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Challenges and Interventions in the Teaching and Learning Process in Public Secondary Schools in Ilemela Municipality, Mwanza, Tanzania

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Abstract

The study aimed to examine challenges and intervention in teaching and learning process in government schools at Ilemela Municipal, Mwanza Tanzania. Primary aim of education is to enhance both individual and national development by imparting relevant knowledge, fostering positive attitudes, and equipping individuals with the necessary skills to address existing challenges. Through the process teaching and learning process in schools encounter several challenges that impede their progress. The study adopted mixed research approach and convergent parallel research design. About 200 participants out of 2000 target population were included in the study subject matter. Questionnaire and Interview guide were used as instruments in which questionnaire was validated and reliability was checked using split in obtaining 0.8 Correlation coefficients. The data collected through questionnaires were analyzed by researcher using SPSS Version 23 to summarize data, while data gathered through interviews were thematically analyzed. The findings revealed that most of the public secondary schools face in-depth challenges throughout the teaching and learning process. Furthermore, the findings indicated that school feeding programs appear to be essential for enhancing effective teaching and learning, leading to improved academic performance among students. The study recommends that the government should ensure the availability of teaching and learning resources and emphasize the establishment of school feeding programs to enhance students' academic performance.

Keywords*— *Classroom, Class size, Education, Commuting, Performance.

I. INTRODUCTION

This study explored challenges and interventions in teaching and learning process. Quality education is a pillar to social mobility and can thus help reduce poverty, although it may not necessarily reduce income inequality. Teaching and learning have evolved into complex professions that play a pivotal role in intellectual growth and the preparation of individuals to make positive contributions to society. The teaching-learning process can be influenced by a variety of factors, including classroom environments, libraries, technical workshops, qualified teachers, and instructional methods. The quality of facilities provided, such as classrooms, infrastructure, health and sanitation, teacher-student relationships, and moral or social values, can have a profound impact on students' learning outcomes (UNICEF, 2019). Factors such as spatial density and personalized classroom settings can affect academic performance and behavior (Maxwell, 2003; Maxwell and Chmielewski, 2008). Education systems worldwide grapple with numerous challenges that have repercussions for the quality of teaching and learning. These challenges include issues related to access to education, especially for marginalized groups, shortages of qualified teachers, large class sizes, outdated teaching methods, and inadequate infrastructure and resources (UNESCO, 2017). Several countries, including India, China, and numerous African nations, face difficulties in enhancing teaching and learning in public schools, leading to subpar learning outcomes (UNESCO, 2018; Zhang et al., 2014; Fourie, 2016). The COVID-19 pandemic has further exacerbated these challenges, spotlighting existing disparities and inequities (UNESCO, 2020).

Africa's education system displays extremely low levels of education in many African nations. Some countries have alarmingly low literacy rates, while others have higher literacy rates. Sub-Saharan Africa, on average, has lower literacy rates compared to the global average (Fourie, 2016). Many African countries have prioritized universal primary education in their education policies, aiming to increase enrollment, reduce dropout rates, and improve literacy levels. However, challenges such as high population growth, poverty, political instability, and underfunding of education hinder progress (UNESCO, 2019). In East Africa, countries like Tanzania, Kenya, and Uganda face many challenges similar to the rest of the continent, including large class sizes, under-qualified teachers, and infrastructure deficits (Johnson et al., 2019). Public schools in these countries grapple with issues such as under-qualified and unmotivated teachers, inadequate teaching facilities, large class sizes, and low proficiency levels among students (Kimenyi, 2012). Interventions are needed to improve teaching methods, provide ongoing teacher training, increase resources, and reduce class sizes (DeGraff & Riddle, 2016).

II. LITERATURE REVIEW

Teachers in large classes have more students to prepare lessons for, grade assignments, and provide feedback to (Kassile, 2020). This increased workload can lead to higher stress levels and burnout, impacting teaching quality. Teachers in large classes tend to rely more on didactic, whole-class teaching methods rather than interactive, student-centered strategies that require more one-on-one time (Mukama & Andersson, 2019). This less-effective instruction can hinder student outcomes. In large classes, it is more difficult for teachers to engage with individual students and keep track of each student's comprehension and progress. Large class sizes tend to disproportionately disadvantage students from low-income backgrounds or those with special needs who rely more on individualized teaching approaches (Mushi, 2019). As class sizes increase, the number of students per teacher also goes up, leaving teachers with less time for each student and impacting how much individual attention and support students receive. Smaller class sizes allow teachers to provide more individualized attention and feedback to students. Larger class sizes are associated with less teacher-student interaction, time spent on instruction, the use of varied teaching techniques, and differentiation of instruction (Hattie, 2017).

Students who have long commutes to school arrive tired and less alert, impacting their ability to focus and engage in class. This fatigue builds up over time and hinders performance. Students with long commutes, especially those involving public transportation, often arrive at school tired, distracted, and less alert due to the physical and mental strain of the commute. As a result, these students may have more difficulty concentrating in class, participating in lessons, and absorbing new material. Over time, this accumulated fatigue can negatively impact academic performance (Kassile, 2020). Students who live far from school are more likely to be absent, especially on difficult travel days. This missed instruction hinders learning and achievement. Students with long commutes, particularly those involving unpredictable public transportation, tend to have higher rates of absenteeism. This is because issues like traffic, delays, and breakdowns make it difficult for these students to make it to school on some days. Every school day missed results in lost learning opportunities that accumulate over time and hinder academic performance (Makwinya, 2019).

Long commutes can impact student health due to less sleep, physical fatigue, and the risk of accidents (Kassile, 2020). Long commutes can negatively impact students' health and wellbeing in various ways, including a lack of sleep, physical fatigue, and a higher risk of accidents during the commute. Poorer health and wellbeing then influence students' ability to focus, concentrate, and learn, subsequently impacting their attendance, test scores, and grades. Poorer health can then influence attendance and academic performance.

Insufficient hands-on materials and laboratory equipment impede the practical and cognitive skill development of students (Munene, 2014; Muianga et al., 2018), contributing to lower-order learning outcomes. A survey in South Africa revealed that 79% of teachers believed that inadequate materials hindered their ability to teach in accordance with the prescribed curriculum standards (Makwinya, 2019). This results in students having a surface-level understanding of concepts due to limited exposure to real-life examples and applications, ultimately leading to shallow learning. Inadequate teaching resources have been shown to correlate with poorer performance on tests, exams, and assessments on a global scale (Christopher & Obeka, 2014; Onsomu et al., 2006; Ringness, 2015). In several African countries, the absence of proper textbooks leads to a shift toward lecture-based teaching rather than interactive methods that require materials (Lemma et al., 2016). A significant disparity in student performance emerges, with those in schools equipped with more instructional materials scoring, on average, 23% higher in national leaving exams compared to students in less-resourced schools (Alemu, 2017). For instance, in Kenya, 90% of science teachers reported that the lack of laboratory equipment restricted their ability to

conduct demonstrations and experiments, negatively impacting lessons (Munene, 2014).

III. RESEARCH METHODOLOGY

This study adopted mixed research approaches together convergent parallel research design. The design involved gathering both qualitative and quantitative data simultaneously, analyzing them separately, and then combining the results at the end to gain a comprehensive understanding of the research problem (Creswell, 2014). The use of a convergent parallel design allows for data validation and confirmation, ensuring thorough and validated findings. The study focused on Ilemela district in Tanzania's Mwanza region. Both purposive and simple random sampling methods were employed to select schools, teachers, and students. Stratified sampling method divided respondents into male and female groups, while purposive sampling was used to select key informants like the district education officer and head teachers. Simple random sampling was used to select schools and students from five schools in scattered wards. The sample size was 5 head teachers, 92 teachers (46 male and 46 female), 1 district secondary education officer, and 60 students.

IV. FINDINGS OF THE STUDY

Challenges in the Teaching and Learning Process in Public Secondary Schools

Teaching Resource on Instructional Effectiveness and Learning Outcomes

The findings in Figure 1 below indicate that 47.8 percent of the respondents agree that there is a shortage of teaching and learning resources, which can affect the teaching and learning process in public secondary schools. Additionally, 19.6 percent of the respondents strongly agree, 22.8 percent of the respondents disagree, understanding that there are enough teaching and learning resources, and 9.8 percent of the respondents were neutral or moderate. The study relates to Kristmundsson (2017), suggesting that the lack of basic teaching resources like textbooks, lab equipment, workbooks, and charts makes it difficult for teachers to effectively deliver lessons and engage students. This impacts instructional effectiveness in schools with insufficient textbooks and materials, as teachers spend more time planning lessons and searching for supplemental resources, which distracts from actual teaching time. Without adequate textbooks and supplementary materials, teachers struggle to assign readings, homework, and practice exercises, limiting students' opportunities for independent learning and mastery. This implies that there is a shortage of teaching and learning materials, which still affects the teaching and learning process. Teacher qualifications and experiences are influenced by the shortage of teaching and learning materials, like science subject equipment. Teachers reported that a lack of adequate resources limited the range of teaching strategies they could employ in the classroom.

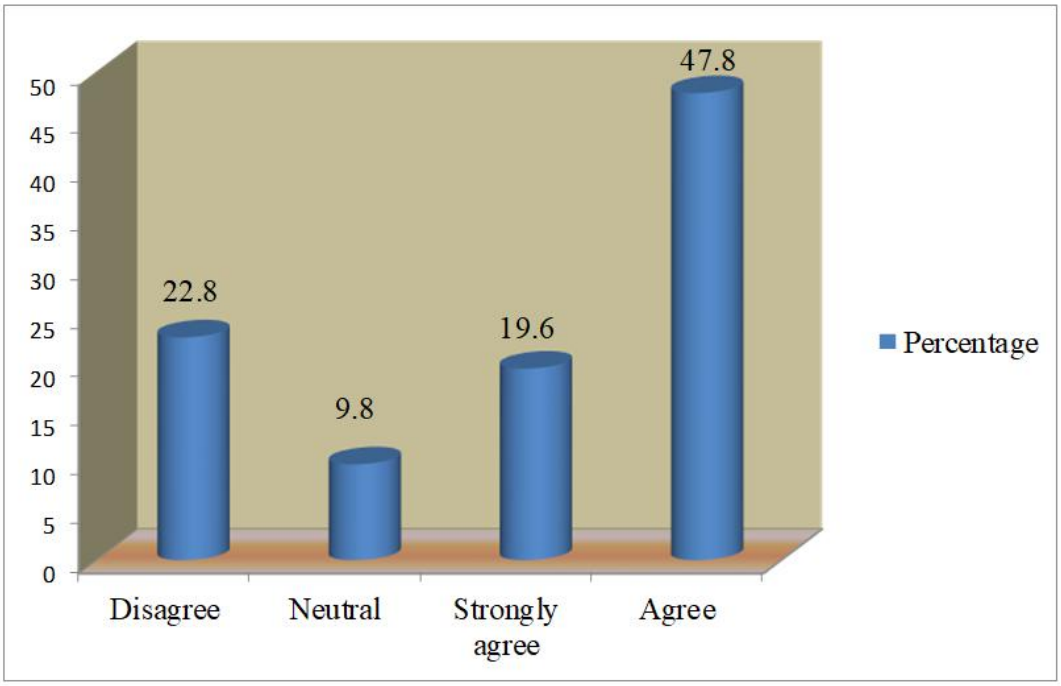

Fig.1: Opinions on teaching resource on instructional effectiveness and learning outcomes (n=92)

Source: Field Data (2023)

Therefore, the findings relate to the dilution theory by Blake in 1981, as the number of children in a family increase, the resources available to each child decrease, leading to negative outcomes such as lower educational attainment and occupational status. Since then, the theory has been widely studied and applied to various contexts, including education. The resource dilution theory argues that as class sizes increase, the resources available per student decrease, resulting in lower student achievement. This includes things like the teacher's time, attention, and ability to provide individualized instruction and teaching resources.

Challenges of infrastructures in relation to the number of students

The findings from Figure 2 reveal that 60.9 percent of secondary school teachers acknowledge a genuine shortage of classes. This shortage poses a challenge to the teaching and learning process due to the large number of students in a class, impacting class control and overall educational effectiveness. Additionally, 12.0 percent of secondary teachers responded neutrally, 4.3 percent disagreed on the impacts of class size on teaching quality and student learning outcomes in public secondary schools, while 22.8 percent strongly agreed that there is an inadequate number of teachers affecting class size and, subsequently, teaching quality and student learning outcomes. These results align with Andersson and Grosjean (2012), asserting that teachers in large classes tend to resort to didactic, whole-class teaching methods, hindering interactive, student-centered strategies that necessitate more individualized attention. In interviews, several participants shared their perspectives on the impacts of class size. One interviewee acknowledged the shortage of classes but highlighted ongoing government initiatives to address this issue by constructing more classes and establishing additional schools. The interviewee emphasized the importance of community involvement in supporting these initiatives. Another participant expressed concerns about the inadequacy of classes, leading to challenging and un-conducive teaching and learning conditions, even in newly established schools.

The findings and participant statements align with the dilution theory, indicating that as the number of students in a class increase, available resources for each student decrease, potentially resulting in negative outcomes such as lower educational attainment. This perspective is supported by Kyoshaba (2009), who highlighted a consistent negative correlation between class size and student achievement, suggesting that resource dilution impacts learning outcomes adversely.

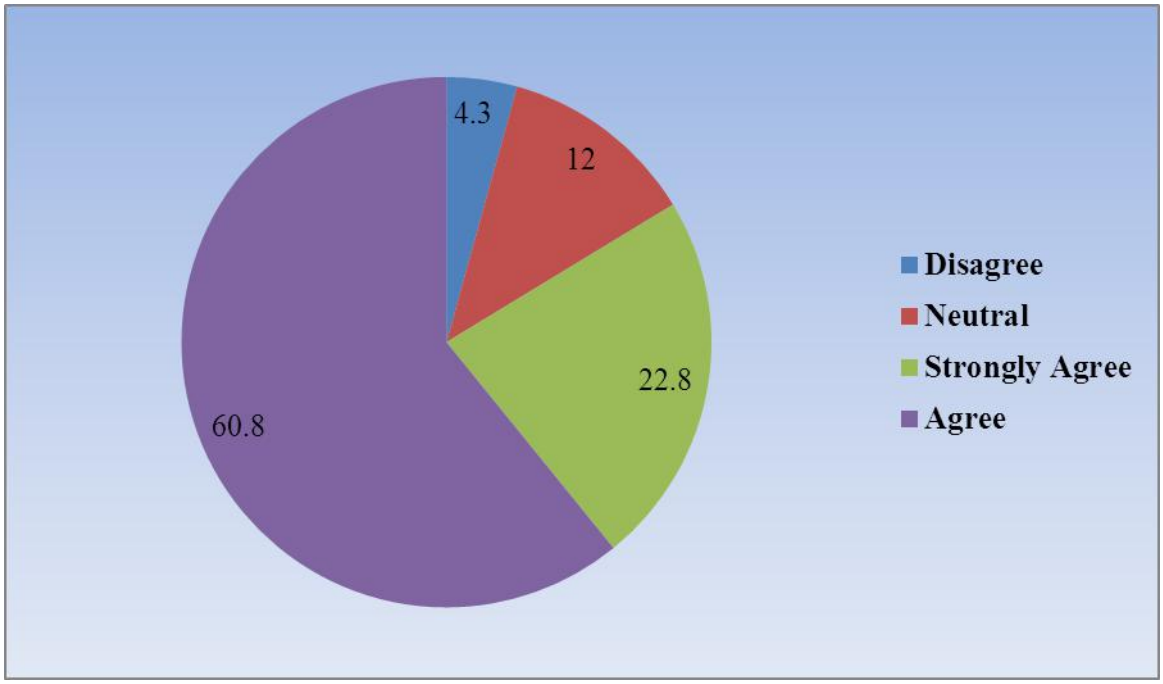

Fig.2: Inadequate Number of Classes (n=92

Source: Field Data (2023)

Interviews response to wards challenges in teaching and learning process

Poor Infrastructure and Large class Sizes

Based on the objective the findings displayed that most classrooms are overcrowded, with student numbers exceeding the recommended classroom size. This makes it difficult for teachers to give individual attention to students and poses a challenge for classroom management. Classrooms often have 60-80 students in a single class, far exceeding recommended ratios. Teachers struggle to provide individual attention and ensure all students understand lessons. It is difficult to conduct student-cantered, participatory lessons, or project work. Large classes are prone to noise and disruptions, undermining the learning environment.

One of the interviewee stated that:

> "*Many school buildings, classrooms, and sanitation facilities are in poor condition, negatively impacting the learning environment. Issues such as inadequate seating, leaking roofs, and a lack of labs or workshops hamper the delivery of quality education. Leaking roofs, cracked walls, and poor ventilation in dilapidated buildings compromise comfort and safety. Unsuitable or missing desks, blackboards, and furniture also hinder the learning process. Overcrowded and under-resourced facilities cannot support interactive or collaborative styles of teaching". (Interviewee H, September 2023).*

According to an interviewee, "Most schools still use old infrastructures with no access to any modern tools. Laboratories are inadequate as a single room is used as physics, chemistry, and biology practical labs. Also, no learning and leading resources like enough libraries with needed materials. All these have been setbacks to effective teaching and learning processes"

Shortage of teaching and learning materials:

There is a shortage of basic teaching resources such as textbooks, lab equipment, and stationery. This affects the effectiveness of teaching practices. Students are forced to share limited resources, which affects their learning. Most schools lack basic textbooks, with student-to-book ratios being particularly unfavourable in science subjects, where equipment for practical lessons is also lacking. This makes it hard for teachers to effectively impart knowledge or skills using appropriate tools and resources. Students must share or go without vital materials.

The findings indicated that teachers and students do not have enough books compared to the population ratio.

One interviewee emphasized that,

> "*For an effective teaching and learning process, there should be enough teaching and learning resources that could be accessed in conducive learning infrastructure in school.' School management should ensure the resources are well-utilized when they are available, as some teachers do not distribute them to students while they are provided by the government. The government should ensure equal distribution of teaching and learning materials, as we found that most urban schools have a large number of students". (Interviewee I, September 2023).*

Lack of Qualified Teachers:

There is a shortage of content area specialists and trained teachers in key subjects like Math, Sciences, and English (Dass, 2018). This compromise the quality of instruction delivered to students. Many teachers are also improperly deployed and end up teaching subjects they are not qualified in. Hard-to-staff specialty subjects often lack dedicated teachers, lowering the quality of content delivered and the ability to effectively answer student questions. High teacher absenteeism further disrupts lessons and consistency.

The findings indicated that schools are hiring temporary mathematics and science subjects' teachers to ensure effective teaching and learning.

One interviewee emphasized that,

> "*In order to overcome the situation, we are trying to find out the qualified competent mathematics and science subjects temporary teachers like physics teachers to satisfy the needs of the subjects to students. This is due to the fact that without hiring temporary teachers, the problem of qualified teachers' in some of the subjects continue to be the gap in the teaching and learning process". (Interviewee J, September 2023).*

Low Student Motivation and Participation:

Factors like socioeconomic challenges, parental neglect, and the need to work to earn income demotivate students from active participation in class activities (Kimani et al., 2013). This affects their academic performance and learning outcomes. Many students work part-time to support their education or family financially, negatively impacting study time and concentration in class. Poverty, neglect, and struggles to meet basic needs demotivate some from valuing school, affecting attendance, engagement, and academic performance. The findings indicated that the tendency of motivating students by providing gift to support their on-going academic performance also affect the teaching and learning process, as one of the interviewee stated,

> "*Due to the presence of the large number of students, most of the schools are failing to motivate their students even through gifts and priorities, there were issues of buying and providing gifts to the students who did well in their academic results and this conducted at the end of each the term but as time goes this tendency started to dis appear because now days schools are waiting at the end of completing form". (Interviewee K, September 2023)*.

Getting students motivated and engaged in learning can be challenging. Student motivation is correlated with achievement and recommended strategies like connecting material to students' interests, allowing more autonomy, and providing rewards to boost motivation. However, some students may face external barriers to engagement, such as unstable home environments.

Interventions in the Teaching and Learning Process in Public Secondary Schools

Reduce Class Sizes:

Large classes make it difficult for teachers to give individual attention needed for effective learning. Smaller classes of 40-45 students allow for more interactive, inquiry-based lessons and feedback. Building additional classrooms or recruiting more teachers can enable more individualized instruction. Large class sizes have been shown to negatively impact learning. Muchiri et al. (2017) studied the influence of class size on academic performance in Mwanza secondary schools and found that class sizes over 50 students led to significantly lower test scores compared to classes with 40 students or less. Reducing class sizes from over 50 to fewer than 40 students improved examination scores by an average of 12 percent. One of the Interviewee stated that;

> "*These public secondary school must be improved in all school infrastructures, includes classrooms, laboratories, libraries and other facilities. Noise levels from within and outside the school, Lighting, temperature, ventilation and air quality in facilities also Cleanliness and hygiene of school premises these entire make the school to be good and influence the effective teaching and learning process". (Interviewee N, September 2023)*.

The findings show that not only class size but all school premises should be considered to improve the teaching and learning environment.

Improve Teacher Training:

Continuous professional development ensures teachers learn new skills to keep their teaching engaging and relevant. Subject-specific training improves content knowledge and the ability to explain concepts clearly. Providing regular teacher training programs can improve pedagogical skills and knowledge of current teaching methodologies. A study in Tanzania found that regular coaching of teachers improved exam scores by 14% compared to only a 5% increase without coaching (UNESCO, 2021). According to Kimani et al. (2018), examined the effect of continuous teacher professional development programs in Kenya, schools that provided regular subject-specific training for teachers saw improved learning outcomes for pupils. Teachers also reported increased confidence and job satisfaction with ongoing training to strengthen their pedagogical skills. Also one of the Interviewee stated that;

> "*Is good for the education development leaders to provide and facilitate training to public secondary school teachers because investing in comprehensive and ongoing teacher training programs focus on pedagogical techniques, subject knowledge, and classroom management skills for effective teaching and learning". (Interviewee O, September 2023)*.

The findings indicated that providing opportunities for teachers to participate in professional development workshops, conferences, and collaborative learning communities can enhance their teaching effectiveness.

Focused professional development in content and pedagogy can positively impact student outcomes.

Increase Learning Resources and Introduce E-learning Programs:

Adequate, up-to-date textbooks and materials supplement lessons by providing students references to study independently. Laboratories and technology help bring subjects like science and IT to life. A program providing tablets loaded with educational content to rural Tanzanian schools saw standardized test scores rise 25% above the national average, according to Sergeant (2019). Introduce e-learning programs utilizing technology or the internet to make up for shortages and supplement traditional methods.

The findings indicated that Classroom resources and equipment can play an important role in supporting student learning and engagement. Examples, Technology resources such as computers, tablets, and interactive whiteboards can help teachers deliver engaging lessons that incorporate multimedia and interactive activities.

One of the interviewee stated that,

> "*Using technology in the classroom can improve student engagement and motivation. Classroom libraries can provide students with access to a variety of books and other reading materials, which can help improve reading skills and academic performance. Also Science equipment such as microscopes and lab supplies can help students engage in hands-on learning and develop critical thinking skills. Access to laboratory equipment was positively associated with student achievement in science". (Interviewee P, September 2023)*.

Integrate technology into teaching and learning processes to enhance access to information, facilitate interactive learning experiences, and develop digital literacy skills. Provide teachers with training and support to effectively use educational technology tools and resources. According to UNESCO (2012), introducing technology, integrating devices, software, and internet access enables modern blended learning approaches. Extending learning time, such as through after-school/summer programs, boosts learning when instruction is effective.

School Feeding Program:

Well-nourished students are better able to pay attention, concentrate, and participate actively in hands-on lessons versus hunger-impacted learning. Implement a school feeding program to improve nutrition and reduce hunger as a barrier to concentration. Also, Muchiri et al. (2019) conducted a randomized control trial examining the impact of school feeding on education in Mwanza. Results demonstrated feeding led to significantly higher test scores along with reduced absenteeism and dropout rates by addressing undernutrition barriers to learning.

One of the Interviewee stated that;

> "*Feeding programs contributed to improved test scores, reduce absenteeism, and lower dropout rates since hungry students cannot learn. Feeding programs create opportunities for an education; the school feeding programs have been shown to improve the nutritional status and health of students". (Interviewee R, September 2023)*.

Therefore, the findings indicate that, school feeding program can increase the performance in the whole teaching and learning process for the students to get good academic results.

Community Involvement and Partnership with Local Stakeholders:

Families actively engaged in their children's education through school committees provide accountability and social support linked to better attainment. Forming clusters among area schools and local government strengthens collaboration on issues like training, resource-sharing, and community engagement. During data collection, one of the interview findings as one of the interviewees narrated,

> *"All education stakeholders including the community should be given an opportunity to contribute to the teaching and learning process and get awareness of which areas they are supposed to contribute to the development of the education of their children". (Interviewee T, September 2023)*.

The findings indicated that, schools can establish effective communication channels with parents and involve them in their child's education. Encourage parental engagement through regular communication, parent-teacher conferences, and involvement in school decision-making processes. Collaborate with community organizations and stakeholders to provide additional resources, mentorship programs, and extracurricular activities. According to Henderson and Mapp (2002), move away from traditional lecture-based instruction and adopt student-centered

approaches that actively engage students in the learning process. Encourage active learning, problem-solving, critical thinking, and collaborative activities that promote a deeper understanding and application of knowledge.

Strengthen School Leadership and assessment practices

According to Black and Wiliam, (1998) Implement a balanced and formative assessment system that includes a variety of assessment methods, such as projects, portfolios, and performance-based tasks. Provide timely and constructive feedback to students to support their learning and growth. Providing instructional materials, ensuring all students have textbooks and supplies improves educational equity. Extra academic support for struggling students, such as after-school tutoring, can help close achievement gaps. Insisting School nutrition programs and Parent engagement initiatives, addressing hunger through meals or snacks allows students to better focus on schoolwork. One of the Interviewee stated that,

> "*An important aspect of a school's success is the administration to maintain quality standards, the head of schools should be able to guarantee that all factors that contribute to the school's atmosphere favoring the teaching-learning process are upheld". (Interviewee U, September 2023)*.

Also enhance school administration through leadership training and increased funding or autonomy. Effective administration improves school functioning. Research shows that effective school leadership is correlated with better student performance, retention, and teacher job satisfaction in Mwanza schools (Ndirangu et al.). Monitoring classroom practices and learning outcomes enable timely corrections and accountability in programs supported by assessment results of the school leaders (Odongo et al., 2022).

V. CONCLUSION

The study illuminated multifaceted challenges in Tanzanian public secondary schools, ranging from class size issues to long commuting distances and resource shortages. The interconnected nature of these challenges calls for a comprehensive and integrated approach to educational interventions. Strategies such as reducing class sizes, improving teacher training, increasing resources, and implementing targeted interventions like school feeding programs emerged as crucial steps toward enhancing the overall teaching and learning environment. Addressing these challenges holistically is essential to fostering an environment that supports effective teaching, positive learning outcomes, and the overall well-being of students in Tanzanian public secondary schools.

RECOMMENDATIONS

The government should prioritize and ensure the consistent and sufficient provision of teaching and learning materials to facilitate an effective teaching and learning process. Allocate and prioritize an adequate budget for the education sector, ensuring schools receive sufficient funds for effective teaching and learning. Timely disbursement of allocated funds according to a predefined schedule is crucial. The Ministry of Education, Science, and Technology (MoEST) should organize regular training, seminars, and workshops for teachers to enhance their competence and keep them updated on various teaching and learning methods in secondary schools. The Ministry of Local Government and Regional Administrative (LGRA) and MoEST should pilot evidence-based interventions on a small scale to test feasibility and impact before implementing them on a larger scale. This includes exploring options such as reducing class sizes, improving teacher training models, and introducing remedial classes.

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