lack of individualized attention for students. With a considerable number of students to attend to, teachers may find it increasingly difficult to cater to the diverse learning styles, paces, and needs of each student.

The other head of school also added:

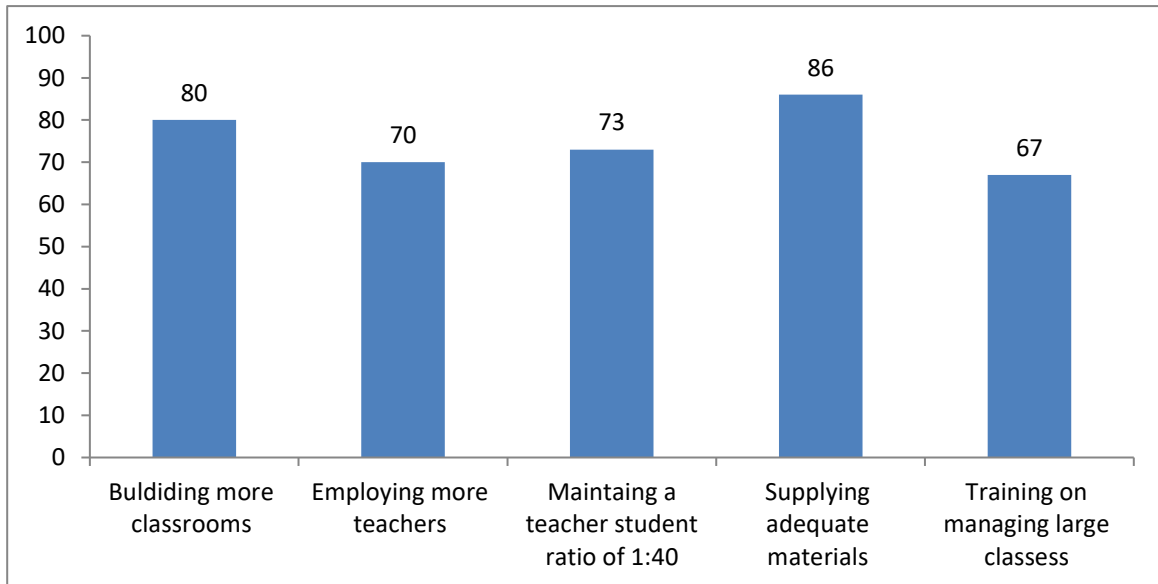
Larger class sizes also impact the opportunities for interactive and engaging teaching methods. With a high student-to-teacher ratio, conducting effective interactive activities, stimulating discussions and engaging in fruitful group work becomes more challenging. This limitation could potentially hinder students from actively participating in the learning process.

The findings from the heads of schools in Temeke Municipality uniformly highlight the significant challenges posed by large class sizes in the teaching and learning process. All three heads of schools concurred that the sheer number of students per class creates substantial obstacles for teachers, severely affecting their ability to foster positive teacher-student relationships, which are crucial for effective learning.

The heads of schools pointed out that with large class sizes, teachers face considerable difficulties in providing individualized attention and addressing each student's unique needs and diverse learning styles. The larger number of students also restricts opportunities for employing interactive and engaging teaching methods, such as stimulating discussions and group work. As a result, these challenges hinder students' active participation in the learning process, which could detrimentally affect the overall quality of education in their schools.

Remedies to Overcome Challenges Encountered by Teachers Due to Class Larger Size in Temeke Municipality

To address the fifth objective of this study, which focused on suggesting remedies for the challenges encountered by teachers due to large class sizes in Temeke Municipality, data were collected from the teachers. The results of these suggestions are illustrated in Figure 3.



Source: Field data (2023)

Figure 3.
Teachers' Responses to Remedies of Challenges of large Class size

One of the suggested solutions to address the challenges of large class sizes is to build more classrooms, as indicated by 80% of the teachers. Building additional classrooms would help accommodate the growing number of students, reducing the overcrowding in existing classrooms. This, in turn, can create a more conducive and less chaotic learning environment, allowing teachers to better engage with individual students and provide personalized attention. The importance of this solution is underscored by the findings of Likuru and Mwila (2022) in Tanzania, who highlighted that overcrowded classrooms negatively affect the teaching and learning process, compromising the implementation of a competence-based curriculum and supportive classroom management practices. Therefore, investing in expanding infrastructure is crucial to improving the overall educational experience and student outcomes in large-class settings.

Another vital solution proposed by 70% of the teachers is to employ more teachers in schools with large class sizes. Increasing the number of teachers can help reduce the teacher-student ratio, allowing educators to allocate more time and attention to each student. The findings of Xu and Harfitt (2019) in China support this recommendation, as they found that inadequate attention to individual students was one of the challenges

faced by teachers in large classes. By hiring additional teachers, educational institutions can enhance teacher-student interactions, provide more personalized feedback, and improve the overall quality of instruction.

Maintaining an optimal teacher-student ratio of 1:40, as suggested by 73% of the teachers, is crucial for effective teaching and learning in large classes. A lower teacher-student ratio allows teachers to devote more time to each student, better understand their individual needs, and provide timely support. The significance of this solution is emphasized by the findings of Wuttor (2022) in Ghana, who revealed that large class sizes had a negative impact on the development of employable skills among undergraduate students. By keeping the teacher-student ratio at an appropriate level, educational institutions can enhance student engagement, academic performance, and the overall learning experience.

Ensuring the availability of adequate teaching materials is another essential solution, with 86% of the teachers advocating for it. Large-class settings often face resource constraints, limiting students' access to learning materials. By providing sufficient materials such as textbooks, learning aids, and technology tools, students can have equal opportunities to engage with the curriculum. This solution aligns with the findings of Kiogolo and Mtana (2022) in Tanzania, who stressed the importance of effective classroom management practices in improving academic performance. Having the necessary materials can facilitate innovative teaching approaches, enhance student participation, and support the learning needs of diverse students.

A valuable solution suggested by 67% of the teachers is to provide training on managing large classes. Educators often face unique challenges in large-class settings, such as maintaining discipline, engaging all students, and providing individualized attention. By offering specialized training, teachers can develop strategies to effectively manage large classrooms and maximize student learning opportunities. This solution resonates with the findings of Bakar and Mwila (2022) in Tanzania, who emphasized the need for effective classroom management practices in overcrowded classrooms. Properly trained teachers can create a positive and conducive learning environment, fostering better student outcomes and academic performance.

Generally, addressing the challenges posed by large class sizes requires a multifaceted approach. The suggestions put forward by teachers—building more classrooms, employing more teachers, maintaining an optimal teacher-student ratio, supplying adequate materials, and providing training on managing large classes—are all interconnected and supported by previous research. Building more classrooms is essential to accommodate the increasing student population and provide a conducive learning environment. Employing more teachers and maintaining an optimal teacher-student ratio can improve teacher-student interactions and personalized instruction. Supplying adequate materials enhances student engagement and access to the curriculum. Additionally, offering training on managing large classes equips teachers with the skills to effectively handle the unique challenges of large-class settings. By implementing these solutions, educational institutions can foster a better learning

experience, promote academic achievement, and enhance overall educational outcomes in large classes.

CONCLUSION

The study concludes that overcrowded classrooms are a significant issue in Temeke Municipality, with class sizes consistently exceeding the recommended limits. Findings indicate a maximum of 90 students per class, a mode of 71, and an average of 73, underscoring a widespread problem of overcrowding. This condition adversely affects the quality of education, as large class sizes impede effective teaching and learning. Teachers and students face challenges in managing such numbers, leading to limited personalized attention, reduced student engagement, and potentially compromised academic performance. To improve the educational experience, it is crucial for policymakers and stakeholders to prioritize addressing overcrowding by enhancing infrastructure and supporting effective teaching practices.

The study also reveals that teachers in Temeke Municipality hold predominantly negative attitudes toward current class sizes, which exceed the recommended ratio of 1:40. This negative perception aligns with broader research indicating that large class sizes are perceived as barriers to effective teaching. Despite these challenges, many teachers noted that students remain actively engaged, which could be seen as a positive aspect. Nonetheless, a majority of teachers reported difficulties in class management, highlighting the need for strategies to improve classroom dynamics and support a more effective learning environment. Understanding and addressing teachers' concerns about class size is essential for enhancing teaching effectiveness and overall educational quality.

Additionally, the study establishes a clear relationship between class size and the quality of education, with students expressing concerns about various aspects of their learning experience. Issues related to class facilities, participation opportunities, access to clarifications, and assignment management suggest that larger class sizes negatively impact student engagement and learning outcomes. Teachers' acknowledgment of these issues reinforces the importance of addressing class size challenges to enhance instructional quality and student success. Previous research supports these conclusions, consistently demonstrating the adverse effects of large class sizes on teacher-student interactions and overall instructional quality.

The study also identifies significant challenges faced by teachers due to large class sizes, including difficulties with classroom mobility, marking students' work, managing behavior, and using participatory teaching methods. These issues hinder effective teaching, classroom management, and student engagement, potentially affecting academic performance. The study emphasizes the need to address these challenges to create a supportive learning environment that meets both teacher and student needs. Effective solutions to mitigate the impact of large class sizes are essential for improving the overall quality of education and enhancing students' learning experiences in Temeke Municipality.

Finally, the study concludes that addressing the challenges of large class sizes requires comprehensive remedies. Teachers have suggested several solutions, including building more classrooms, hiring additional teachers, maintaining an optimal teacher-student ratio, ensuring adequate teaching materials, and providing training for managing large classes. Implementing these recommendations is crucial for creating a conducive learning environment, improving student engagement, and achieving better educational outcomes. Addressing these challenges effectively will be vital for optimizing the quality of education and fostering better educational experiences for secondary school students in Temeke Municipality.

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