



Original Article

The Impact of Pupil-Teacher Ratio on Performance in Mastering Reading, Writing and Arithmetic Competencies in Morogoro Municipality. A Case Study of Standard Four Pupils in Primary Schools

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Keywords:
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The main purpose of this study was to investigate the impact of pupil-teacher ratio (PTR) on academic performance in mastering reading, writing, and arithmetic competencies in public primary schools in Morogoro Municipality. The study targeted 62 public primary schools in the municipality, in which a total of 5 schools were sampled for the study. A descriptive survey design was used as the research design for the study. Interviews and documentary reviews were used in collecting data for the study. Interviews were conducted with the municipal primary education officer in charge, all head teachers, and all standard four teachers. Documentary reviews were done on Standard Four National Assessment and analysis reports and documents concerning the number of teachers and pupils in sampled schools. Piloting study of the research instruments was conducted prior to the actual data collection to determine the validity and reliability of the tools. The data collected were analysed descriptively. The finding of this study revealed that PTR significantly influences the performance of pupils in standard four-nation assessments and in mastering reading, writing, and arithmetic competencies. The study recommended that all education sector stakeholders pay adequate attention to PTR since it affects the performance of pupils in primary schools. The study recommended the government employ more teachers to lower PTR and ease teacher workload. Also, the government through the MoEST and PO-RALG should undertake a balancing of employed teachers throughout the country to ensure equity in teacher distribution thus bringing down PTR in those schools which have high PTR and reducing teachers in those schools that have been overstaffed. Furthermore, the government should review education acts to empower head teachers to admit pupils on the basis of PTR in the respective schools.

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INTRODUCTION

In 1948, the United Nations Declaration of Human Rights proclaimed that education, especially elementary education, was a fundamental human right. Every person has a claim to a basic level of knowledge regardless of her social, political, or economic status. At the 1990 World Conference on Education for All (EFA), the international community agreed that education is a basic human right (United Nations, 2000).

Many developing countries have made tangible achievements in the provision of free primary education and subsequent increase in enrolments. The average net enrolment for primary education in developing countries increased from 78% in 1990 to 83% in 2000 (Vander, 2003). Between 1990 and 2000, the world's primary school-age population grew from 600 million to 648 million. Demographers argued that by 2015, the number would exceed 700 million (United Nations, 2000). One of the measures of education quality is the pupil-teacher ratio. Teachers of a large class can dedicate less time to each pupil than in a small class.

The global average is 24.6 pupils per teacher in primary school. The data on the pupil-teacher ratio in primary schools in investigated 194 countries worldwide showed that: 7 countries have fewer than 10 pupils per teacher, 90 countries have 10 to 19 pupils per teacher, 27 countries have 20 to 39 pupils per teacher, and 27 countries have 40 or more pupils per teacher. Thus, the lowest pupil-teacher ratios in primary school were observed in San Marino (6.3), Bermuda (8.3), Liechtenstein (8.4), Denmark (9.9), Sweden, and Cuba (10.0). Most developed countries, countries in Eastern Europe and former member states of the Soviet Union have pupil-teacher ratios between 10 and 19. Some countries in East and South-East Asia, the Middle East, Africa, and Latin America also belong to this group, among them China, the world's most populous country, with a pupil-teacher ratio of 18.3. The majority of countries in Latin America, as well as some countries in Africa and Asia, have pupil-teacher ratios between 20 and 29 (UNESCO, 2008). The country with the highest pupil-teacher ratio in the world is the Central African Republic, with a ratio of 83.41:1 and the country with the lowest ratio is San Marino, with a ratio of 6.93:1 (UNESCO, 2008).

Sub-Saharan Africa has recorded the largest increase in the primary school age group, up from 84 million in 1990 to 106 million in 2000, an average growth of 2.6% per year (UNESCO, 2008). Primary school Pupil-Teacher Ratio did not keep pace with the rapid increase in enrolments. The greatest challenge facing developing countries in their efforts to attain international goals like education for all is the provision of quality education (UNESCO, 2008). The Pupil-Teacher Ratio in most developing countries is in a worrying state. UNESCO (2008) estimated that over 84% of classrooms had over 40 pupils per teacher. The majority of countries that have PTR exceeding 40:1 are in Sub-Saharan Africa. Sub-Saharan Africa has the largest PTR with Zambia having a PTR of 51.2, Congo 54:1, Burundi 54.2, Mali 55:1, Chad 63.2, Mozambique 67:1, Rwanda 65:1, Ethiopia, and Malawi hovering around 70:1;(UNESCO, 2008). The high PTR in many developing countries is a result of large enrolments following the quest for universal primary education and the increasing teacher shortages. With such enrolments and a reduced number of teachers, the available teachers face serious obstacles in an attempt to deal with overcrowded classes.

Tanzania has been facing the daunting challenge of increasing the pupil-teacher ratio due to skyrocketing teacher shortages after the start of the implementation of the Fee Free Basic Education Policy in 2015 and a rapid increase in enrolment. Implementation of this policy witnessed a rising in enrolment from 8,341,611 million in 2016 to 10,460,785 million in 2020 (President's Office Regional Administration and Local Government, 2020). The national Pupil Teacher Ratio (PTR) for public primary education in 2020 was 1:61. This shows the weakening from 2017, when the PTR was 1:47. This PTR is outside the accepted range of 35-53 set in the EP4R program. The worsening PTR can be attributed to the rapidly increasing primary enrolment, which has not been matched by an increased number of teachers (President's Office

Regional Administration and Local Government, 2020). This means that the number of pupils in public schools increases excessively while the number of teachers decreases. Government data shows that primary school teachers in parts of Tanzania attend to as many as 180 pupils in a single classroom, a pointer to how the shortage of teachers is undermining plans to deliver quality education to millions of free-school learners.

The prevailing shortage of teachers across the country, especially in the public sector, heavily hinders the quality delivery of learning even as authorities tout enrolment successes of the free learning policy. Going by the data compiled by the President's Office- Regional Administration and Local Government (PO-RALG) by December 2016, there was a shortage of 47,151 teachers in primary schools across the country. This shortage means teachers in most primary schools manage a class of more than the PO-RALG standard of 40 pupils per teacher ratio (PTR 1:40). According to the data posted on Tanzania's open data website, as of July 2018, 65.9% of 17,352 schools surpassed the 1:40 PTR standard ratio for primary schools (The Citizen, 2018). If the ratio of 45 pupils per teacher, which is often proposed by stakeholders is considered, some 9,600 primary schools in the country will fall in the disadvantaged bracket. The data continue to show that about 3.7% of the schools are worse with one teacher teaching at least 100 pupils (The Citizen, 2018). On average, countrywide, the pupil-teacher ratio stands at 51:1 and of the 26 cited regions, only three have a pupil-teacher ratio below the national average. They include, with the number of teachers in brackets, Dar es Salaam (31), Arusha (33), and Kilimanjaro (34). Sixteen regions in Tanzania have 50 pupils in one class, while four regions have over 60 pupils. At least 120 districts have a PTR of above 45, while 38 districts have a PTR above 60 and nine have the worst PTR of around 70 (The Citizen, 2018).

The pupil-teacher ratio is very significant towards the improvement of student/pupil academic

performance. After the introduction of the Fee Free Education Policy in Tanzania in 2014, the enrolment rate, especially in primary school has increased tremendously. This situation has automatically increased the pupil-teacher ratio in the majority of schools in Morogoro Municipality because of the freezing of automatic teacher recruitment in Tanzania in 2015. This problem has become perennial and concern has now been over poor performance posted by the pupils each year in national examinations and in different competencies. The overloaded teachers due to high enrolments are no doubt a concern as the number of teachers has not responded appropriately to the increased population of pupils in various public primary schools. Even though Fee Free Basic Education is a good idea, its intended gains may be eroded by poor performance due to a lack of observance of the ideal number of pupils per teacher, resulting from high enrolments and a declining number of teachers. Many studies have been done to assess the impact of the pupil-teacher ratio on internal efficiency, curriculum implementation practices, and academic performance in general and on the teaching-learning process. There was inadequate information on to what extent the pupil-teacher ratio influences standard four pupils' performance in mastering reading, writing and arithmetic competencies in public primary schools in Morogoro Municipality. Therefore, this study was a scientific approach to addressing this void in knowledge.

RESEARCH METHODOLOGY

The study was done in Morogoro Municipality which is found in the Morogoro region. The study used a descriptive survey design. The study used a qualitative research approach through which qualitative data was collected and analysed. The targeted population from which the sample was drawn consisted of the public primary schools found in Morogoro Municipality. The population of this study comprised; teachers, head teachers, and Municipal education officers for primary schools of

Morogoro Municipality. The sample size for this study was twenty-nine (29) respondents, whereby 23 standard four teachers, five head teachers, and a municipal education officer were selected from the population under the study.

The study employed a purposive sampling technique in selecting schools and respondents involved in the study. In collecting primary data, a researcher applied interviews. While collecting secondary data, various documents concerning the problem under the study were reviewed. Content validity was used to assess the validity of research tools. A test-retest technique was used to determine the reliability of the research instruments. The researcher obtained a permit from the college and also from the Municipal Director's office in Morogoro Municipality before proceeding to collect data. Interviews were administered to teachers, head teachers, and municipal education officers. The researcher personally visited the schools and municipal education office to conduct interviews with respondents of the study. Examination results and National Standard Four Assessment results were reviewed. These were done by the researcher after the arrangement was made in advance by booking an appointment.

Qualitative data were descriptively analysed. Whereby the collected data were cleaned up to remove irrelevant data; then, data were displayed, and the data were transformed through which information displayed in the tables were briefly interpreted; thereafter, the data correlation was done in which the researcher checked the interconnectedness of the data to translated data. And also, the data were consolidated by putting themes together using study objectives. Data comparison was followed, and lastly, data integration was involved in bringing the data together in a systematic way. At this step, the researchers determined what the data suggested according to the research objectives. The study also observed the following ethical considerations; anonymity of the respondents, assurance of

confidentiality, no harm to the participants, free and informed consent, respect for audiences, use of non-discriminatory languages, respect for the rights of participants, and reporting research fully and honestly.

RESEARCH FINDINGS

The main objective of this study was to assess the impact of pupil-teacher ratio (PTR) on standard four pupils' performance in mastering reading, writing, and arithmetic competencies in public primary schools in Morogoro Municipality. In this case, the impact was measured through a variety of questions that were formulated to find out how PTR impacted standard four pupils' performance in mastering reading, writing, and arithmetic competencies in public primary schools. The results were based on the views of municipal education officers, head teachers, teachers, and document reviews. The results showed that there was some relationship between the two variables of the study.

The findings showed that two schools which had at least lower PTR of 50:1 and 64:1 had good performances in mastering reading, writing, and arithmetic competencies compared to those schools which had PTR above 300:1. These schools had PTRs that slightly exceeded the national ideal PTR. But the findings showed that the performances of their standard four pupils in mastering reading, writing, and arithmetic competencies were better compared to those schools with high PTR of above three hundred pupils per teacher. All pupils in a school with the lowest PTR of 50:1 were able to write and count well, but only one pupil had a poor performance in mastering reading competency, while in a school with the highest PTR of 351:1 had 38 pupils who had poor performance on mastering reading competency, 23 pupils who had poor performance on mastering writing competency, and 14 who had poor mastery on arithmetic competency.

This implies that the low pupil-teacher ratio has a positive impact on the performance of pupils in

mastering reading, writing, and arithmetic competencies. The respondents from the schools with low PTR said that standard four pupils of their schools had performed well in reading, writing, and arithmetic competencies because of the small number of pupils in the classes. They further said that the lower PTR provided a good platform for the interaction between teachers and pupils during teaching and learning activities. This means that lower PTR helped a teacher to guide pupils one after another on how to read, write, and count well because a teacher could provide assistance to individual pupils according to his/her learning difficulties. This situation helped many standard four pupils to master well competencies that were taught by their teachers. Effective and efficient classroom interactions between teachers and their pupils were very important to standard four pupils in understanding well what was taught by their teachers because pupils of this class need strong interactions during their learning activities.

Also, a teacher who teaches in a class which has few pupils get enough time to make pupils' work. This in turn helped him/her to spot the learning difficulties that his/her pupils face and solve them accordingly. Through the careful making of pupils' work, the teacher could detect the mistakes that had been made by pupils. By detecting the mistakes that had been made by individual pupils, teachers managed to provide individual help to pupils with learning difficulties.

Bayo (2005) opined that smaller classes benefit all pupils because of individual attention from teachers. But, pupils in large classes drift off-task because of too much instruction from the teacher to the whole class instead of individual attention.

Furthermore, the class with a low PTR did not have a big problem with the shortage of desks. Desks in the classes are used as sitting tools on which pupils sit and write on them. Therefore, the class which was faced with the problem of the shortage of desks hindered pupils from writing well. This acted as an

obstacle to pupils of standard four from being competent in writing.

The class that I teach has a large number of pupils who do not know to write well because of the shortage of desks as a result of a large number of pupils that have been enrolled in this class. Pupils use their thighs as their writing places. But, few pupils who write on desks are writing well. Therefore, the failure of pupils to write well led to their failure in various examinations (CT-06 Verbatim, 2022).

Moreover, the low PTR helped teachers in managing the classes and pupils' discipline during teaching-learning activities. The low PTR simplified the work of the teacher in managing the class and pupils' discipline. This is because a teacher could move around the class and see how and what is being done by pupils when a class has a few numbers of pupils. By so doing, a teacher could be able to control stubborn pupils so as to create a good learning environment in the class. Good learning environments helped pupils to have good performances in reading, writing, and arithmetic competencies as it has been planned in the curriculum.

This class has many pupils, as you can see; I usually fail to manage the class well because of this congestion. Also, I fail to control stubborn pupils in the class who disturb other pupils during the teaching and learning process. This is because I Am not able to move around the class because of this pupil's congestion. Stubborn pupils discourage others from making good follow-ups towards my instructions during the teaching-learning process. The large number of pupils in this class forced some pupils to sit down near the blackboard to accommodate all three fifty-one pupils of this class. It is very difficult for me to supervise the well-learning activities of my pupils in this class which has a large number of pupils like this (LT-10 Verbatim, 2022).

But it is opposite to the case of schools with high PTR of 334:1 and above; the findings showed that pupils of schools with higher PTR had poor performance in mastering reading, writing, and arithmetic competencies. Respondents' views and the finding from the reviewed documents showed that two sampled schools which had the ratios of one teacher per three hundred thirty-four pupils (334:1) pupils and that which had one teacher per three hundred fifty-one pupils (351:1) had a very poor performance of pupils in mastering reading, writing, and arithmetic competencies compared to schools with low PTR ratios. This implies that the high PTR had a negative impact on the performance of standard four pupils in mastering reading, writing, and arithmetic competencies in sampled schools.

Higher PTR of the two sampled public primary schools hindered the teachers from providing individual help to their pupils according to their individual learning problems; hence most of the pupils from those schools had failed to master well reading, writing and arithmetic competencies. This situation occurred because high PTR forced teachers to use more time to help a few pupils and leave many of them in the class without any help. This negatively affected the academic performance of standard four pupils.

This is in line with Miji & Makgato's (2006) in their study on factors associated with high school learners' poor performance in South Africa, which revealed that teacher shortage and high pupil-teacher ratio hindered teacher-pupil interaction and hence it affected the performance of pupils negatively in the national examinations. This is supported by the study carried out by Majanga et al. (2010) in Nakuru County in Kenya, who found that over-enrolment in Kenya led to high PTR. This high PTR resulted in a decline in performance in most schools. For instance, mathematics performed poorly because its learning requires frequent teacher-pupil interaction and good management. This study generally found that public primary

schools with a high number of pupils per teacher had poor performance compared to private schools due to the heavy workload allocated to the teachers. Thus, most public primary schools performed poorly due to the excess workload allocated to their teachers due to high PTR.

It can be concluded that low PTR leads to the good performance of pupils, as it had been proposed by Lewin in his Group Dynamics Theory in 1943. According to the GDT, for the group to accomplish set goals and objectives, there should be a pattern of communication and coordination. It further assumed that a smaller group is better at attaining the goal because it facilitates effective communication and coordination mechanisms. This is similar to small classes, where a teacher can provide essential teaching-learning resources, facilitate the active participation of learners, provide varied challenges but creativity, take care of individual learner differences, and enhance active participation in experimental work in the classroom. This always results in the good performance of pupils in mastering various competencies.

In addition, that found that a high pupil-teacher ratio made it impossible for the teachers to adopt competency in assessment and evaluation, thus leading to poor performance. On the other hand, Too (2005) also supported the claim that high PTR leads to poor academic performance.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The study found that, in order to get better performance in mastering reading, writing and arithmetic competencies, among others, great attention should be placed on schools' PTR. The PTR not only affects performance but also affects the class interactions between the teacher and the pupils, the management of pupils' discipline inside and outside the classrooms, and teachers' motivations in teaching inside and outside the classrooms.

Low PTR enables teachers to help pupils to solve their individually learning difficulties accordingly. Much of the case for a low pupil-teacher ratio is based on common sense arguments, but this study has now documented the benefits of attaining an ideal PTR in schools. In classes or schools with low PTRs, teachers can have ample time and attention to each pupil's learning needs, but it is opposed to when the classes or schools have high PTRs.

Recommendations

Towards this end, based on the above conclusions, the following recommendations are necessary for better performance of standard four pupils and attainment of ideal PTR in public primary schools:-

- There is a need for the government through the MoEST and PO-RALG to undertake a balancing of employed teachers throughout the country to ensure equity in teacher distribution thus bringing down PTR in those schools which have high PTR and reducing teachers in those schools that may be overstaffed.
- There is a need for the government to improve the salary scale of teachers. This will prevent teachers who are in the teaching force from leaving the teaching profession to join other sectors with high salaries. Also, this will attract people who are out of the teaching profession to join the profession; hence it will be very helpful in curbing high PTR due to the shortage of teachers in various schools in the country.
- There is a need to establish systems to monitor PTR initiatives continually and closely, providing feedback to administrators, policymakers, and parents on the success of the programme.
- There is a need for the government to employ more primary school teachers. This will enable schools which currently are far above the set standards to attain a recommended PTR. It will also help to solve the problem of teachers

shortage as a result of over-enrolments caused by the implementation of the Fee-Free Basic Education Policy in Tanzania from the year 2015.

- There is a need to review education acts to empower head teachers to admit pupils on the basis of PTR in the respective schools. This initiative will help schools in attaining and maintain an ideal PTR proposed by the government.
- There is a need for the government to fund schools adequately to enable schools management to employ qualified part-time teachers where PTR are extraordinary high.
- There is a need for the government to provide motivation to teachers who are agreed and endure to teach at schools with poor working environments.
- There is a need for the government to discourage unreasonable transfers of teachers from schools with high PTRs to schools with low PTRs. The government should discourage the transfer of teachers from schools that are facing the problem of high PTRs to those with low PTRs.
- There is a need for the government to build more than one public primary school in places with a high population. The schools should be built to the demand in highly populated places to provide more chances of getting an education to school-age children living in such places.
- There is a need for the government to improve working conditions in schools. This is because poor working conditions discourage teachers from teaching at a certain school facing such a problem. This in turn will result in a shortage of teachers and high PTR in public primary schools in the country.

Recommendations for Further Research

It is recommended that further research should be conducted in the following areas:-

- A study to investigate the impact Pupil-Teacher Ratio on the performance of standard two pupils in mastering reading, writing and arithmetic competencies.
- A study to investigate the impact of teaching commitment of teacher on academic performance in primary schools.

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