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Performance in Mathematics and Science Subjects: A Gender Perspective for Selected Primary Schools in Rural and Urban Tanzania

Samwel J. Kabote[1], Elliott P. Niboye[2] & Carolyne I. Nombo[3]

Abstract

Since the 2000, Tanzania is striving to eliminate gender inequality in the education system. As such, the gender gap in enrolment is closing in primary education. Yet, gendered performance remains a challenge. Using data from Primary School Leaving Examination results for the period between 2007 and 2011, and from qualitative methods, this paper examined trends and factors for poor performance in Mathematics and Science subjects with a gender perspective. Two schools from rural and two from urban areas were involved in the study. The results did not show a clear trend in Mathematics performance in rural relative to urban schools, which showed a clear decreasing trend. On the other hand, performance in science was decreasing in rural schools and in one of the urban schools. There was also lower girls' performance in both subjects with some few unique cases. Secondly, the gender inequality was more prominent in rural relative to urban schools because of a number of overlapping factors including lack of female teachers role models and lack of an appropriate school environment for girls. Therefore, to tackle gender inequality in performance, rigorous efforts need to consider multiple, but interlocking factors with a gender lens, while considering rural-urban differences.

Keywords: Performance, gender inequality, Mathematics, Science, Tanzania

1. Introduction

This paper examines performance in Mathematics and Science subjects in primary education.

[1] Development Studies Institute, Sokoine University of Agriculture, P. O. Box 3024, Morogoro, Tanzania. Email for correspondence: samwel.kabote@yahoo.com
[2] Institute of Development Studies, University of Dar Es Salaam, P. O. Box 35169, Dar Es Salaam, Tanzania.
[3] Development Studies Institute, Sokoine University of Agriculture, P. O. Box 3024, Morogoro, Tanzania.

It compares examination results for selected schools in rural and urban Tanzania and also explores reasons for the gender inequality in performance. Basically, the gender dimension in education is an imperative ingredient for development in the world. For instance, understanding gendered performance in primary education for Mathematics and Science subjects is crucial for sustainable development in the sense that the two subjects are critical for science and technology, which is indispensable for development (Spaull, 2011). Secondly, there has been public outcry throughout the hierarchy of education system globally (Schleicher, 2008: 43), and particularly in Tanzania on gendered performance in Mathematics and Science subjects. Yet, the issue is not empirically researched in the country. As such there is paucity of information on the factors, which drive gendered poor performance in education at primary, secondary and tertiary levels.

The paper utilizes secondary data that were obtained from standard seven leaving examination results for the period between 2007 and 2011 and qualitative data obtained from Focus Group Discussions (FGDs) and key informants, mainly, head teachers, subject teachers, pupils and parents. The Primary School Leaving Examination (PSLE), which marks completion of primary education - a seven-year cycle - in Tanzania, encompasses a cohort of students aged between 7 and 13 years (URT, 2011). The PSLE results are used for selecting students to join secondary education, a six year cycle for both ordinary level (four years) and advanced level (two years) of secondary education in Tanzania. The results from PSLE are important in the education system of Tanzania because they determine transition for boys and girls students to an ordinary secondary education. There is a general understanding that women and girls have been historically and socially deprived of their rights to education in society. Thus, it is necessary to mainstream gender dimension in the system right from pre-primary, primary to higher levels.

The paper is organized into five sections. Section one gives an introduction of issues addressed by the paper. The section also discusses theories underpinning education and gender before presenting the gender dimension in education. Section two gives descriptions of the study area and section three presents the methodologies. In section four, the paper first presents the results on trends in performance and factors causing gender inequality and poor performance in Mathematics and Science subjects in primary education. The section then discusses the results by explicitly showing the rural-urban differences. Finally, in section five, the paper presents conclusion and recommendations.

1.1 Theories Underpinning Education and Gender

In examining issues related to education and gender, it is useful to consider theories including human capital theory, human rights theory and feminist theories. The human capital and human rights theories emphasize importance of education while feminist theories uncover gender inequality and stresses women rights in all aspects at all levels. For instance, the human capital theory stresses that education builds human capabilities necessary for production, which in turn brings about development at all levels (Olaniyan and Okemakinde, 2008; Kang, 2009). Educated personnel, according to this theory, are productive relative to the ones who are not educated. This implies that an investment in human capital is as pertinent as an investment in physical, financial, natural and social capital. The theory emphasizes increasing the level of cognitive stock among the human population mainly through provision of good content and quality education, which is then transmitted to the future generations in order to increase productivity. In addition, the theory argues that human capital can be achieved through investment on-the-job training and in health of the people (Kang, 2009).

The theory also emphasizes the use of existing knowledge to develop new products and technologies through creative approaches. Development economists have shown that investment in human capital through education brings about positive economic growth and development. Nonetheless, the theory does not emphasize on the differences between rural and urban areas and more importantly, it is gender blind for issues related to education especially on the rural – urban dichotomy and gender inequality in education and development. The theory has been criticized on the grounds that although shortage of educated people can negatively affect development, education to all people in a society can in turn result into unemployment because the government and the private sector may not be able to absorb all of the skilled personnel. This in turn can result into increased income inequalities in society, with employed people having higher income levels relative to the unemployed, and in this way, threatening development (Olaniyan and Okemakinde, 2008).

Another theory prevailing in literature is the human rights theory. This theory succinctly argues that every human being is entitled to education because education has substantial role in development.

In other words, education is a basic human right just like it is for clean and safe drinking water, good quality housing and food, thus everyone must have access to it. While human capital theory does not stress on intrinsic and non-economic value of education, the human rights theory emphasizes on these issues including facilitation of healthy and improved living standards at an individual and societal levels (Kang, 2009). The theory is nonetheless, silent on the strategies to enforce the rights to education. Like human capital theory, the human rights theory is also gender blind and neither recognizes nor emphasizes on the differences between rural and urban areas in provision of social services like education.

On the other hand, feminist theories including socialization theory, gender difference theory, structural theory and deconstructive theory underpin equal gender rights in all dimensions including education for sustainable development. For example, the socialization theory aptly puts that gender difference is a problem and that girls perform poorly in education because they are treated unfairly by the teachers relative to boys. This idea is also rightly shared in the liberal feminism thinking (Chege and Sifuna, 2006). Thus, the theory recommends gender neutral teaching approaches and affirmative action policies to overcome girls' poor performance (Thompson, 2003; Chege and Sifuna, 2006). Gender difference theory on the other hand, celebrates on gender differences particularly on the unique values of women. According to this theory, the problem for girls is a mismatch between schools culture and feminine culture. Unlike socialization theory which emphasizes on gender neutral teaching approaches, gender difference theory underscores about gender sensitive teaching approaches. Yet, the two theories converge in emphasizing reforms not radical changes of the patriarchy ideology in the education system, "radical feminism", which can cause conflict. The theories also converge in emphasizing women role models as one of the strategies to improve education performance for girls.

Structural theory on the other hand, concentrates on power relations and argues that unequal power relations and interests there in, which are more or less constant, in the view of this theory, such as patriarchy system have resulted into underrepresentation of women in different power structures and by extension, poor education performance for girls. Another feminist theory is deconstructive theory. This treats gender issues as things which are socially alterable contrary to the structural theory that view patriarchy system as not alterable. According to the deconstructive theory, the solution is to challenge unequal power relations, which discriminate women in order to promote girls performance.

Arguably, based on the human capital and human rights theories, it appears that, although their arguments stress on the importance of education at an individual and society level, they are gender blind. Ignoring gender dimension in theory can result into serious gender inequalities regarding performance and other aspects in the education system. Some scholars including Klasen and Lamanna (2008) argue that gender inequality in education jeopardizes the average amount of human capital and in turn threatens economic growth and development in general. Based on this line of thinking, this paper succinctly posts that gender dimension is unavoidable if education is to bring about sustainable development especially in the global south where women and girls have been historically and socially denied their rights to education.

The authors of this paper are of the view that education, in its broadest sense, is an important weapon for achieving positive development at different levels. In Tanzania, education is essential for fighting the three enemies of development which are ignorance, diseases and poverty. Literature acknowledges that education is a key for development because it serves as a capital for production of other goods and services (Olaniyan and Okemakinde, 2008; Kang, 2009; Talaka, 2009). Thus, education is one of the fundamental instruments for inclusive growth and social development and it is a driving force for positive change in society. For instance, the importance of primary education cannot be taken for granted because of its roles in social development. Some scholars including Kang (2009) posit that education has an intrinsic value, while others like Talaka (2009) view it as an instrument for social development. The authors of this paper argue that whether education has an intrinsic value or it is an instrument for social development that entails institutions, structures, processes and policies; education and development are inseparable entities and can trigger freedom of people from poverty and gender inequality(DFID, 2005; Perkiö, 2009).

1.2 Gender Dimension in Education

In view of the role of education in development, the national and international efforts have concentrated on among other things; Education for All (EFA),Universal Primary Education (UPE) and also on implementing Millennium Development Goals (MDGs) especially the one focusing on elimination of gender inequality in basic education and women empowerment (DFID, 2005).

These efforts acknowledge the pivotal role that access to quality education is, not only an end in itself, but also an essential means of reaching other important objectives, such as reducing poverty and achieving sustainable human development. Yet, gender inequality in education persists in developing countries and in Sub-Saharan Africa (SSA) in particular (Hanushek, 2008). Surprisingly, efforts to improve girls' enrolment at a primary level have resulted into decline in boys' enrolment (Gibson, 2004). Girls' completion rate in primary schools in Africa continues to be low. For instance, it stood at 46% in SSA in the year 2000, implying that many girls dropped out from primary schools (Birdsall*et al.,* 2005). The same report depicted that boys' completion rates in developing countries was 85% in 2005 whereas girls' completion rates was 76% in the same year. Furthermore, Birdsall*et al.* (2005) demonstrated that completion rate in primary education was lowest for poor households in rural areas largely because of low family income (Gibson, 2004). However, the situation is different in Latin America where completion rate is higher for girls relative to boys (Birdsall*et al*., 2005).

Enrolment in primary education is no longer an issue of concern in Tanzania. The main problem is truancy leading to school dropouts and poor performance in the country (Kang, 2009). Truancy is higher for girls relative to boys. This is due to, among other factors, pregnancy and early marriages as also reported in Ghana (Arko, 2013). Low returns of education for women in the global south including Tanzania can explain the lower completion rates for girl pupils, which is also exacerbated by low investment in girls' education (Patrinos, 2008). In case of primary school performance in Tanzania, the trend is not clear. For instance, the number of pupils who passed Primary School Leaving Examination (PSLE) in Tanzania showed increasing trend during the period between 2002 and 2006 (Kang, 2009). Then, the trend decreased during the period between 2006 and 2010. For instance, performance dropped from 70.5% in 2006 to 53.5% in 2010 (URT, 2011a). These data were however, not disaggregated by gender, subjects and place of residence that includes rural and urban areas. As such, it is too difficult to ascertain the gender inequality in performance in the country.

Since the 2000, Tanzania has delved into improving basic education after the worse periods in the education sector during the second half of the 1980s and the entire period of the 1990s. Strategies to improve the sector have focused at increasing budget allocation and classroom constructions to expand school enrolment.

The country abolished primary school fees in 2001 (Gajigo, 2012), embarked on implementing the Primary Education Development Plan (PEDP) during 2002-2006; and also embarked on implementing the Secondary Education Development Plan (SEDP) in 2004 (Kang, 2009). It is worth noting that abolition of school fees increased teaching workload that in turn contributed to poor performance in Kenya (Gakure *et al.,* 2013). However, abolition of school fees has noticeably improved access to education in Tanzania. As such, the country has become a role model in terms of expanded primary education enrolment, teacher recruitment and training since the President Benjamin Mkapa's second phase leadership, which was between 2000 and 2005 (Swai and Ndidde, 2006). Some gender aspects in primary education have also been improved. For example, in 2011, the gender gap in net enrolment almost closed at the national level and girls bypassed boys by 0.5% (URT, 2011b).

Nonetheless, like in other developing countries in SSA, the gender gap in performance remains a challenge in Tanzania (Chege and Sifuna, 2006). According to the global gender gap report, Tanzania was the 114th out of 135 countries in terms of closing the gender gap in educational attainment in the 2011. Its position shifted to 105th in the 2012 out of 135 countries (Hausmann *et al*., 2012). This suggests that the country has a long way in order to close the gender gap in education. Some studies like Ponge (2013) recommends equity policies to improve performance in the education system. Although performance is the best measure of education quality (Spaull, 2011), information about it in various subjects and according to gender is scanty in Tanzania. Therefore, this study contributes to the body of knowledge by focusing on performance in Mathematics and Science subjects in primary education by residence and gender coupled by exploring driving factors for gender inequality in performance. The specific objectives were to (i) to assess trends in performance in science and mathematics subjects in a five year period since 2007 by gender; (ii) to compare the performance between rural and urban areas using selected primary schools in a five year period since 2007 using a gender lens and (iii) to explore factors for persistence of gender inequality in performance.

2. Descriptions of the Study Areas

The study was conducted in Meatu and Morogoro Urban District in Simiyu and Morogoro Regions respectively. Morogoro Urban is one of the six district councils in Morogoro Region.

Other district councils include Kilosa, Kilombero, Ulanga, Morogoro Rural and Mvomero. Majority of the people in Morogoro Urban are self-employed and others are employees in the public and private sector. Meatu District on the other hand is found in Simiyu Region. Majority of the people in Meatu are smallholder farmers and agro-pastoralists. The bigger part of the Meatu lies in the semi-arid agro-ecological zone which receives inadequate annual rainfall while characterized by higher temperature. Prolonged dry spells are common in the district especially in the southern zone. Therefore, agro-pastoralists have developed strategies to overcome drought including seasonal movement of animals in search of pasture and water. This has implications on educational achievement particularly attendance in primary schools and performance as well. It is for this reason; Meatu District was selected for the study. Morogoro urban on the other hand was included in the study to represent urban areas.

3. Methodology

The study adopted explanatory research design in which it began by collecting and analyzing quantitative data followed by qualitative phase. The qualitative phase in this case was informed by quantitative phase, which was meant to explain the results from quantitative analysis (Bryman, 2006). Quantitative data were collected from Kihonda-maghorofani and Mkundi primary schools in Morogoro Municipal herein referred to as an urban area and from Mwamanimba and Mwashata primary schools in Meatu District in Simiyu Region (Table 1).

Table 1: Some Key Information for the Primary Schools Involved in the Study

Name of the school	Place	District	Number of Pupils by March 2013	Number of teachers houses by March 2013	Number of teachers by March 2013	
					Men	Women
Mwashata	Rural	Meatu	885	5	9	3
Mwamanimba	Rural	Meatu	413	1	3	4
Kihonda-maghorofani	Urban	Morogoro	1650	1	2	50
Mkundi	Urban	Morogoro	547	2	8	16

Quantitative data collection involved recording the number of pupils who scored different grades in Mathematics and Science subjects during Primary School Leaving Examinations (PSLE) by gender, between 2007 and 2011 period.

PSLE determines the number of pupils who can continue with secondary education and it is administered by the National Examination Council of Tanzania (NECTA). These data were complemented by qualitative information collected from key informant interviews including teachers. In total, six teachers were interviewed, three in Meatu District and three in Morogoro urban. Four pupils Focus Group Discussions (FGDs) with a total of 40 pupils, each with ten boys and girls, two in Meatu and two in Morogoro urban, were also conducted. In addition, one parents FGD was conducted in Meatu in order to collect parents' views on factors responsible for persistence of gender inequality in education performance. During data analysis, the numbers were computed into percentages and data were presented in tables. Grades A, B and C were deemed as pass whereas grades D and E were presented as fail as classified by the NECTA (URT, 2011a) as shown in Table 2. Content analysis was used to analyze qualitative data.

Table 2: Grade and Range of Scores

Grade	Range of scores	Remark
A	161-200	Pass
B	121-160	Pass
C	85-120	Pass
D	41-84	Fail
E	0-40	Fail

Source: United Republic of Tanzania (URT) (2011a). Basic Education Statistics in Tanzania 2007-2011 Revised Data. Ministry of Education and Vocational Training; Dar es Salaam. Pp38.

4. Results

4.1 Trends in Education Performance

Table 3 to 6 present results on education performance as recorded by the Primary School Leaving Examination (PSLE). Generally, performance in Mathematics was higher in urban relative to rural schools. Nevertheless, performance at Kihonda-maghorofani (Urban school) was below 50% suggesting poor performance. There was also no clear trend in all schools for the period between 2007 and 2011. Girls' performance lagged behind in all schools except at Mwamanimba where girls were ahead of boys from 2007 to 2009, and also in 2011 (Table 3).

Although boys were ahead of girls, except at Mwamanimba, their (boys) performance showed a decreasing trend over the years from 2007 to 2011 in urban and rural areas (Table 4). These results were in line with Swai and Ndidde (2006) who observed poor performance in primary schools in Singida Region Tanzania. This implies that decreasing performance over the years in primary education of Tanzania is a common phenomenon.

Table 3: Overall Performance in Mathematics (in %)

Year	Mwashata (Rural)		Mwamanimba (Rural)		Kihonda-maghorofani (Urban)		Mkundi (Urban)	
	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
2007	15	85	03	97	40	60	25	75
2008	08	92	11	89	40	60	90	10
2009	24	76	11	89	31	69	71	29
2010	11	89	18	82	34	66	58	42
2011	21	79	11	89	36	64	68	32

Table 4: Performance in Mathematics Disaggregated by Gender (in %)

Year	Mwashata (Rural)				Mwamanimba (Rural)				Kihonda-maghorofani (Urban)				Mkundi (Urban)			
	Passed		Failed		Passed		Failed		Passed		Failed		Passed		Failed	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
2007	95	05	44	56	00	100	51	49	68	32	48	52	58	42	42	58
2008	91	09	41	59	40	60	57	43	64	36	45	55	62	38	25	75
2009	53	47	62	38	33	67	46	54	64	36	45	55	73	27	45	55
2010	71	29	28	72	55	45	44	56	59	41	47	53	40	60	54	46
2011	67	33	48	52	09	91	59	41	56	44	48	52	41	59	46	54

Table 5 presents results on performance in Science subjects. Like in Mathematics, overall performance in Science subject was higher in urban relative to rural schools. Unlike in Mathematics, performance in Science subject showed decreasing trend, both in rural and urban schools, throughout the period from 2007-2011. Similarly, the results in Table 6 show that girls' performance lagged behind boys in rural and urban schools except in 2010 when girls were ahead of boys. At Mwamanimba, girls were ahead of boys' performance for two consecutive years from 2009. In addition, girls were ahead of boys at Kihonda-maghorofani in 2011, while girls were ahead of boys in 2007 and 2010 at Mkundi. Generally, boys had a better performance in Science subject relative to Mathematics, but the trend in their performance appeared to decrease (Table 6).

Table 5: Overall Performance in Science Subject (in %)

Year	Mwashata (Rural)		Mwamanimba (Rural)		Kihonda-maghorofani (Urban)		Mkundi (Urban)	
	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail
2007	41	59	63	37	86	14	25	75
2008	37	63	04	96	85	15	88	12
2009	38	62	52	48	87	13	60	40
2010	27	73	33	67	86	14	51	49
2011	26	74	29	71	81	19	61	39

Table 6: Performance in Science Subject Disaggregated by Gender (In %)

Year	Mwashata (Rural)				Mwamanimba (Rural)				Kihonda-maghorofani (Urban)				Mkundi (Urban)			
	Passed		Failed		Passed		Failed		Passed		Failed		Passed		Failed	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
2007	81	19	29	71	63	37	36	64	52	48	40	60	25	75	58	42
2008	72	28	32	68	50	50	56	44	57	43	42	58	56	44	40	60
2009	70	30	42	58	36	64	54	46	51	49	35	65	57	43	45	55
2010	06	94	43	57	30	70	54	46	50	50	33	67	36	64	51	49
2011	56	44	40	60	57	43	60	40	49	51	43	57	58	42	44	56

4.2 Driving Factors for Gender inequality and Poor Performance

Table 7 summarizes factors for gender inequality and poor performance in general as reported by key informants and during Focus Group Discussions (FGDs). Qualitative information showed that Meatu District is predominantly inhabited by agro-pastoralists who practice seasonal movement of cattle in pursuit of pastures and water. This practice involved mainly boys such that their school attendance was greatly compromised. This in turn affected education performance not only in Mathematics, but also in other subjects. Other factors are presented in Table 7.

Table 7: Factors for Girls' Poor Performance in Mathematics and Science Subjects

Factor	Teachers views	Boys' views	Girls' views	Parents views
Socio-cultural factors	Heavy workload for girls at the family level	Heavy workload for girls at the family level	Heavy workload for girls at the family level	Not mentioned
	The community do not value girls' education	Not mentioned	Not mentioned	Girls' education is not important compared to boys' education
Practice	Parents ask girl pupils to refrain good performance during PSLEs	Pressure from parents to refrain good performance	Pressure from parents to refrain good performance	Some parents ask girls to refrain good performance
Belief	Rural communities believe that educated girls become prostitutes	Not mentioned	Not mentioned	Educated girls become prostitutes
	Rural communities believe that educated girls are likely to be not married	Some girls become pregnant while in school	Some girls become pregnant while in school	Some girls become pregnant while in school
Socio-economic factor	Rural communities view girls as one of sources of wealth at the family level	Not mentioned	Not mentioned	A girl child is viewed as source of wealth, but educated girls have low return compared to boys
School environment	Lack of subject mastery for teachers especially in rural schools	Heavy teaching load reduces seriousness in teaching Mathematics and Science subjects	Lack of subject mastery for teachers coupled with poor toilet facilities	Lack of subject mastery especially for Mathematics
	Lack or no female teachers role models	Lack of textbooks especially in rural schools	Lack of textbooks especially in rural schools	Not mentioned
Perceptions	Girls believed that Mathematics and Science are difficult	Perception that Mathematics and Science are difficult	Perception that Mathematics and Science are difficult	Perception that Mathematics is difficult

PSLEs means Primary School Leaving Examinations

4.3 Discussion

4.3.1 Rural - Urban Differences in Education Performance

The results in this study demonstrated lower performance in rural relative to urban schools. Kihonda-maghorofani, one of the urban schools, also showed poor Mathematics performance compared to Science subject. This implies lower performance in Mathematics in rural schools and that lower performance in Mathematics affected some of the urban schools.

This further implies that performance in Mathematics was not only and issue of concern in rural, but also in urban schools in the study area. Studies conducted by Amos (2011) and Albert *et al*. (2012) also reported poor performance in rural primary schools in Zimbabwe.

Although rural schools showed better performance in Science compared to Mathematics urban schools performed better in Science subject relative to rural schools. Surprisingly, performance in Science subject showed a decreasing trend for the period between 2007 and 2011 in both rural and urban schools. This implies that performance in Science, though was relatively better, would be worse in the future in rural and urban schools. If lower performance continues, there would be inadequate number of pupils pursuing Mathematics and Science subjects at higher levels. In the long run, some sectors which are critical for development including manufacturing, agriculture and health whose cadres' training is based on Science and Mathematics subjects would be greatly compromised because of depriving the labour force specialized in Mathematics and Science.

The results also demonstrated that urban schools were relatively able to reduce the gender gap in both schools that were involved in the study compared to rural schools. This can be interpreted that gender inequality was prominent in rural compared to urban schools with girls lagging behind boys counterparts. Interestingly, girls' performance was ahead of boys in some periods in both subjects, contrary to Mbelle and Katabaro (2003) who reported higher girls' performance relative to boys not in numeracy, but in literacy related subjects. The higher performance for girls in some periods, for example, at Mwamanimba implies that girls, like boys, were able to perform well in Mathematics. These results also suggest that, despite the efforts of the Government of Tanzania to curtail gender inequality in primary education, inequality was higher, more so in rural schools. Table 8 shows comparison in performance between rural and urban schools as synthesized from quantitative results.

Table 8: Performance in Mathematics and Science Subjects between Rural and Urban Schools

Indicators	Performance	
	Rural schools	Urban schools
Overall performance	• Poor performance • Somewhat better in Science subject • Decreased over time for Science subject	• A little bit better performance compared to rural schools, however, performance in Mathematics was poor at Kihonda-maghorofani Primary School • Better for Science subject • Yet, performance in Science subject was decreasing over time
Gender inequality	• Generally, girls lagged behind their boys counterparts • Performance decreased over time in both subjects for boys, while it increased for girls even though girls remained behind. Yet, gender equality in Science subject was reached at Mwamanimba in 2008 • Girls were ahead of boys' performance in Mathematics at Mwamanimba Primary School except for one year	• Girls lagged behind in most of the years • Gender equality was recorded in Science subject in 2010 at Kihonda-maghorofani and in Mathematics in 2007 at Mkundi Primary School. • Girls' performance was ahead of boys by 1% in Science subject at Kihonda-maghorofani in 2011

The poor performance in Mathematics and Science subjects, particularly for girls pupils was embedded in a complex cultural context and the factors responsible for it were intertwined with one another. One of the factors impinged on performance was the view that Mathematics is the most difficult subject compared to other subjects. This view can negatively affect girls' performance, and, as reported during FGDs, it was widespread in rural and urban areas, and it was more prominent among girls as reported by teachers and girls themselves.

Lack of female teachers intensified the view that Mathematics and Science subjects were most difficult for girls and so aggravated poor performance. Randell and Gergel (2009) also reported that lack of teachers female role models in most of the primary schools in Africa has substantial contribution to girls' lower performance. In addition, lack of subject mastery even among male teachers compounded the problem in the study area. As demonstrated in this study, the lower performance for girls can also be explained by factors like the view that educating a girl child is not as important as educating a boy child. Such gender bias among the parents including mothers (women) can also be seen in school curricula in most African countries (Randell and Gergel, 2009).

Parents in Meatu had negative views with regard to educating a girl child. For instance, during FGDs parents succinctly argued that an educated girl child can become pregnant while in school and in that way the resources that were invested for her education, gets lost. In addition, parents had the view that a girl child was a source of the family wealth. One of the arguments put forth by male participants in Meatu at Mwamanimba village and which was supported by women participants can be summarized as follows:

…"a girl child is a source of wealth…has higher value in terms of dowry compared to a degree holder woman…in addition, a girl child who is not educated respects her husband compared to an educated woman…"

This quotation implies that educated girls and women were discriminated particularly in rural areas when it comes to marriage. Arguably, it was not the issue of lack of respect from an educated girl that men feared about, but the capacity of an educated girl to break the patriarchy ideology, which traditionally subordinates women in the marriage and other institutions in society. Thus, men tend to resist changes, which educated girls and women can bring about in a society. It is clear from the quotation that education empowers women in different ways. The changes that educated women aspire for are those, which subordinate them (women) in the marriage institution like decisions on how many number of children to have during a woman's life time.

Another reason for viewing girls' education as not important particularly in rural areas was that parents particularly men were likely to miss cattle in form of bride price they would get from a non-educated girl when she becomes married. Women participants also agreed about this view. This translates into the idea that the bride price was lower for educated women relative to non-educated ones. The opposite also is true. In the view of the parents, an educated girl child has lower economic returns at the family level because, in addition to lower bride price associated to her, she actually spend her salary with her husband. Extending this observation, and due to males' domination entrenched in the patriarchy ideology as put by the structural theory (Thompson, 2003), it can be argued that the woman's salary can be controlled by her husband and in that way she can hardly help her parents in form of remittances.

This translates into poor return of education for girls and women, which has implications on girls' performance. Poor return of education among girls and women has also been reported by Swai and Ndidde (2006).

Socialization of children as aptly put in the socialization theory (Thompson, 2003), had resulted into profound girls heavy work load including domestic chores resulting into limited time for girls to do academic work at home relative to boys counterparts. Mathematics for instance, requires extra time for doing revisions in order to equip with different techniques of solving mathematics tutorials. Therefore, heavy work load for girls increased chances of failure in Mathematics. In addition, girls have different needs regarding school environment and facilities. To that view, unavailability of appropriate toilet facilities as reported by girls during FGDs can increase truancy among girls, which in turn result into poor performance. However, this can affect not only performance in Mathematics and Science subjects, but also an overall education performance for girls. The same factors contributing to lower performance, including sexual harassment of girls students by teachers, severe punishment, peer influence, hard manual work at school and students' own lack of interest in school were also reported by Arko (2013) in Ghana. This implies that such factors are not only pronounced in Tanzania but also in other African countries.

Difficult working conditions for teachers due to inadequate remuneration and lack of textbooks especially in rural areas, reported in this study, also exacerbate poor performance in primary education. This was also reported by Amos (2011) and Albert et al. (2012) in Zimbabwe. As a result of these socio-cultural views, socio-economic and beliefs, parents tended to create pressure to girls so that girls had to refrain from performing well during Primary School Leaving Examinations (PSLEs). This circumstances negatively affected performance more so in Mathematics and Science subjects, which were viewed difficult subjects relative to others.

5. Conclusions and Recommendations

This paper examined performance in Mathematics and Science subjects between rural and urban selected primary schools in Tanzania with a gender perspective. The results generally showed lower performance in rural schools relative to urban schools. In addition, girls' performance for the period between 2007 and 2011were lower relative to boys counterparts.

Nonetheless, girls showed better performance relative to boys in Mathematics subject at Mwamanimba primary school, one of the rural schools suggesting that girls, like boys, were able to perform better in Mathematics. Therefore, the government and Non-governmental efforts to improve performance will need to focus on equity based policies and interventions through directing more qualified male and female teachers in Mathematics and Science, and other resources to improve teaching in rural schools. This can, in turn, improve performance in Mathematics, Science and other subjects. Interventions that are geared towards improving performance in Mathematics and Science subjects should also be concentrated at different levels particularly at the school level, because it is where teaching and learning activities take place.

In addition, the government of Tanzania needs to ensure that re-training and conducting workshops for teachers who teach Mathematics and Science subjects focusing on how to teach problematic topics are in place. Male and female teachers are also urged to take their own initiatives to increase knowledge regarding Mathematics and Science subjects. As emphasized by the gender difference theory, gender sensitive teaching methods are critically important to deal with lower performance. Women teachers "role models" who can boldly teach Mathematics and Science subjects as suggested by the socialization and gender difference theories are highly recommended both in rural and urban schools.

The government should also establish programmes to sensitize girls' education. Female teachers "role models" who teach Mathematics and Science subjects at different levels; engineers and doctors can be good facilitators in sensitizing the importance of education in development both at institutional and community level. The main objective of sensitization should be to promote girls' education through change in gender relations especially those, which subordinate women in society. Gender relations refer to ways in which a society defines identities for men and women in relation to one another (Shayo, 2004). For instance, one of the interventions that can be highly emphasized at the family level is to reduce domestic chores for girls, and put more emphasis on the importance of education among males and females for human development. This can help to forgo the view among parents that the girl child is the source of wealth through bride price only.

Changing gender relations is something to do with disintegration of the patriarchy ideology.

This is basically not an easier task because the patriarchy ideology is entrenched within, and is reinforced by social cultural norms, attitudes and beliefs. According to the deconstructive theory, one of the feminist theories, interventions to change gender relations should focus on changing gender division of labour and power relations between men and women in society. The changes may be gradual, but when attained at the family level they are likely to spill over to the community level including the school, where school age children spent most of the time, and finally to the societal level, which is a higher level where changes in gender relations occur. In addition, the view that Mathematics and Science subjects are difficult needs to be worked up on so as to change this way of thinking. This mentality is fallacious as it has been proved that girls can perform better in these subjects just like boys. For example, at Mwamanimba, one of the selected schools in this study, girls almost bypassed boys' performance in Mathematics.

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