Are Our Children Learning?

Numeracy and Literacy across East Africa

Uwezo is an East African initiative hosted by TEN/MET in Tanzania, WERK in Kenya and UNNGOF in Uganda, with overall quality assurance and management support from Twaweza/Hivos. This report is produced by the Uwazi unit based at Twaweza. The principal authors are Hans Hoogeveen and Dorica Andrew. The assistance of Fenohasina Mareth in preparing data sets and creating a first set of tables and graphs is gratefully acknowledged. Sara Ruto and Rakesh Rajani provided overall guidance and quality assurance. Editing support was provided by Stephanie McDonald and Maggie Bangser.

All data used in the report were provided by Uwezo and can be downloaded from www.uwezo.net.

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Foreword

This work provides us with well researched results on the performance of the education system in terms of literacy and numeracy. Uwezo and Twaweza have demonstrated a great deal of strength and high levels of quality in collecting, analyzing and interpreting the basic statistics on education and overall ability of children in literacy and numeracy. The key findings illustrate the magnitude of work that lie ahead of all us, and particularly if the region is to achieve accelerated development operating in the current knowledge based and fiercely competitive world.

At the EAC level, co-operation in the development of human resources, science and technology is one of the pillars that are crucial to achieving the objectives of the Community. Article 102 of the Treaty for Establishing the East African Community spells out how the Partner States agree to undertake concerted measures to foster co-operation in education and training within the Community. In order to undertake such measures at both the regional and national levels, enormous information is required to develop and implement the desired policies and strategies.

Therefore, the importance of information collected during the survey on the literacy and numeracy across the three East African countries covered in this report will greatly help the Partner States in their pursuit for a well developed and harmonized education system; not least in the harmonization of curricula, examination, certification and accreditation of education and training institutions. Of special interest in the report is its reference to very important issues of gender, curriculum development, private sector involvement and standards of promotion to the next grade. All these are very important areas for the EAC Partner States who are engaged in the implementation of key policies in the area of basic education and training, most especially the policy of universal education that requires well researched work to inform decisions thereof.

The report further analyses the relationship between household income and education parameters such as performance, school drop outs, enrollment by gender, age, etc. For decades, we have used enrollment rates as a key marker of progress in education. The Uwezo report demonstrates that this is not enough, because children who are in school are still unable to read and count, which are the basic foundations for learning and development. Nevertheless, the results in this report would be useful in the ongoing process of harmonization of education and training policies in the region. For instance, information collected under this survey after verification and validation can well be used in legislation review and amendment at both regional level and national levels.

It is my expectation that this commendable work will be used by a wide range of interested parties and that Uwezo and Twaweza will continue to distinguish itself as a key player in this area. The exercise also poses a challenge of quality of output. Whereas expanding school enrollment is fundamental, the most important element of measure of success is to verify whether the children attending school are actually learning. This is an area worth further work by Uwezo and Twaweza.

It is also my hope that the next exercise of this nature will cover all five Partner States of the East African Community.

Dr. Richard Sezibera
Secretary General
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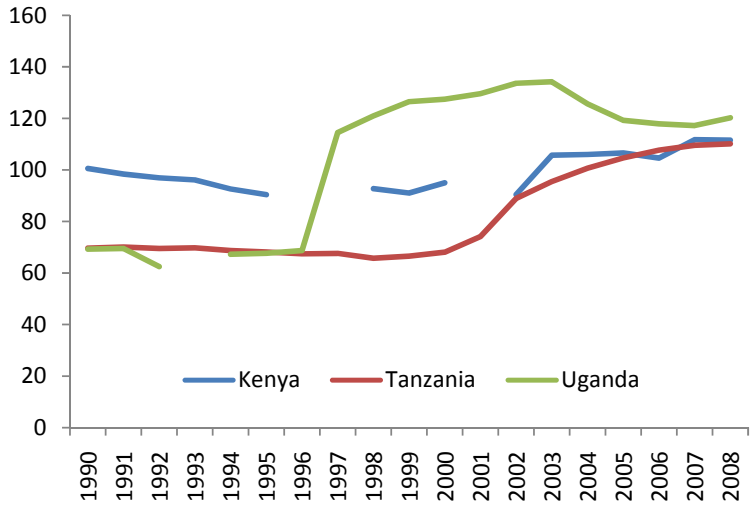
June 2011

1. Introduction

Few question the importance of learning, for its own right and to prepare future generations to lead productive and fullfilling lives. The Governments of Tanzania, Uganda and Kenya subscribe to this view. All three countries have adopted free primary education policies in the expectation that this will allow all children to go to school and, at the very least, become numerate and literate citizens. To achieve this goal, large amounts of money have been and continue to be invested into primary education. For instance, in 2009/10, Tanzania's government allocated 14% of its budget (or 4% of GDP) to primary education alone.[1] Kenya and Uganda spends similarly high amounts, and in each country the budgets for education have risen significantly in absolute terms in the last decade.

In each of the three countries the (re-)introduction of free primary education was followed by significant increases in the number of children going to school. This is illustrated by the gross enrollment ratios shown in Figure 1 (the gross enrollment ratio is the total number of children attending primary school over the age group of children that are expected to attend primary school). In Uganda, where free primary education was reintroduced first in East Africa in 1997, gross enrollment went up from slightly less than 70% in 1997 to over 120% in 2000. In Tanzania, after the abolishment of school fees in 2001, gross enrollment went up from around 70% to about 110%. In Kenya the increase was less pronounced, mostly because enrollment was already high, but here too gross enrolment rose to about 105% following the re-introduction of free primary education in 2003.

Figure 1: Gross enrollment in primary schools 1990-2008



Source of data: UNESCO Institute for Statistics[2]

Impressive progress in enrollment has allowed attention to shift from providing access to focusing on learning. Do all these children who now go to school indeed become numerate and literate? Do the significant investments governments make in primary education yield the return policy makers and parents expect?

To assess the degree of literacy and numeracy of school-age children, Uwezo conducted surveys in Kenya, Tanzania and Uganda, testing tens of thousands of children in a home environment. The tests used were Standard 2 level tests for English, Kiswahili and numeracy, designed in accordance with

[1] Basic Education Statistics in Tanzania 2010
[2] http://stats.uis.unesco.org

national curricula. This report uses these data to assess how school age children performed on the Uwezo tests across the three countries.

The main finding is that performance across the three countries was poor. Very poor in fact. The majority of children in Standard 3, who should all have acquired Standard 2 level literacy and numeracy skills, were unable to complete the Uwezo tests. A comparison of the three countries demonstrates that children in Kenya performed best and those in Tanzania worst. The analysis also shows that in Kenya and Uganda pupils who reached Standard 7 were almost universally competent at *the Standard 2 level*. This was less the case in Tanzania, where only between 50% to 80% of pupils in Standard 7 managed to succesfully complete the Standard 2 level Uwezo tests.

This report considers other aspects as well. It compares access to primary school across the three countries, contrasts performance in public and private schools, and considers differences by gender, school quality and household wealth. The remainder of the report is organized as follows. In section 2 more detail is provided about the Uwezo tool, when and how it was administered and the degree to which the tests are comparable across the three countries. Section 3 considers access to primary schools and section 4 discusses learning outcomes. Section 5 looks into school quality. Sections 6 and 7 discuss private schools and gender disparities respectively. Wheareas sections 4 through 7 consider the association between individual factors (gender, wealth, school quality) and performance in isolation, section 8 presents results from regression analyses, which provide an analysis of the impact of these factors in combination. Conclusions follow in section 9.

2. The Uwezo survey and tests

Uwezo implemented large scale household surveys and assessed literacy and numeracy competency of children aged 6-16 years (5-16 in Tanzania) in the home environment. The Uwezo surveys are the largest sample-based studies ever undertaken in the region. In addition the survey teams collected information from one school per village.

In Kenya, the initial Uwezo survey was held in 2009. Information for 70 of Kenya's 158 (census) districts was collected and in total 68,945 children aged 6-16 years from 40,286 households were tested. School information was collected from 2,030 public primary schools.[3]

In Uganda, the first Uwezo survey was conducted in 2010. It collected representative information for 27 districts (out of a total of 80 districts in Uganda at the time). A total of 810 villages and 16,200 households were visited and 34,752 children aged 6-16 years were tested.

In Tanzania, the survey was conducted in 2010. It covered 38 of 133 districts and 1,140 villages and 22,800 households were visited. In total, 42,033 children aged 5-16 years old were tested.

[3] Currently there are more districts in Kenya, but at the time of the survey, 158 districts had been gazetted and participated in the 2009 population census.

Table 1: Uwezo survey in Kenya, Tanzania and Uganda, summary of key features

	Kenya	Tanzania	Uganda
Date of survey	Sept/Oct 2009	May 2010	April 2010
Number of districts	70 (out of 158)	38 (out of 133)	27 (out of 80)
Number of households	40,386	22,800	16,200
Number of children tested	68,945	43,033	34,752
Number of schools visited	2,030	1,140	810
Age range	6-16	5-16	6-16
Numeracy test	Yes	Yes	Yes
Kiswahili test	Yes	Yes	No
English test	Yes	Yes	Yes

Source of data: Uwezo national reports[4]

The tests used by Uwezo were of Standard 2 level, designed to be consistent with the requirements of each country's curriculum. In Kenya and Tanzania, children were tested for numeracy and literacy in Kiswahili and English. In Uganda, numeracy and literacy in English were tested. Standard 2 was selected because according to international standards, after completing two years of schooling a pupil is expected to have acquired basic competencies in literacy and numeracy, which are considered the foundations for learning in all other subjects in later years.

All tests were designed such that pupils could be graded into different levels. The literacy test, for instance, distinguished between the ability to read letters, followed by words, a sentence or paragraph, and finally a story followed by comprehension questions. Similarly, the numeracy test starts with number recognition, addition, subtraction, multiplication and division. Children were also given a bonus "ethno-mathematics" problem, based on typical daily tasks and presented in the child's preferred language.

As the tests reflected national curricula, they were not directly comparable. Rather, a comparison of the test scores reflects whether children in each country mastered a Standard 2 level of their national education curriculum. In each of the countries, if the education system was working well, all children (100%) who are in Standard 3 should have acquired the Standard 2 level competencies.

While not strictly comparable, the requirements for students in Standard 2 do not differ much among the three countries. This can be seen in Table 3 which presents the tests used in each of the countries. The Kiswahili test was comparable for Kenya and Tanzania, with the proviso that the comprehension questions for Tanzania seem slightly more difficult than those for Kenya. The English test was similar in the three countries, even though Tanzania's story was shorter and easier than those for Kenya and Uganda. The numeracy tests across the three countries were also comparable, except that Tanzania's test included additions with carry over, and subtractions with borrowing which were not asked in Kenya and Uganda. On the other hand, in Uganda and Kenya children were expected to do divisions which was not the case in Tanzania.

Strictly speaking these tests only measured children's comptence in numeracy and literacy, and not learning. To assess learning, a measure of change, one would have to control for children's knowledge at the start of their school careers in Kenya,Uganda and Tanzania. In Uganda and Kenya, English is presumably more widely spoken than in Tanzania, so even if teaching is of equal quality in all three countries and the test of equal difficulty, one expects children in Kenya and Uganda to do better on the English test than children in Tanzania. The reverse could hold for Kiswahili, which is

[4] Uwezo 2010, *Are our children learning? Annual Learning Assessment Report*. Kenya 2010; Uganda 2010; Tanzania 2010. All downloadable from www.uwezo.net

more widely spoken in Tanzania than in Kenya and is generally not spoken in Uganda. Also, the level of education of parents is likely to lead to capability differences at entry. According to the Demographic and Health Surveys for instance, in Kenya 19% of mothers have no education; the corresponding numbers for Tanzania and Uganda are 33% and 23% respectively. If the home environment affects childrens' abilities at school entry, then differences in numeracy and literacy outcomes do not automatically translate into differences in learning. At the same time, one does expect a very close association between results on the numeracy and literacy tests and learning in school.

In much of this report national statistics will be presented. This is justified as the sampling procedure selected districts randomly. Within districts, villages were selected randomly, and also within villages a careful randomization procedure was followed (though the procedure adopted in Tanzania left some choice to enumerators which may have led to some bias). To verify the degree to which Uwezo national results replicate results from other established national household surveys, Table 2 presents a small number of household characteristics, derived from Uwezo and other surveys. A comparison of the data for Uganda (which followed the strictest randomization procedure) yields a close match between Uwezo results and Demographic Household Survey (DHS) results. There are some differences in ownership of radios and televisions but these may just be a reflection of the four years that elapsed between the two surveys. Also for Kenya, the Uwezo results replicate the DHS results. There are some slight differences, as would be expected when comparing two sample surveys, but nothing major. If anything, the Uwezo sample in Kenya appears to be slightly skewed towards poorer, less well educated and less well endowed households. In Tanzania, on the other hand, larger differences can be discerned. Here the Uwezo sample seems to be skewed towards slightly better educated, better endowed households. In particular the difference in the fraction of mothers without education (30% in the Household Budget Survey (HBS); 14% in the Uwezo survey) is striking. Also the fact that Uwezo reports 19% of households with electricity versus 12% in the HBS is significant.

In the remainder of this paper these issues will not be addressed, but the reader may want to keep in mind that the Tanzania sample may be skewed towards better off households, and the Kenya sample towards slightly worse off households.

Table 2: Comparison of Uwezo national results with other national household surveys

	Tanzania		Kenya		Uganda	
Mother's education	**Uwezo 2010**	**HBS 2007**	**Uwezo 2009**	**DHS 2009**	**Uwezo 2010**	**DHS 2006**
No education	14	30	24	19	No information on mother's education in the Uwezo survey.	
Primary 1-4	8	9	53	60		
Primary 5-7/8	66	52				
Secondary 1-4	6	6	23	20		
Post secondary	2	2				
Assets & Electricity						
Electricity	19	12	11	23	8	9
Radio	70	66	73	74	74	61
TV	18	8	22	28	13	6

Source of data: Uwezo, DHS (Uganda and Kenya) and HBS (Tanzania)[5]

[5] www.measuredhs.com; National Bureau of Statistics 2009; Household Budget Survey 2007.

Table 3: Samples of Numeracy, English and Kiswahili tests used by Uwezo

3a. Numeracy Test

	Number Recognition 1-9	Number Recognition 10-99	Addition without carry over	Addition with carry over	Subtraction with-out borrowing	Subtraction with borrowing	Multiplication	Division	Ethno mathematics
TZ	2 8 6 0 7 5	87 31 51 60 28 99	55 49 +23 +30 24 33 +71 +42	77 45 +25 +48 23 12 +68 +64	89 76 - 42 -33 66 48 - 55 - 4	33 62 -15 -25 70 97 -34 -48	12 15 x 4 x 4 11 9 x 5 x24		300 Shillings + 200 Shillings = Shillings
KE	3 6 2 7 4 5	16 34 33 78 50 99	32 60 +24 +15 24 43 +71 +51		46 59 -24 -38 53 74 -41 -21		3 x 4 = 5 x 2 = 3 x 2 =	5 ÷1 = 15 ÷3 = 8 ÷2 =	You have 80 shillings. How much will you be left with after buying a packet of flour which is sold for 60 shillings?
UG	9 5 1 3 8 6	11 91 91 47 72 69	14 88 + 12 +11 15 13 +13 +14		71 46 - 60 -14 66 89 - 15 -14		7 x 3 = 3 x 4 = 5 x 1 =	6 ÷2 = 2 ÷2 = 8 ÷2 =	Jane wants a rope which costs 250 shil-lings. John gives Jane 300 shillings. How much money will Jane remain with after buying the rope?

3b. English Test

	Letter	Words	Sentence/Paragraph	Story
TZ	e n d u w f	boy tall good best come sing	This is my cat. That dog is big. I like my school. My home is small.	Juma is living in a small village. He gets a letter once a month. The letter is from his son Musa. Musa lives in Dodoma. Juma can-not read the letters. He asks Sara to read the letters for him. *Questions:* 1. Where does Juma live? 2. What does Sara read? 3. What is the name of Juma's son?

KE	e x d w k c	room face table dog desk pen	My mother works in Lamu. Lamu is the busy town. The people there are good. They are very kind.	Juma reads to us a story from his book every day. He reads the story aloud in class. We enjoy listening to the stories. Yesterday, he read about the sun and the wind. Both of them lived in the same sky. The wind did not like the sun .It wanted to be the head of the sky. One day, the wind chased the sun away. It told sun to go to another sky. The sun did not go. The next morning, the wind ran after the sun. The sun fell down and started crying. That is how it began to rain. We clapped for Juma. *Questions:* 1. What does Juma do every day? 2. How did rain begin?
UG	i o w y s h	cow mat car sing bus leg	This is our goat. She has two kids. She likes her kids. She feeds them well.	Tom is our best football player. He stays far away from school. One day we had a big match. Tom had not come to school that day. The teacher went to look for Tom. The teacher found Tom weeding cassava. The teacher called Tom from the garden. All pupils were happy when Tom came. Our school won the match. We danced the whole day. *Questions:* 1. Where was Tom? 2. Why were the children dancing?

3c. Kiswahili Tests

	Silabi	**Maneno**	**Aya**	**Hadithi**
TZ	fa ki mwa njo le chi	chai sherehe vuta maziwa mama kaka	Baba amejenga nyumba nzuri. Nyumba yetu imezungukwa na miti. Miti huzuia upepo mkali. Miti hutupatia hewa safi.	Hapo zamani za kale samaki waliishi nchi kavu. Waliishi kwa kula wadudu kama vile panzi, mende na sisimizi. Siku moja wadudu hawa walikaa kikao na kupanga namna ya kuwaondoa samaki. Kikao chao wengi walichangia. Ikafika zamu ya sisimizi. Sisimizi alisimama na kusema, “Umoja ni nguvu na utengano ni udhaifu”. Wote walisimama na kupiga kelele “samaki wauaweee”. Samaki waliposikia hivi walikimbia na kujificha majini. Hadi hivi leo samaki wanaishi majini. *Maswali:* 1. Hapo zamani samaki waliishi wapi? 2. Zamani samaki walikuwa wanakula wadudu gani? 3. Hadithi hii inatufundisha nini?
KE	be di na tu ho le	kiti taa soko uso mali choo	Mama anapika uji. Juma anasoma kitabu. Maria anacheza mpira. Naye baba analima shambani.	Jina langu ni Fatuma Abdi. Ninaishi Nakuru na familia yetu kwenye nyumba kubwa. Baba yangu ni mwalimu katika shule ya upili. Wanafunzi wanampenda mama yangu kwakuwa ni mwalimu mzuri. Nao nyanya na babu wanaishi kule kijijini. Wao wana mbuzi na kondoo wengi. Mimi huwatembelea siku za likizo. Nyanya hunipa hadithi nzuri za kuchekesha. Mimi hucheka hadi mbavu zikaniuma. Likizo ikiisha, nyanya hunipa maziwa nimletee mama yangu. *Maswali*: 1. Mama ya Fatuma hufanya kazi gani? 2. Fatuma huwatembelea Nyanya na Babu wakati gani?

(*) Note: Kenyan districts in blue, Ugandan districts in green, Tanzanian districts in red.

Source of data: Uwezo national reports

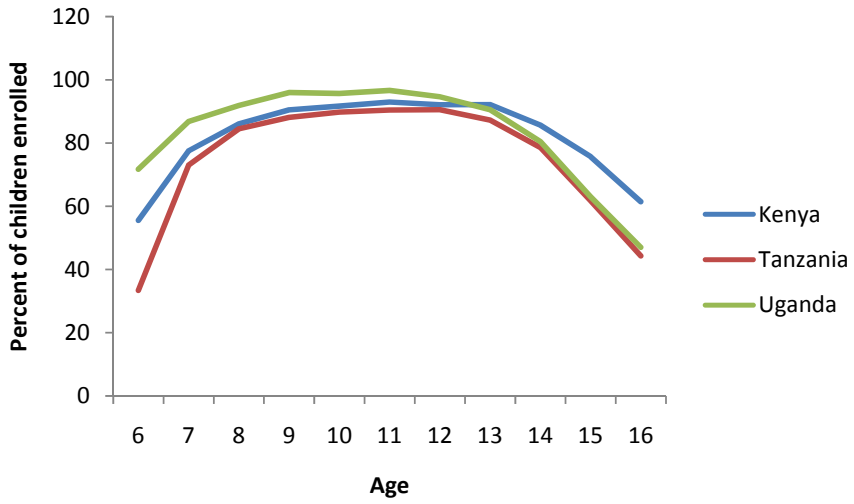
3. Access to Education

3.1 Primary school enrollment is high but not universal

Figure 2 presents school enrollment by age for the three countries.[6] The graph reflects differences in the education systems among the countries. In Kenya, primary school lasts eight years with children expected to attend school between the ages of six and 13. In Tanzania and Uganda, primary school takes seven years. In Uganda, children start by the age of six and complete when they are 12 while in Tanzania they start when they are seven and complete when they are 13. The figure, however, includes children outside the official age brackets.

The graph demonstrates how enrollment was lowest in Tanzania. Irrespective of age, a smaller fraction of children went to school in Tanzania than in the other countries. The graph furthermore illustrates how in Uganda, and relative to Kenya, more children were enrolled in primary school by six years of age. In Kenya, in part because the curriculum lasts an additional year, a larger fraction of older children (those aged 14-16) attended primary school.

Figure 2: Enrollment in primary school by age



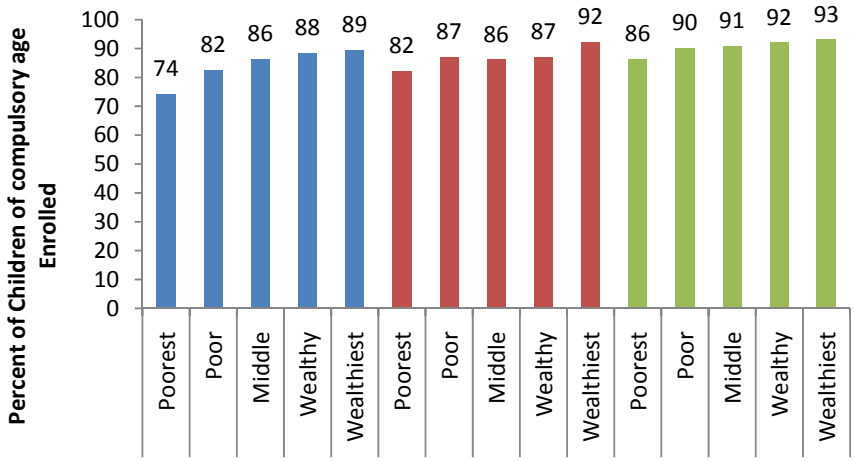
Source of data: Uwezo

3.2 Opportunities for enrollment remain unequal and depend on household wealth

Figure 3 considers how enrollment within a country varies by wealth of the child's household. Five wealth categories (quintiles) were distinguished: very poor, poor, those in the middle, wealthy and very wealthy with each quintile comprising 20% of households. The wealth quintiles were constructed using country specific data, implying that it is possible that poor households in Kenya are better off than those in the middle quintile in Tanzania. This figure restricts itself to enrollment of children within the official school going age range in each country. Enrollment rates were lowest in Kenya (around 84%) and highest in Uganda (around 90%). The graph furthermore illustrates that children from very poor households were least likely to be enrolled. These differences were more pronounced in Kenya and less so in Uganda and Tanzania.

[6] This section draws upon questions asking parents about school enrollment. As a consequence we use the term "school enrollment", even though it is plausible that parents understood the question as one about attendance. The latter is borne out by the fact that enrolment rates calculated from the Uwezo data correspond very closely to attendance rates as reported by DHS surveys (see for instance the stats compiler at www.measuredhs.com).

Figure 3: Enrollment of children of compulsory school going age(*) by wealth quintile

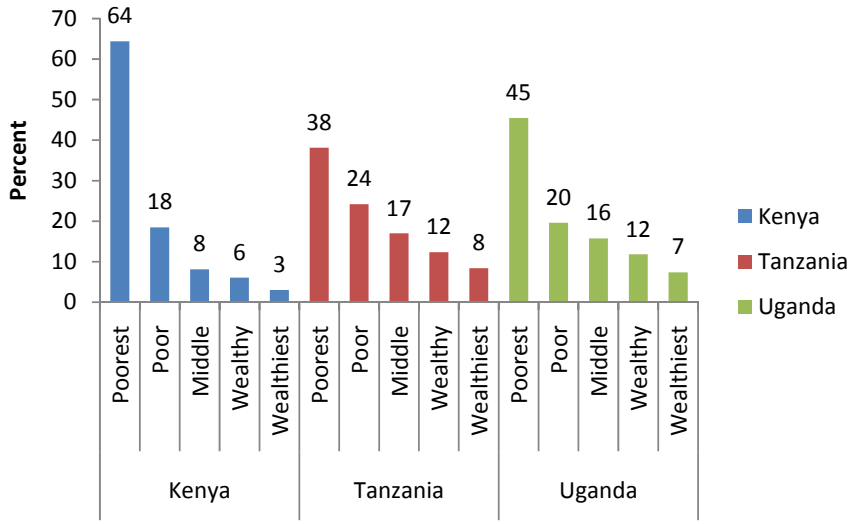


(*) In Kenya compulsary school going age is 6-13; in Tanzania 7-13 and Uganda 6-12.

Source of data: Uwezo

Another way to highlight the plight of children from very poor households is to consider children who never attended primary school. As Figure 4 makes clear, children from the poorest wealth quintile were seriously disadvanataged. In Kenya, 64% of children aged 6-16 years who never enrolled were from the poorest wealth quintile, while in Uganda and Tanzania it stood at 45% and 38% respectively.[7]

Figure 4: Percent of children aged 5-16 who never attended primary school, by wealth quintile

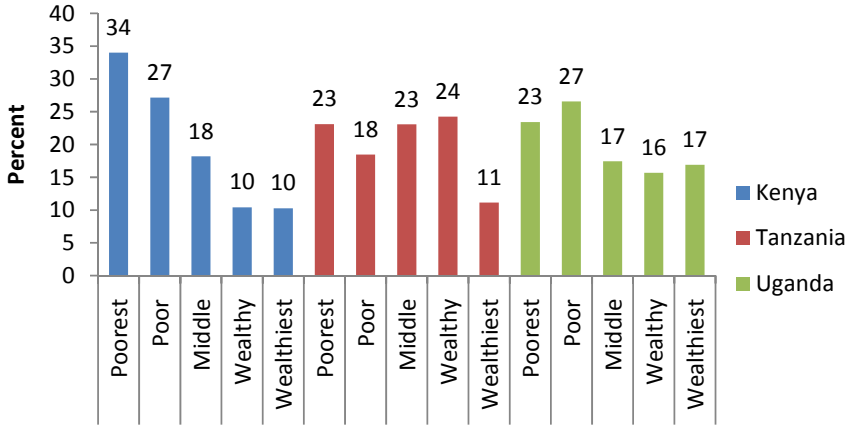


Source of data: Uwezo

[7] For Tanzania the age range used was 5-16 years.

As is the case with non-enrollment, drop out rates were higher for children from poor and very poor households, though differences were smaller than for non-enrollment. Among those who dropped out of school, 61% were from poor or very poor households in Kenya compared with 50% and 41%, respectively, in Uganda and Tanzania.

Figure 5: Children aged 5 to 16 who dropped out of school, by wealth quintile



Source of data: Uwezo

Conclusion: Despite significant increases in enrollment following the introduction of free primary education, Uwezo survey data demonstrate that enrollment was far from universal. Depending on the wealth quintile, between 7% and 26% of children of school going age were not in school. These rates correspond to attendence rates found by other surveys. The Demographic and Health Surveys report attendance rates of 73% for Tanzania (2004/5), 79% for Kenya (2008/9), and 82% for Uganda (2006).

Children from poor and very poor households were less likely to be in school than children from better off households. So not only was universal access to education not fully achieved, opportunities to go to school were not equal, and depended on household wealth.

4. Learning

4.1 Performance on the English, Numeracy and Kiswahili tests

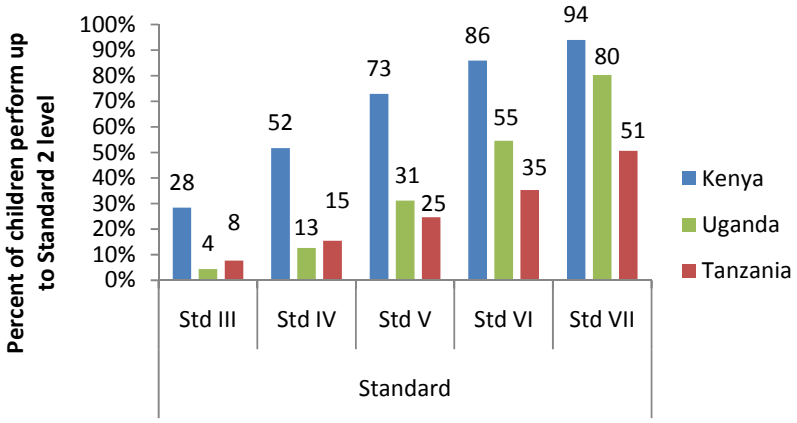
The main objective of the Uwezo test was to assess literacy and numeracy competency. As the tests reflect what pupils should have mastered by the end of Standard 2, all children in Standard 3 and above should be capable of achieving the highest levels of a Standard 2 test. As will be demonstrated in this section, this was not the case. Even amongst children who have advanced to Standard 7, many have not acquired Standard 2 numeracy and literacy skills.

English: Figure 6 presents performance on the English test for the three countries while distinguishing between different grades. The Figure demonstrates how, in each of the countries, few children in Standard 3 achieved Standard 2 level competency in the English literacy test. In Kenya, only 28% of pupils in Standard 3 completed the test succesfully, meaning they were able to read the story with ease. In Uganda and Tanzania, pass rates were worse and stood at 4% and 8% respectively. Children in higher grades progressively did better on the Uwezo tests, as should be

expected. In Kenya 94% of children in Standard 7 possessed Standard 2 level competencies in reading a story in English. Competency improved with the grade level in Uganda and Tanania as well. Irrespective of standard, the percent of children in Kenya who were at the highest level was higher than that of their peers in Uganda and Tanzania. In Tanzania, the results were particularly discouraging; only 51% of children in Standard 7 passed the Standard 2 level English test.

Over time the gap between Kenya and Uganda in the percent of children who had acquired Standard 2 level competencies gradually closed. Whereas in Standard 4 the difference in pass rate was 39%, by Standard 7 the difference closed to 14%. For Kenya and Tanzania this did not hold and almost twice as many children in Kenya passed the English test in Standard 7 as in Tanzania.

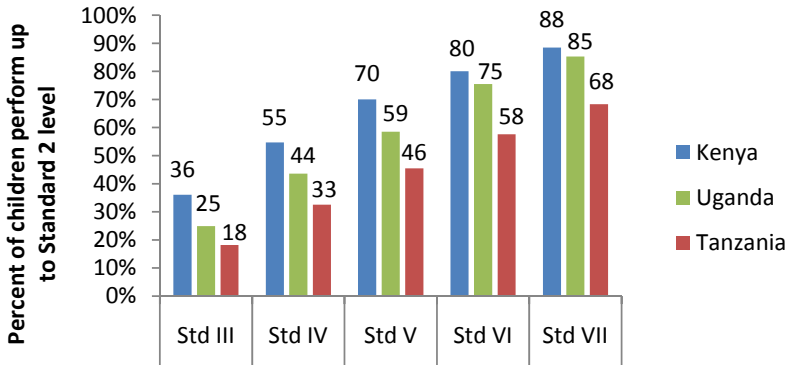
Figure 6: Performance on Uwezo English test, by standard



Source of data: Uwezo

Numeracy: For numeracy, the pattern was comparable to that for English, with children in Kenya doing better (but far from well) compared with those in Uganda and Tanzania. Tanzania was again the worst performer. Like in English, childrens' abilities improved with time and once they reached Standard 7 most were numerate and possessed competencies expected by the end of Standard 2. But even in Kenya, the country with the best performance, 12% of children in Standard 7 failed to reach the Standard 2 level. In Uganda, 15%, and in Tanzania a disturbing 32% of children in Standard 7 failed to perform numeracy tasks expected at the Standard 2 level.

Figure 7: Performance on Uwezo numeracy test, by standard

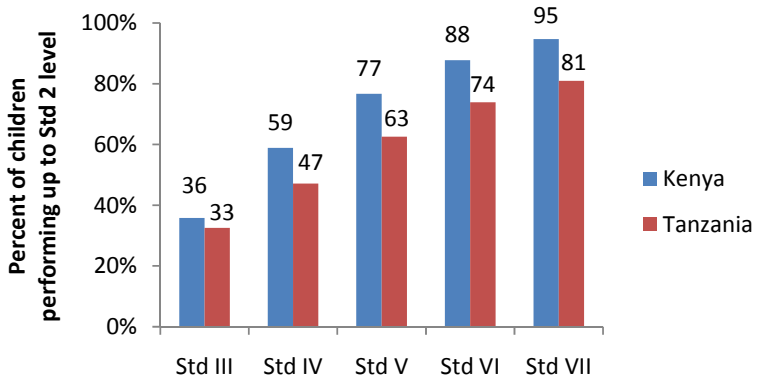


Source of data: Uwezo

Compared to English literacy, the gap in performance on the numeracy test between Tanzania on the one hand and Kenya and Uganda on the other, was smaller. Possibly, though this is a speculation, the larger gap for English than for numeracy reflects the fact that children in Kenya and Uganda live in environments where English is more widely heard and spoken. As a consequence they have an advantage over Tanzanian children who are rarely exposed to English outside school and whose teachers also have little experience speaking English. The gap in numeracy test scores demonstrates, however, that this is not the only explanation for the poorer performance of children in Tanzania. As the performance on both tests was worse in Tanzania, it seems highly plausible that children in Tanzania learn less while in school than their peers in Kenya and Uganda.

Kiswahili: This conclusion is supported by performance on the Kiswahili test. This test was conducted only in Kenya and Tanzania (because Kiswahili is not widely used in Uganda). The earlier pattern of poor performance by Standard 3 pupils and gradual catch-up in later standards was repeated. Children in Kenya performed better than children in Tanzania. The gap in performance between Tanzania and Kenya for Kiswahili was smaller than that for English and numeracy (this is likely a reflection of the fact that Kiswahili is more widely spoken in Tanzania compared to Kenya), but it was still there. So even on a test in which children in Tanzania ought to have an advantage over children in Kenya, Tanzanian children performed worse. Figure 8 gives further details on performance in Kiswahili, by grade level, in Kenya and Tanzania.

Figure 8: Performance on Uwezo Kiswahili test, by standard



Source of data: Uwezo

4.2 Differences in performance by district

In addition to differences in performance among the three countries, significant differences existed among districts within each country. Table 5 shows the percent of children in Standard 3 with Standard 2 numeracy and literacy skills. In Tanzania, 33% of children in Moshi Urban, the best performing district, passed the English test, yet no child (0%) in Liwale district passed the test. In Kenya, 66% of children in Kikuyu district passed the numeracy test, but only 5% did so in Lagdera district. And in Uganda, 40% of the children in Bushenyi district passed the numeracy test, but only 7% in Nakapiripirit district. Such differences can be observed for each of the three tests, and within each of the countries. These large disparities are reason for concern. There is no reason why children in Nakapiripirit, Lagdera or Liwale should do worse than their peers in Bushenyi, Kikuyu or Moshi Urban. Where one is born and goes to school should not affect the likelihood of acquiring basic literacy and numeracy competencies. The fact that it does points to the existence of significant inequalities in the education systems within each country.

Table 4 presents the 10 best and worst performing districts across Kenya, Uganda and Tanzania. On the English and numeracy tests, all top 10 disctricts, without exception, were Kenyan. At the bottom, few Kenyan districts were found, but there were many districts from Uganda and Tanzania. The overall pattern was that districts from Kenya top the charts, districts from Tanzania were at the bottom, and Ugandan districts were in between.

Table 4: Best and worst performing districts, Standard 3 pupils on English and numeracy tests

	English test		Numeracy test	
	Best performing districts	Worst performing	Best performing	Worst performing
1	Kikuyu	Adjumani	Kikuyu	Kasulu
2	Naivasha	Liwale	Kaloleni	Lagdera
3	Pokot North	Katakwi	Naivasha	Bukoba Rural
4	Taita	Bundibugyo	Meru South	Nakapiripirit
5	Nandi East	Shinyanga Rural	Nandi North	Gulu
6	Imenti North	Gulu	Mbeere	Kotido
7	Nyeri South	Kamuli	Kibwezi	Mwanga
8	Ruiru	Mayuge	Gatanga	Singida Rural
9	Nakuru North	Yumbe	Keiyo	Mayuge
10	Gatanga	Amuru	Imenti North	Shinyanga Rural

(*) Note: Kenyan districts in blue, Ugandan districts in green, Tanzanian districts in red.
Source of data: Uwezo

Table 5 shows that districts that performed well in one test were also likely to do well on the other tests. In Tanzania, Moshi Urban and Rombo were among the top three districts for each of the three tests. In Kenya, Kikuyu and Naivasha were top performers in every test, and in Uganda, Wakiso and Masaka stand out. What do these districts have in common? Amongst poorly performing districts there was more variation even though Muleba and Kasulu in Tanzania, and Lagdera and Wajir East in Kenya show up more than once in the list of worst performing districts.In short, it seems *good performing districts are all alike, poorly performing districts perform poorly in their own way.*

Table 5: Best and worst performing districts of Standard 3 pupils, by district and country

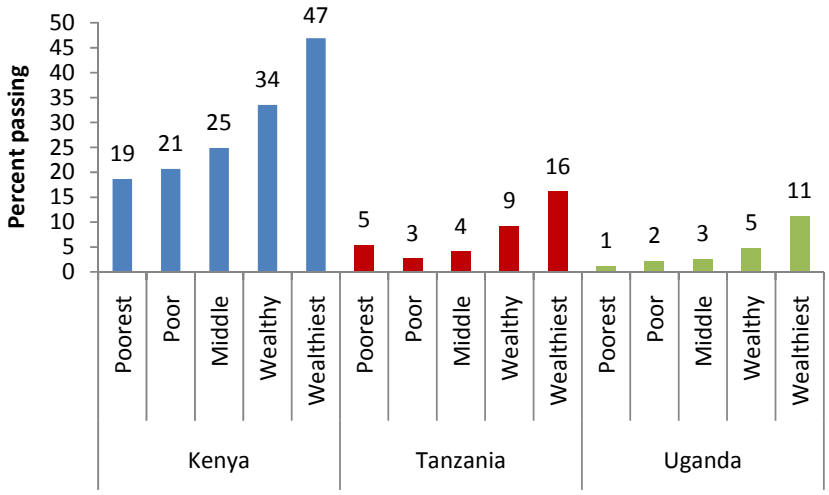
	Tanzania				Kenya				Uganda			
English	**Best performers**		**Worst performers**		**Best performers**		**Worst performers**		**Best performers**		**Worst performers**	
1st	Moshi Urban	33%	Liwale	0%	Kikuyu	64%	Lagdera	4%	Wakiso	12%	Adjumani	0%
2nd	Rombo	23%	Shinyanga Rural	1%	Naivasha	53%	Trans Mara	9%	Masaka	8%	Katakwi	0%
3rd	Moshi Rural	23%	Muleba	2%	Pokot North	52%	Rachuonyo	10%	Nakasongola	8%	Bundibugyo	1%
Numeracy												
1st	Moshi Urban	40%	Kasulu	5%	Kikuyu	66%	Lagdera	5%	Busheni	40%	Nakapiripirit	7%
2nd	Rombo	39%	Bukoba Rural	7%	Kaloleni	65%	Samburu North	14%	Masaka	38%	Gulu	7%
3rd	Moshi Rural	35%	Mwanga	8%	Naivasha	57%	Wajir East	17%	Wakiso	38%	Kotido	8%
Kiswahili												
1st	Rombo	63%	Muleba	9%	Naivasha	68%	Lagdera	4%	Not done			
2nd	Moshi Urban	58%	Mwanga	16%	Taita	64%	Wajir East	12%				
3rd	Kisarawe	57%	Kasulu	17%	Kikuyu	62%	Trans Mara	14%				

(*) Note: Kenyan districts in blue, Ugandan districts in green, Tanzanian districts in red.
Source of data: Uwezo

4.3 Differences in performance by household wealth

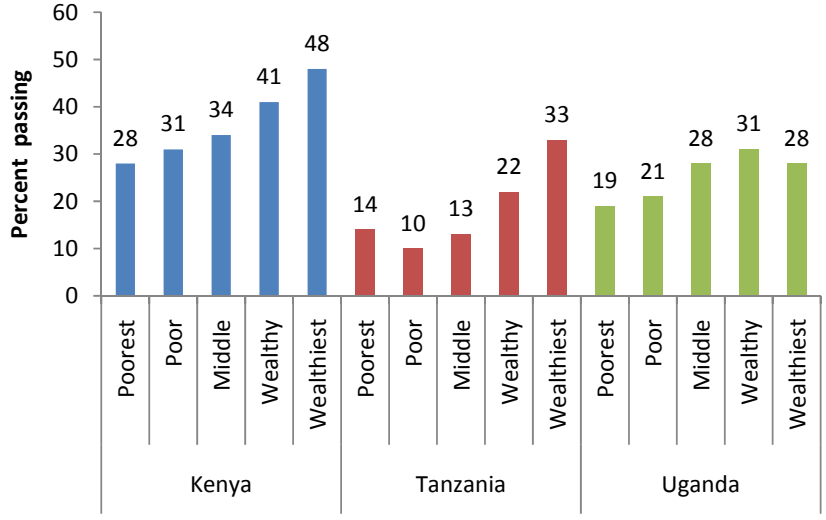
Household characteristics also mattered with regards to performance. Figures 9 and 10 below demonstrate how differences in household wealth were associated with performance. Children from the wealthiest households did significantly better on the Uwezo tests than children from less wealthy households. In Kenya for instance, almost half (47%) of the Standard 3 children from households in the wealthiest quintile attained Standard 2 English literacy skills, as opposed to only 19% of children from the poorest households. Likewise, 48% of children from the wealthiest households in Kenya passed the numeracy test, as opposed to only 28% of children from the poorest households.

Figure 9: Performance of Standard 3 children on Uwezo English test, by wealth quintile and country



Source of data: Uwezo

Figure 10: Performance of Standard 3 children on numeracy test, by wealth quintile and country



Source of data: Uwezo

Children from the poorest households in Kenya were much less likely to pass the numeracy and English tests than children from wealthier Kenyan households. Nevertheless, the chances of success

were still higher for a child from a very poor Kenyan household than a child from a very wealthy Ugandan or Tanzanian household. For instance, 19% of children from a household in the poorest wealth quintile in Kenya passed the English test, compared to 16% and 11% of children from the wealthiest households in Uganda and Tanzania. For numeracy, similar results held, except that children from the poorest quintile in Kenya performed at par with their peers from the wealthiest of households in Uganda and Tanzania.

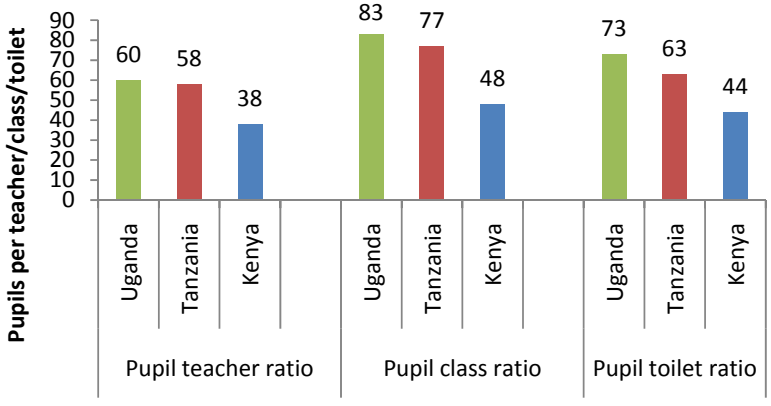
Conclusion: The Uwezo survey results show that numeracy and literacy skills were dismal across the three countries and the majority of children in Standard 3 did not possess Standard 2 level numeracy and literacy skills. Amongst the poorly performing, Kenya did better than Uganda and Tanzania. Tanzania exhibits by far the worst performance based on the Uwezo tests. Large differences in performance were observed in districts within and between countries and for children coming from different wealth backgrounds. A silver lining might be that there were substantial intra-country differences in performance. This suggests that improved performance is feasible within the existing systems and offers opportunities to find out the reasons behind these differences.

5. Quality of Schools

One explanation for differences in district performance may be that the quality of schools or quality of teaching differed. Whereas the Uwezo survey did not contain information about the quality of teaching, information from the school questionnaires allowed basic observations on quality of schools. For each of the three countries, the Uwezo school questionnaire collected information from which the number of pupils per teacher, pupils per class, and pupils per toilet could be calculated.

Country comparisons show that Kenyan schools had smaller pupil:teacher ratios, pupil:class ratios, and fewer pupils per toilets than schools in Uganda and Tanzania. The difference with Tanzania and Uganda was quite large. For instance, in Tanzania there were 60 pupils per teacher, in Kenya 38. In Uganda there were 83 pupils per class, in Kenya 48. Overall, Kenya's actual school quality indicators were closer to official standards than those for Uganda and Tanzania.

Figure 11: School quality indicators for Kenya, Uganda and Tanzania



Source of data: Uwezo

Within countries large differences were observed. This can be seen from Table 6 presenting a district ranking of school quality based on the three ratios. The overall ranking was produced after ranking the districts on each of the three indicators separately and assigning districts the corresponding rank number. The summation of the three rank numbers gives the overall rank, according to which districts were ranked from highest to lowest in Table 6.

The Table shows that district averages varied considerably: from as low as 25 pupils per teacher in Imenti South district, Kenya to as high as 91 per teacher in Muleba district, Tanzania. Similarly pupil per class ratios varied from as low as 23 in again Imenti South, to as high as 173 in Buliisa district, Uganda. The pupils per toilet ratio exhibited similar variations, from a low of 14 pupils per toilet in Nyeri South, Kenya to a high of 110 pupils per toilet in Kamuli, Uganda. These are district averages, implying that they mask starker differences between schools. For individual schools and classes, the variation was much higher. For instance, in the Kenya Uwezo data set pupil:teacher ratios ranged from as low as 10 :1 to over 200:1.

Another observation is that Kenyan districts topped the ranking, while Tanzanian and Ugandan districts, and just a few Kenyan districts, were found at the bottom of the ranking. In the East African Uwezo ranking, Kenyan districts occupied the first 24 positions. The first non-Kenyan district was from Tanzania in the 25th position, while the first Ugandan district was only found in 44th place. No Kenyan districts were among those ranked in the bottom 10.

Table 6: Best and worst performing districts on a combined pupil:teacher ratio, pupil per class and pupil per toilet rating

Rank	District name	Pupils per teacher	Pupils per class	Pupil per toilet
Top 10 districts				
1	Imenti South	25	23	14
2	Mbeere	27	28	17
3	Meru south	28	25	17
4	Imenti north	28	29	23
5	Nyeri South	33	28	14
6	Kericho	28	35	30
7	Nyandarua North	35	33	17
8	Kikuyu	35	31	25
9	Tharaka	29	29	39
10	Wareng	31	35	31
Bottom 10 districts				
126	Muleba	91	83	79
127	Kamuli	66	86	110
128	Mayuge	64	99	100
129	Urambo	86	110	69
130	Amuru	70	117	76
131	Amuria	69	100	89
132	Budaka	69	101	87
133	Geita	83	108	92
134	Buliisa	67	173	112
135	Ilemela	87	140	107

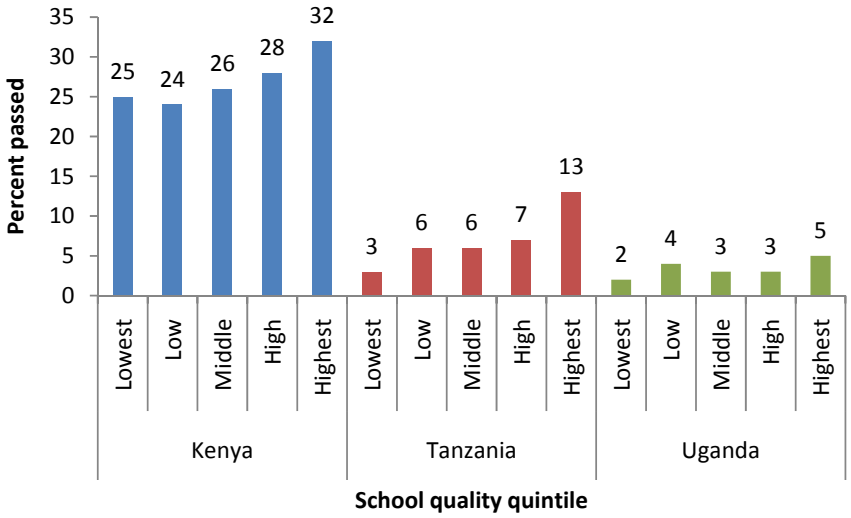
(*) Note: Kenyan districts in blue, Ugandan districts in green, Tanzanian districts in red.
Source of data: Uwezo

A school quality index can be constructed using the same approach as was used to construct a wealth index for households.[8] Five school quality quintiles, each comprising 20% of the schools visited, were established per country. The quintiles were not strictly comparable across the three

[8] See for instance Filmer D and Pritchett LH. *Estimating wealth effect without expenditure data – or tears: an application to educational enrollments in states of India. Demography 2001; 38:115-32.*

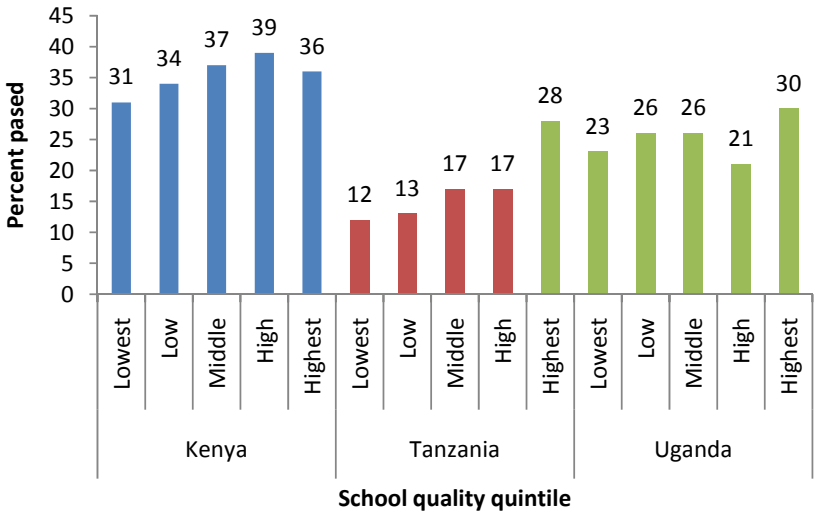
countries as different variables were used to construct each country index. Within countries, significantly, performance of Standard 3 pupils on the Uwezo tests did not vary much with school quality quintile. The only exception was that in Kenya and Tanzania, performance was better on the English test for children attending a school in the top quality quintile.

Figure 12: Standard 3 children with Standard 2 English literacy skills, by school quality quintile



Source of data: Uwezo

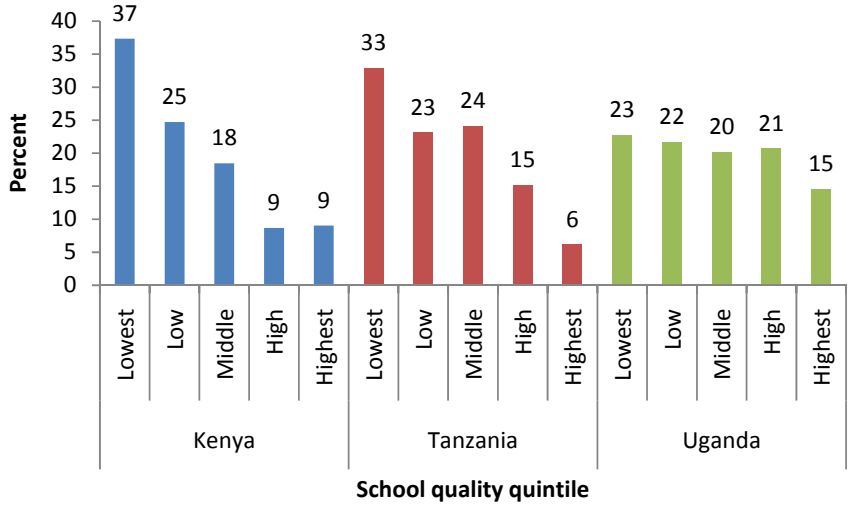
Figure 13: Standard 3 children with Standard 2 numeracy skills, by school quality quintile



Source of data: Uwezo

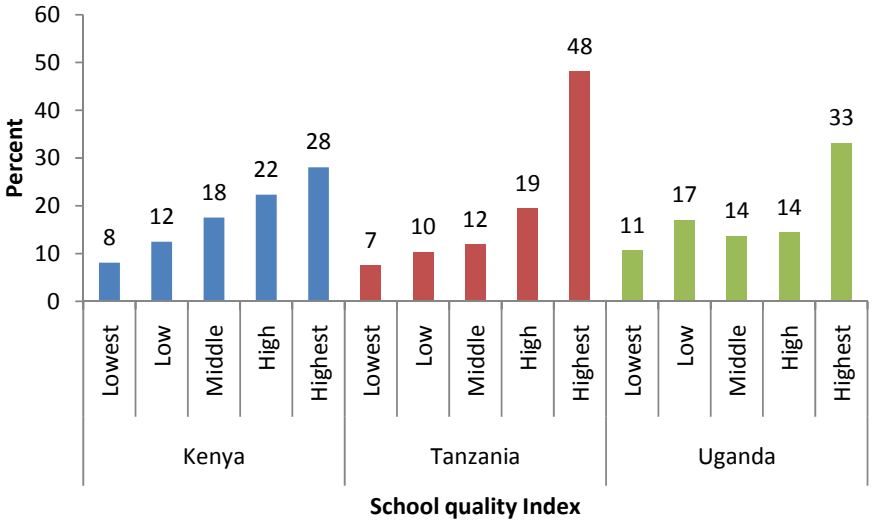
Figures 14 and 15 present the quality of schools attended by children from the bottom and top wealth quintiles. One notes that, generally, children from poor families attended worse schools, while children from better off families attended higher quality schools. In Kenya, the differences were most pronounced and 37% of children from the poorest 20% of families attended the worst schools, while only 9% attended the best schools. In Uganda, the distribution was most equal, with Tanzania taking an intermediate position.

Figure 14: Quality of schools attended by children from the poorest wealth quintile



Source of data: Uwezo

Figure 15: Quality of schools attended by children from the top wealth quintile



Source of data: Uwezo

Conclusion: There were large differences in quality between schools. Defining quality by using a set of simple indicators (pupils per teacher, pupils per class, and pupils per toilet) illustrated great variance in quality among the three countries, across districts within countries, and within schools found in the same districts. Schools in Kenya were generally better equipped than schools in Uganda and Tanzania; schools in Uganda did particularly poorly.

Only a weak association was found between school quality and performance on the Uwezo tests. *This should caution those who believe that performance in schools will improve by reducing pupil:teacher or pupil:classroom ratios.* The Uwezo data suggest that these aspects matter, but that other non-observed aspects are probably more important. The quality of teaching, practical

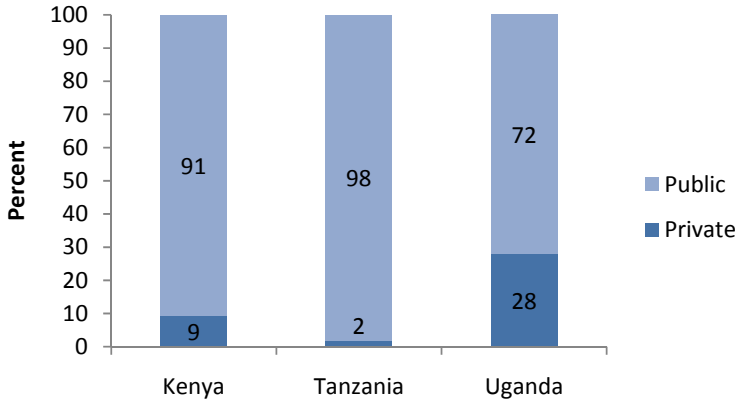
accountability and teacher motivation come to mind as potentially important determinants of school performance. Unfortunately no information was collected on these factors.

Finally, children from poor families were doubly disadvantaged in that not only were they more likely not to attend school or to drop out of school, they were also more likely to attend schools of poorer quality.

6. Private schools

Thus far this report has focused on numeracy and literacy skills in public primary schools. But across East Africa, a significant number of children attend private primary schools. In Kenya 9% of school going children go to private schools and in Uganda as many as 28% of children attend private schools. Tanzania is the one country in which few children attend private schools (2%).

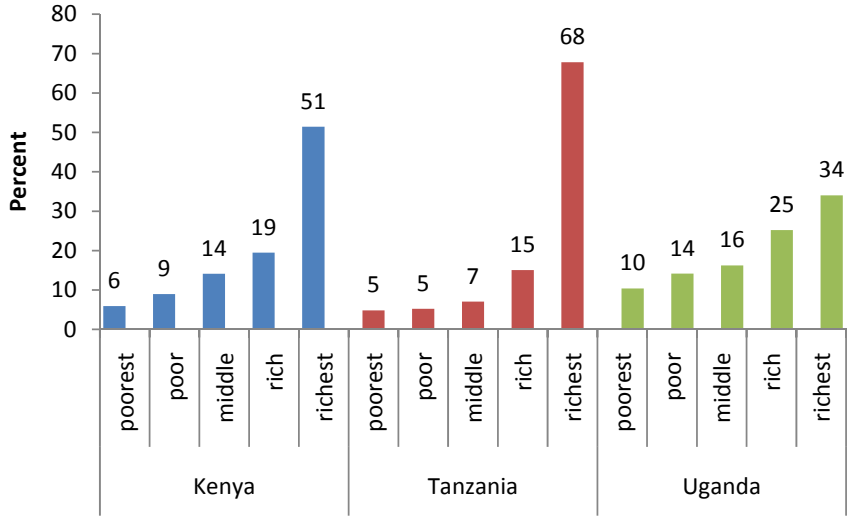
Figure 16: Distribution across public and private schools of primary school pupils



Source of data: Uwezo

Unsurprisingly, perhaps, the majority of children who attended private schools were from the wealthiest families; few were from poor families. This pattern was most distinct in Tanzania, where children attending private schools almost without exception came from households in the top two wealth quintiles. In Uganda, private education was also accessed by children from poorer households, though children from wealthier families were still much more likely to attend. Kenya takes an intermediate position.

Figure 17: Enrollment in private primary schools by wealth quintiles

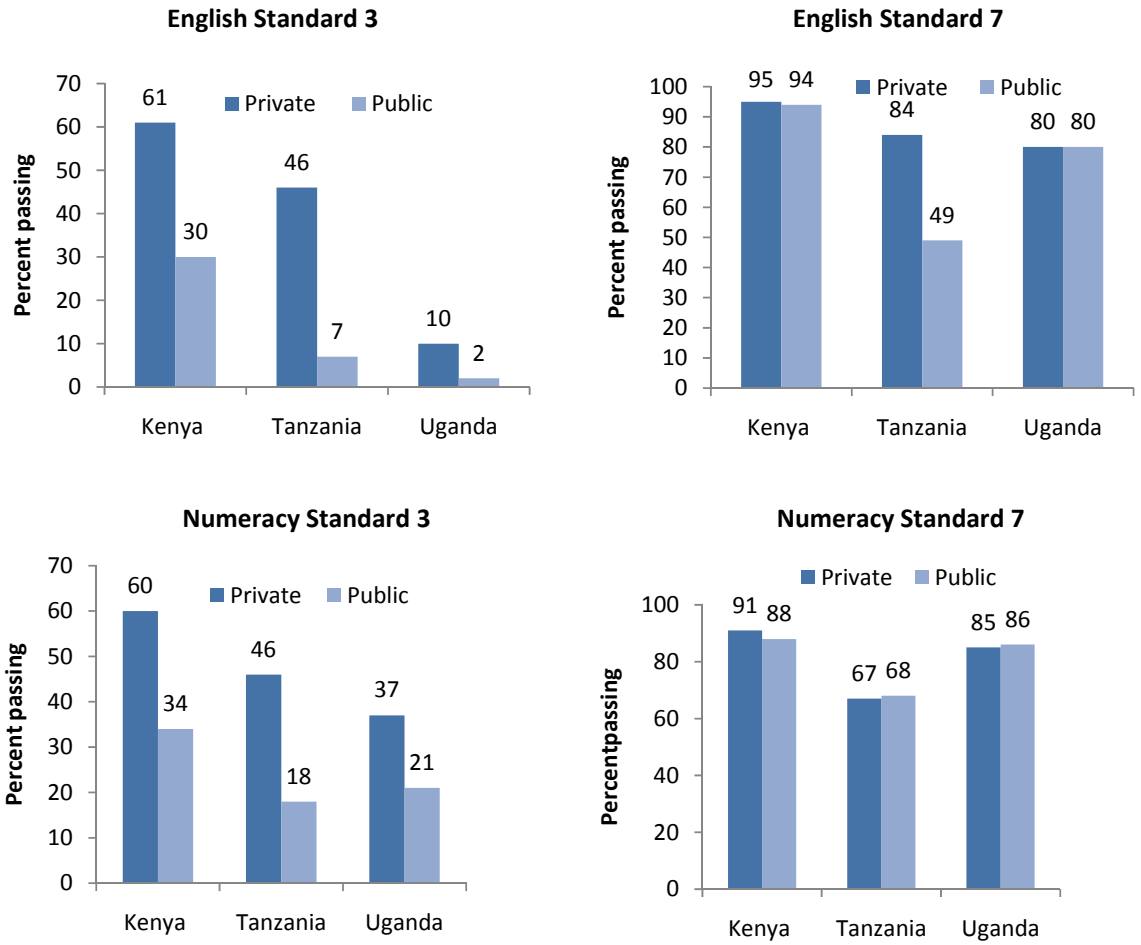


Source of data: Uwezo

Pupils attending private schools performed better on the Uwezo tests than those attending public schools. This holds true across the three countries. In Kenya, 60% of children in Standard 3 private schools passed the English and numeracy tests. This was still a far cry from the expected 100% but twice as good as the performance in public schools. In Tanzania, the difference in performance by Standard 3 students between public and private schools was most notable. Whereas less than 10% of children in public schools passed the English test, almost half of those in private schools did. A similar yet smaller difference was found for the numeracy test. Perhaps the more surprising result was from Uganda where private schools did better than public schools, but with only 10% of children in Standard 3 passing the English test, even though English language is ostensibly used in some of these schools. This performance was the worst in East Africa. Ugandan Standard 3 private school children also performed worst on the numeracy test amongst those attending private schools.

By the time children reach Standard 7, no difference was found in performance between those attending public and private schools, except in Tanzania where public school Standard 7 students did much worse than pupils attending private school. At the same time, in Uganda and Tanzania large numbers of private school students in Standard 7 continued to fail the Uwezo tests. For instance, one in five private school Standard 7 students in Uganda failed the Uwezo English test and one in three Standard 7 students in private schools in Tanzania failed the Uwezo numeracy test.

Figure 18: Performance on Uwezo English and numeracy tests by school type and standard



Source of data: Uwezo

Conclusion: Private school attendance varied greatly in East Africa, with as many as one in four pupils attending private schools in Uganda, to as few as one in 50 in Tanzania. As expected, mostly children from the wealthiest families attended private schools, though in Uganda access was more equally distributed across wealth classes.

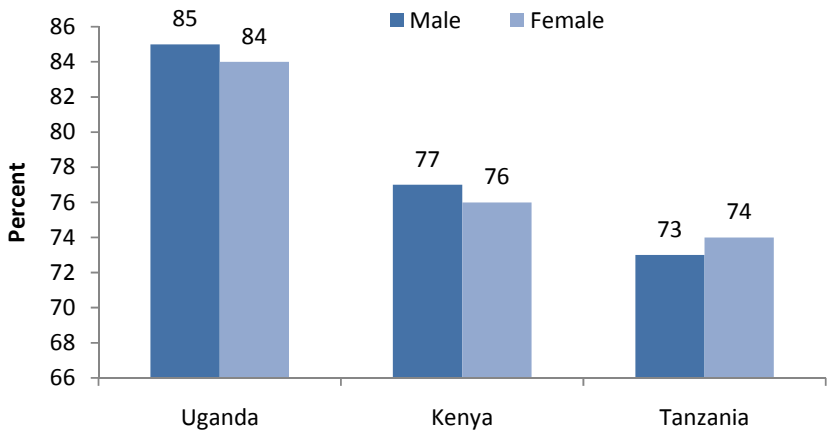
Performance on the Uwezo tests by children attending private schools was significantly better than of those attending public schools, but far from perfect. In Tanzania and Uganda in particular, pupils attending private schools performed relatively poorly. Even in Kenya, whose private schools performed best, one in three pupils in Standard 3 failed to pass the Uwezo numeracy and English test.

The better performance of private schools provides an opportunity to explore what drives the better results. Do private schools have better inputs such as books, better qualified teachers, better practical accountability, better pay for teachers, or other incentives? At the same time it is clear that private schools themselves are not a panacea, as their performance also leaves much to be desired.

7. Gender Equality

This section addresses gender equality in schools. As discussed in Section 3, there were differences in overall enrollment rates across the three countries. However, as Figure 19 demonstrates, gender equality in enrollment has generally been achieved. In Uganda and Kenya, enrollment was slightly higher for male students, while in Tanzania the enrollment rate was slightly higher for female students.

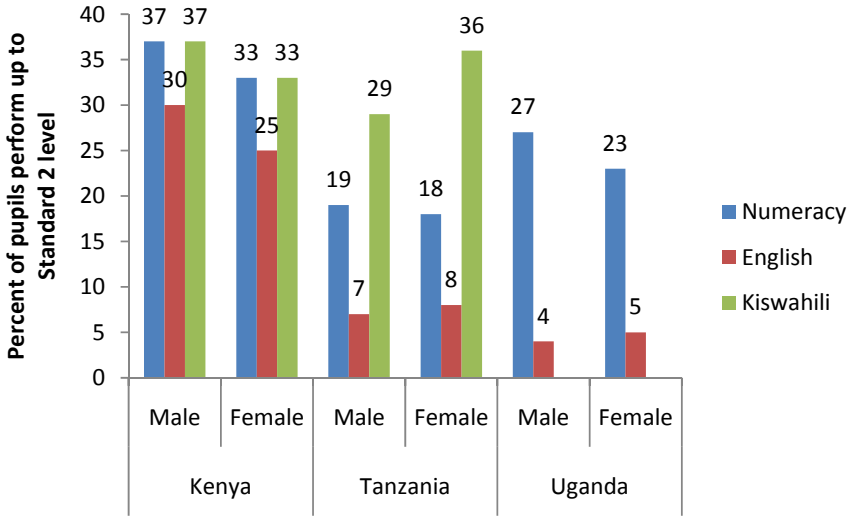
Figure 19: Enrollment by sex (gender) for children of school going age



Source of data: Uwezo

While gender parity in enrolment has been largely achieved, slight differences in performance based on the Uwezo tests between girls and boys were observed as can be seen from Figure 20. In Kenya, female students performed slightly worse on the three Uwezo tests, while in Uganda and Tanzania the evidence was mixed. In Uganda, female students did slightly better on the English test and worse on the numeracy test. In Tanzania, female students also did slightly worse on the numeracy test, better on the English test, and much better on the Kiswahili test.

Figure 20: Performance of Standard 3 children on Uwezo tests, by gender



Source of data: Uwezo

Conclusion: Gender inequity is often noted across many socio-political spheres. This was not the case for primary education, at least in terms of enrollment or performance in basic literacy and numeracy; boy and girl students functioned almost at par. In Kenya, female students did slightly worse both in enrollment and on the Uwezo tests. For Uganda and Tanzania the results were mixed, and it would be fair to conclude that overall girls and boys performed at par.

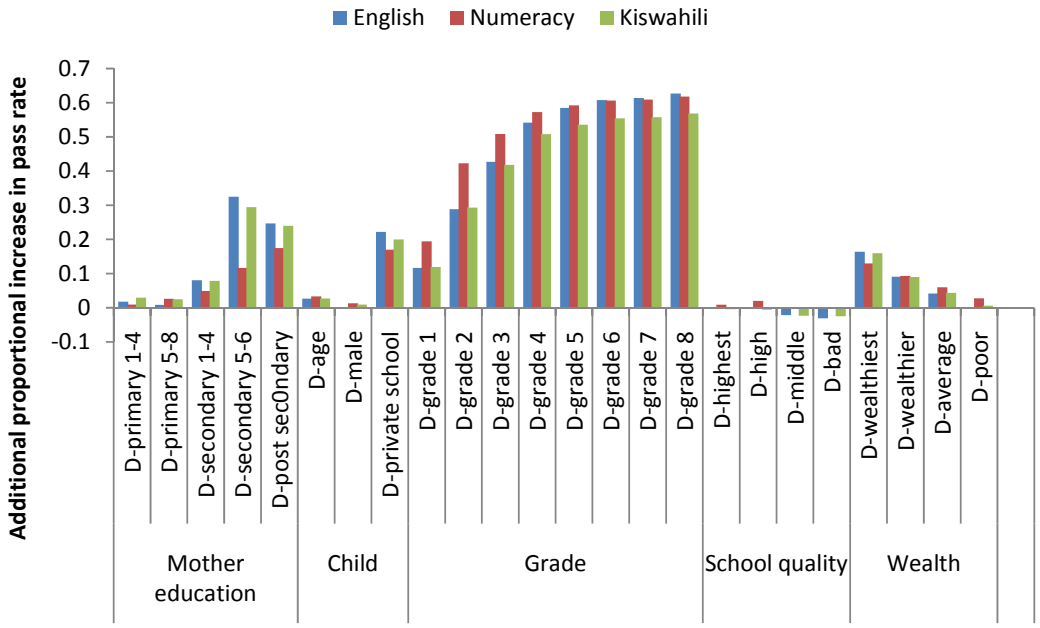
8. Which factors explain performance most?

This report thus far demonstrates that basic numeracy and literacy skills were closely associated with the grade level of a child, whether he or she comes from a wealthy household, and if she or he attends a private school. Basic numeracy and literacy skills were not as closely tied with school quality and gender. Since students that attended lower quality schools were also more likely to face other challenges such as low household income, it is difficult to disentangle the effect of school quality on achievement. In this section we explore the associations with school performance in combination and include some other factors that may also be associated with performance such as the level of mother's education or a child's age. Through regression analysis we attempt to estimate the individual impact of each of these factors on performance, while holding all other factors constant.

We present the results by country as the Uwezo data sets allow the incorporation of different variables in different countries. In the Uganda Uwezo survey for instance, questions about mother's education were not asked, while they were in Tanzania and Kenya.

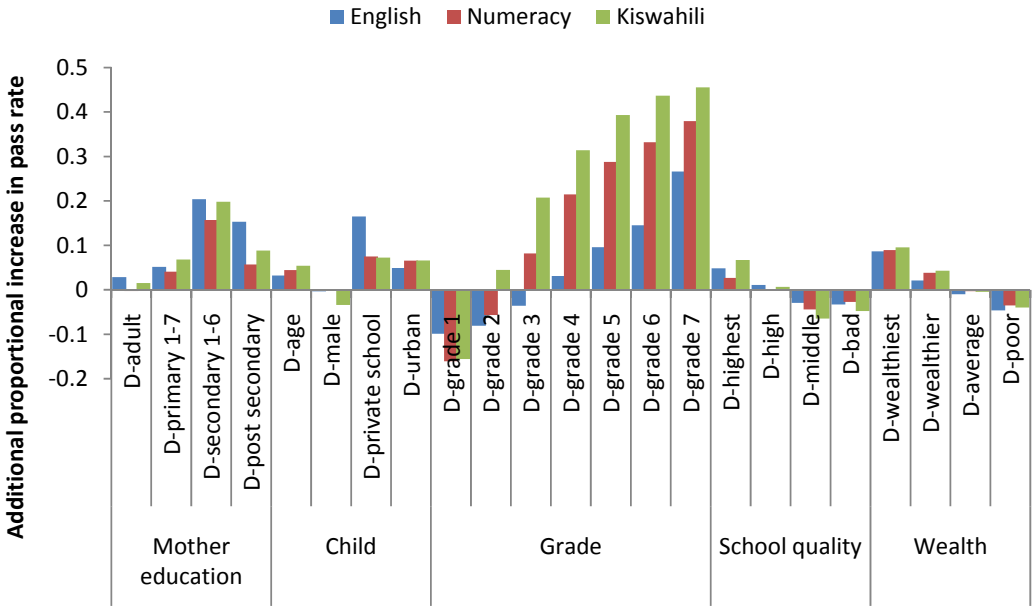
Across the three countries and for the three different tests, very similar patterns emerge. The grade level of a child was by far the most determining factor of the likelihood of a child having acquired basic numeracy and literacy skills. Mother's education also had a large effect on skill attainment but, and this was noteworthy, mostly for mothers with secondary education and higher. When mothers have primary education or less, the positive impact on their child's school performance was limited. Household wealth and attending a private school had considerable positive impacts on school performance. Gender and school quality had very limited impact.

Figure 21: Marginal effects of different factors on Uwezo test performance: Kenya



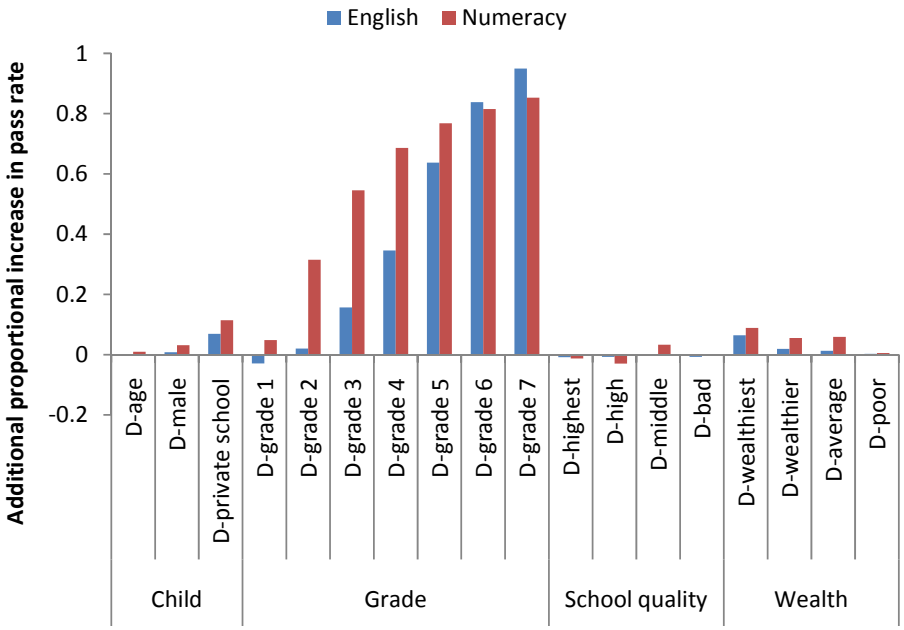
Source of data: Uwezo

Figure 22: Marginal effects of different factors on Uwezo test performance: Tanzania



Source of data: Uwezo

Figure 23: Marginal effects of different factors on Uwezo test performance: Uganda



Source of data: Uwezo

9. Conclusion

Summary of key findings

This report assessed the numeracy and literacy competency of tens of thousands of children aged between six and 16 years in Kenya, Tanzania and Uganda using the Uwezo tests administered in 2009/2010. According to the findings, children in all three countries perform poorly compared to established curriculum levels. Among countries, Kenya's primary schools learn the most. In all three tests- Kiswahili, English and numeracy- Kenya's pupils came out on top, followed by pupils in Uganda. Children in Tanzania performed worst even in the Kiswahili test, a language which children in Tanzania are more exposed to than children in Kenya.

While Kenyan children had acquired better numeracy and literacy skills, they did far from well. In Standard 3, roughly two out of three children failed to pass the Uwezo tests for English, Kiswahili and numeracy. These results are cause for concern, as the expectation is that 100% or all children in Standard 3 should be able to satisfactorily complete a Standard 2 test. Only when pupils reached Standard 7 did almost all of them acquire basic Standard 2 numeracy and literacy skills, though in Tanzania half of Standard 7 pupils were still unable to do the Standard 2 English test.

Schools in Kenya were found to be of better quality (in terms of pupils per teacher or class, or pupils per toilet) than those in Uganda and Tanzania. However, an important finding given the enormous resources invested in recent years in improving school infrastructure, was that school quality was weakly associated with literacy and numeracy levels. Children in areas with better school infrastructure did not perform better than in lower quality schools or more crowded classrooms.

Kenya was also the country in which inequalities were largest. Among the poorest families, fewer children of compulsary school going age were enrolled in primary school in Kenya (74%) than in

Tanzania (82%) and Uganda (86%). Poor Kenyan children were more likely to attend a low quality school than poor children in Uganda or Tanzania. Poor Kenyan children were more likely not to attend primary school and drop out of school than their Ugandan and Tanzanian peers.

Despite this, however, in terms of learning outcomes, *children from poor families in Kenya stood a better chance of doing well on the Uwezo tests than children from wealthiest households in Tanzania and Uganda*. In Kenya, the percent of children from poor households in Standard 3 passing the numeracy test was 31%, as compared to 28% percent of children from the wealthiest households in Uganda who passed this test. The percent of Kenyan children from the poorest households passing the English test was 19%, compared to 16% of children from the wealthiest households in Tanzania who passed this test.

In Uganda, children performed particularly poorly in lower grades but by the time they reached upper grades most were able to perform at the Standard 2 skill levels. By the time they reached Standard 7, performance of children in Uganda was almost at par with performance in Kenya. This was not the case for children in Tanzania, whose poor performance in lower grades was only partially made up in the upper grades. As a consequence, only 51% of Tanzanian children in Standard 7 passed the Uwezo English test and only 68% in Standard 7 passed the Standard 2 numeracy test.

Children attending private schools did better than those attending public schools. The study affirmed that mother's education mostly impacted child performance when mothers obtained at least a secondary education. Gender differences in enrollment or school performance were insignificant.

What can be done

Reflecting on these results, one cannot help but note the enormous challenge East African governments, teachers and parents face in making sure that children acquire basic numeracy and literacy skills. These asymmetries in learning also undermine the prospects for greater cooperation and development across the East African region. The situation in Tanzania is most acute, but results for Kenya and Uganda provide little comfort too. Renewed efforts are urgently needed to address non-attendence and drop out rates. In addition, much more attention needs to be given to the fact that children should not only go to school, but also learn while in school. Increasingly it is being globally recognized that children need to be in school and learning too.

Bad results inevitably lead to the question, what next? The findings of this report suggest that policy makers would do well to question approaches used so far, instead of doing more of the same. While different investments can have positive effects, some are likely to have greater or more lasting impact than others, or present better value for money. In a context where resources are limited, it is crucial to examine the evidence carefully for what is likely to contribute to greater impact.

The Uwezo results offer limited guidance on what could be done to drive progress. First, the fact that pupil:teacher and pupil:classroom ratios were only weakly correlated with learning is valuable information, as it puts into question whether additional inputs and money in these areas will offer a solution to the existing crisis. This is a key moment to focus on the quality of teaching and teacher incentives and motivation. After all, one explanation why children who attend school learn so remarkably little may be that teacher incentives are weak, with teachers often having high rates of absence. For example, evidence from Tanzania demonstrates that 23% of teachers are not in school on any given day and when in school, teachers spend half their time outside the classroom. As a consequence, children are only taught two hours and four minutes a day, instead of an expected five hours.[9] Studies from Uganda and Kenya suggest similar findings.

[9] World Bank Service Delivery Indicators: Education and Health Care in Africa, presented at REPOA, March 4, 2011.

Differences in performance among districts within each of the three countries, and between public and private schools, suggest that certain schools have 'figured out' how to achieve better results within existing constraints. Investigating why certain districts, and certain schools within districts, do so much better than others could provide important clues about what matters most for improved learning. A simple and affordable approach could start by identifying which schools do significantly better (or worse) than expected with the resources available, visiting these schools to identify what might explain their outcomes, and from these visits, derive commonalities.

Other approaches can also be explored. A wide range of existing experimental evidence, much of it from Kenya, demonstrates that programs that increased school inputs were largely ineffective in improving outcomes. Providing additional textbooks and flipcharts, for example, had no effect on average performance, and reducing class sizes by adding new teachers was similarly ineffective.[10] Interventions that increased student performance were those that changed incentives for teachers in meaningful ways. Paying for teacher attendance or exam scores had mixed results, and giving parents information about school conditions was ineffective. However, a program that enabled schools to hire additional teachers on short term contracts and that gave local school committees authority over these teachers was successful in increasing student achievement. Trying these new approaches, with rigorous experimental designs, would be one way to elicit how to improve learning in schools.

One such approach, which is still untested but whose design has been informed by careful review of the evidence of what works, is called *Cash on Delivery*.[11] The core idea here is that instead of funding inputs, a mechanism is created by which payments are made against the achievement of a specified and independently verified outcome, such as $50 per student who completes Standard 2 with 80% literacy and numeracy competencies. This approach was originally designed to improve the effectiveness of aid given to national governments, but the approach may be even more useful for how national governments create incentives to improve performance at district and school levels.

There is a crisis of learning in Kenya, Tanzania and Uganda. Governments are justifiably proud of their achievements in expanding school enrolments. But they should now not hide behind these achievements, and focus instead on making sure that children in school are in fact learning. Global evidence from meta-reviews and rigorous experimental approaches, coupled with the Uwezo data presented herein strongly suggest that investing in inputs alone has limited impact, and that fresh thinking focused on incentives for learning is needed.[12] The billions of shillings and hours spent on basic education each year by parents, governments and donors alike can only be considered well spent when children are learning, literate and numerate. This is the moment to face the crisis squarely, and to craft solutions that are not only well intended, but actually work.

[10] "Improving Education in the Developing World: What Have We Learned from Randomized Evaluations?" Michael Kremer and Alaka Holla, November 10, 2008, accessed at www.economics.harvard.edu/faculty/kremer/files/Annual_Review_081110%20-%20NO%20TRACK%20CHANGES.pdf.

[11] The idea has been developed by the *Center for Global Development*, see http://www.cgdev.org/section/initiatives/_active/codaid. For a comment on its strengths and value in local application see: http://blogs.cgdev.org/globaldevelopment/2011/04/guest-post-five-reasons-i-am-a-fan-of-cash-on-delivery-and-five-ways-to-make-it-sharper.php

[12] For instance see http://siteresources.worldbank.org/EDUCATION/Resources/278200-1298568319076/makingschoolswork.pdf and on the value of experimental approaches see Banerjee, A and Duflo, E, *Poor Economics: A radical rethinking of the way to fight global poverty*, Public Affairs, 2011, especially chapter 4.

Annex 1: District Rankings

District name	Performance indicators				School quality indicators			
	Std 3 pass rate	Std 7 pass rate	Enrolment rate	Performance rank (*)	Pupil teacher ratio	Pupil class ratio	Pupil toilet ratio	School quality rank (*)
Adjumani	0%	93%	89%	107	66	57	47	78
Amuria	2%	60%	93%	76	69	100	89	131
Amuru	2%	67%	89%	112	70	117	76	130
Apac	3%	80%	89%	94	69	97	65	119
Babati	3%	58%	92%	78	58	58	42	72
Budaka	3%	62%	91%	97	69	101	87	132
Bukoba Rural	1%	39%	82%	130	64	78	47	90
Bukoba Urban	6%	36%	86%	117	36	73	62	71
Buliisa	2%	84%	92%	66	67	173	112	134
Bundibugyo	1%	49%	94%	98	65	83	108	124
Bungoma North	7%	78%	91%	48	42	61	31	51
Bunyala	9%	83%	82%	79	43	68	37	55
Buret	25%	85%	81%	46	34	96	81	92
Bushenyi	4%	67%	91%	81	40	47	45	50
Busia	9%	80%	95%	21	48	88	49	88
Busia	2%	79%	87%	109	64	93	90	125
Butere	11%	77%	91%	39	40	45	37	39
Chunya	10%	55%	82%	115	56	73	50	83
Eldoret East	26%	92%	93%	4	28	34	36	11
Gatanga	38%	89%	94%	1	41	34	14	16
Geita	6%	59%	81%	120	83	108	92	133
Gucha	30%	95%	89%	8	43	57	40	54
Gulu	0%	90%	93%	73	59	78	63	100
Hamis	20%	84%	91%	17	37	39	53	45
Ibanda	3%	66%	91%	91	42	52	54	60
Igembe	11%	91%	89%	26	45	44	24	36
Ijara	19%	94%	79%	44	41	50	154	82
Ilemela	13%	68%	81%	105	87	140	107	135
Iment South	38%	85%	88%	18	25	29	23	1
Imenti north	36%	95%	89%	5	28	23	14	4
Kabale	2%	56%	94%	75	41	53	59	61
Kakamega Ctrl	14%	80%	88%	52	44	90	39	74
Kakamega North	14%	79%	79%	85	35	44	45	34
Kaloleni	34%	95%	72%	31	60	59	104	109
Kamuli	0%	74%	92%	95	66	86	110	127
Karagwe	2%	24%	87%	128	65	78	53	99
Kasulu	4%	18%	79%	129	90	77	67	116
Katakwi	0%	88%	95%	64	63	89	84	121
Keiyo	24%	90%	83%	34	28	58	27	23
Kericho	18%	94%	85%	32	28	35	30	6
Kibaale	2%	82%	87%	113	65	107	70	123
Kibaha	7%	35%	90%	102	37	53	58	56
Kibwezi	21%	90%	91%	9	33	37	40	24
Kikuyu	53%	87%	94%	3	35	31	25	8
Kilifi	19%	96%	70%	42	57	59	68	91
Kilombero	2%	43%	91%	106	55	81	80	112
Kilosa	0%	36%	89%	124	53	85	68	108
Kinondoni	6%	48%	92%	77	38	83	120	98
Kisarawe	1%	46%	91%	114	45	41	29	38
Kisii South	14%	84%	84%	58	39	45	42	41
Kisumu West	7%	81%	87%	72	35	38	59	46
Kitui North	19%	95%	91%	7	49	39	36	47
Koibatek	16%	89%	86%	38	32	32	46	19

District name	Performance indicators				School quality indicators			
	Std 3 pass rate	Std 7 pass rate	Enrolment rate	Performance rank (*)	Pupil teacher ratio	Pupil class ratio	Pupil toilet ratio	School quality rank (*)
Kongwa	4%	46%	91%	100	59	91	82	120
Kotido	1%	14%	44%	134	92	92	52	115
Kuria East	10%	83%	84%	70	52	51	66	81
Kyenjojo	2%	78%	90%	93	64	78	65	107
Kyuso	10%	92%	79%	63	36	36	49	31
Lagdera	2%	69%	82%	118	64	38	65	76
Laikipia North	34%	79%	61%	62	38	161	35	65
Lamu	18%	88%	91%	15	32	31	43	17
Lari	17%	59%	93%	22	37	33	13	13
Limuru	23%	66%	87%	50	42	41	78	68
Liwale	0%	16%	79%	135	57	61	50	79
Loitoktok	25%	82%	83%	51	50	46	34	52
Makueni	15%	87%	90%	24	33	37	39	21
Mandera Central	12%	83%	74%	86	51	47	58	73
Manga	27%	91%	89%	11	31	35	31	12
Marakwet	17%	91%	87%	33	30	33	53	29
Masaba	21%	82%	92%	13	31	38	33	15
Masaka	7%	76%	92%	53	49	67	75	96
Maswa	4%	33%	84%	125	54	61	79	97
Mayuge	1%	61%	93%	87	64	99	100	128
Mbeere	35%	94%	92%	2	27	28	17	2
Mbeya Urban	0%	50%	95%	99	40	46	51	53
Mbulu	13%	68%	84%	101	45	62	68	85
Meru south	23%	95%	91%	6	28	25	17	3
Misungwi	4%	34%	91%	108	65	68	53	94
Molo	14%	87%	90%	29	42	45	41	49
Morogoro Rural	1%	25%	80%	133	48	67	66	89
Morogoro Urban	9%	32%	92%	82	49	72	78	101
Moshi Rural	16%	54%	87%	92	30	49	33	25
Moshi Urban	27%	72%	89%	43	41	94	85	106
Moyale	12%	89%	83%	59	56	48	69	86
Mpanda	2%	40%	89%	119	44	90	68	103
Mpwapwa	7%	48%	89%	103	65	87	53	104
Mubende	2%	69%	91%	89	59	76	78	110
Mukono	2%	69%	88%	111	43	65	68	84
Muleba	1%	22%	84%	131	91	83	79	126
Musoma Urban	13%	52%	91%	68	48	86	66	102
Mwala	14%	82%	93%	19	31	49	25	20
Mwanga	1%	17%	89%	127	45	44	28	40
Naivasha	41%	85%	86%	23	44	78	39	64
Nakapiripirit	2%	90%	65%	123	85	78	55	111
Nakasongoria	5%	78%	94%	49	42	55	55	63
Nakuru North	31%	88%	84%	27	36	42	21	22
Nandi Central	17%	87%	83%	54	33	63	39	44
Nandi East	32%	91%	88%	14	28	48	37	26
Nandi North	37%	96%	85%	12	27	35	38	14
Narok North	28%	91%	74%	40	37	52	35	35
Newala	2%	34%	91%	116	78	54	44	80
Ngara	5%	38%	83%	122	69	76	79	118
Njombe	6%	52%	87%	110	65	60	40	75
Nyandarua N.	18%	79%	89%	35	35	33	17	7
Nyeri South	35%	93%	88%	10	33	28	14	5
Pokot North	37%	83%	47%	56	43	93	64	95
Rachuonyo	9%	75%	88%	69	38	63	48	58
Rakai	3%	65%	93%	71	45	69	72	93

District name	Performance indicators				School quality indicators			
	Std 3 pass rate	Std 7 pass rate	Enrolment rate	Performance rank (*)	Pupil teacher ratio	Pupil class ratio	Pupil toilet ratio	School quality rank (*)
Rombo	20%	70%	91%	36	47	68	42	69
Ruiru	27%	80%	84%	45	45	43	29	37
Rukingiri	5%	76%	92%	60	70	80	64	113
Samburu Central	18%	66%	65%	96	34	35	45	28
Samburu North	8%	97%	69%	65	34	31	49	27
Samburu East	5%	95%	56%	88	35	38	57	43
Shinyanga Rural	1%	27%	82%	132	71	76	82	122
Singida Rural	1%	39%	88%	126	68	66	48	87
Singida Urban	4%	44%	84%	121	39	74	53	70
Sotik	12%	85%	91%	25	35	57	60	57
Suba	24%	90%	85%	28	36	38	47	32
Sumbawanga	11%	45%	92%	67	70	101	54	117
Taita	31%	86%	89%	16	38	35	25	18
Tana River	17%	92%	66%	57	41	40	70	62
Tanga	6%	29%	93%	84	48	142	59	105
Taveta	23%	88%	86%	30	46	45	59	66
Tharaka	20%	76%	89%	37	29	29	39	9
Thika West	19%	77%	88%	47	32	66	38	42
Trans Mara	6%	81%	80%	104	41	83	53	77
Trans Nzoia East	16%	91%	84%	41	37	57	30	33
Urambo	4%	52%	92%	80	86	110	69	129
Wajir East	7%	92%	84%	55	48	42	63	67
Wajir North	21%	69%	52%	83	43	34	51	48
Wakiso	8%	76%	91%	61	40	58	51	59
Wareng	20%	78%	75%	74	31	35	31	10
West Pokot	24%	98%	84%	20	33	40	43	30
Yumbe	0%	78%	92%	90	54	84	80	114

Note: Kenyan districts in blue, Ugandan districts in green, Tanzanian districts in red.
(*) The two rankings have been constructed by adding the ranking of each of the three underlying indicators, and re-ranking from lowest overall rank to highest overall rank.
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