



# ARE OUR CHILDREN LEARNING?

Lessons from Uwezo learning assessments from  
2011 to 2015







**THE UWEZO INITIATIVE IS SUPPORTED BY:**

**THE WILLIAM AND FLORA HEWLETT  
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## Contact

School Lane 22, Westlands  
P.O. Box 13784-00800  
Nairobi

**t: +254 715 563720 | +254786 563722**  
**e: kenya@uwezo.net**

127 Mafinga Road, off Kinondoni Road  
P.O. Box 38342  
Dar es Salaam

**t: +255 22 266 4301**  
**e: info@twaweza.org**

Naguru Go down, Suwara Road, Plot 77  
PO Box 40163  
Kampala-Uganda

**t: +256393112815 | +256393518443**  
**e:uwezo.uganda@twaweza.org**

## Website

[www.twaweza.org](http://www.twaweza.org)

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Uwezo is part of Twaweza, an independent East African initiative that works on enabling children to learn, citizens to exercise agency and governments to be more open and responsive in Kenya, Tanzania and Uganda. The data for this report were collected between 2011 and 2015 by the Uwezo country teams currently led by Dr Emmanuel Manyasa in Kenya, Dr Mary Goretti Nakabugo in Uganda and Zaida Mgalla in Tanzania. Dr John Mugo, Director of Data and Voice - Twaweza, provided overall leadership and support in preparing this report.

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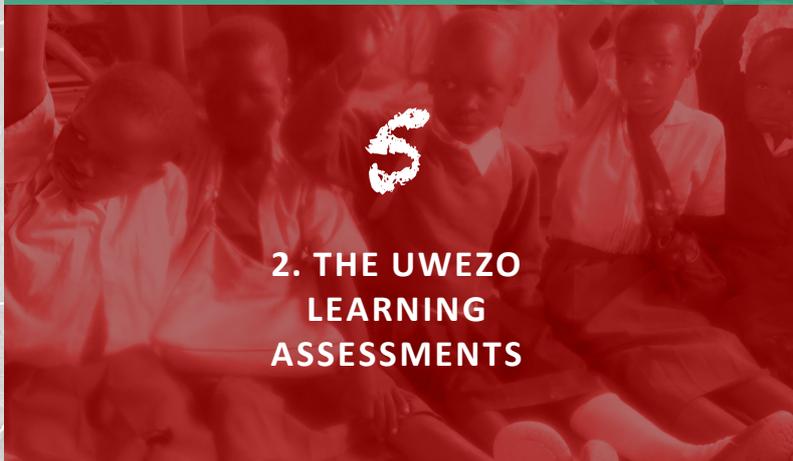
All the data used in the report are drawn from the Uwezo 2015 and earlier national assessments and can be downloaded from [www.twaweza.org](http://www.twaweza.org).

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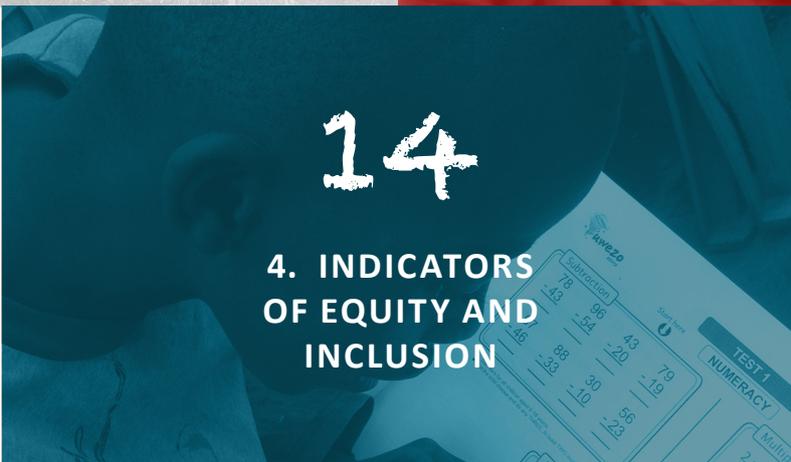
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## 1. INTRODUCTION

### Uwezo Kiswahili Literacy (Tanzania) – Story and Comprehension

Mwaka una miezi kumi na miwili. Machi ni mwezi wa tatu katika mwaka. Mwezi huu hupendwa sana kuliko miezi mingine. Maua huwa na harufu na rangi nzuri. Rangi za maua ni za kupendeza sana. Vipepeo wazuri wanaruka angani na kwenye maua.

Mama huniruhusu kwenda nje kucheza. Ninakimbizana na wenzangu. Mama anachuma maua mazuri kwenye bustani. Tunamwekea katika nywele zake nzuri. Tunakaa kwenye maua na kuimba. Mama hucheka na kufurahi sana.

#### Maswali

1. Katika hadithi uliyosoma wadudu gani wanaruka angani?
2. Kwa nini Mwezi Machi anapendwa Zaidi

This report is based on results from the series of five nationwide Uwezo learning assessments undertaken by Twaweza in Kenya, mainland Tanzania and Uganda over the period from 2011 to 2015. These assessments mobilized thousands of volunteers across all districts of the three countries and collected data on more than 1.5 million children. The assessments are, by a long way, the largest, most comprehensive, independent surveys of households and children ever implemented in the East Africa region. Moreover, as the learning assessments are conducted on an individual basis during household visits, they provide an opportunity to assess learning achievement across the full distribution of children not just those attending educational institutions.

Monitoring of learning achievement is critical. Education is one of the biggest and most important investments undertaken by parents and by government. In Kenya, Tanzania and Uganda, primary school has been free and compulsory since the early 2000s or before. Moreover, numerous commitments have been made to improve children's access to schooling and raise educational standards. More recent interventions in these countries target the improvement of learning outcomes, especially reading in the early grades of primary school. These interventions, implemented by governments with support from development partners, necessarily require regular and rigorous monitoring to gauge their impact. The transparent and independent monitoring of educational outcomes conducted through the Uwezo assessments, therefore, is essential to identify successes and failures and inform changes to educational policies and programs. It is also critical to empower citizens and provide tools through which education systems can be made to deliver.

The year 2015 was historically significant as the deadline for achieving the six Education For All (EFA) goals.<sup>1</sup> The results of the Uwezo assessment for 2015, which was conducted at the end of the school year in all three countries, can therefore be viewed as a snapshot of the status of education in East Africa at the close of the EFA era. At the same time, the results can provide baseline data for measuring progress towards some of the targets of Goal 4 of the recently launched 2030 Agenda for Sustainable Development. In particular, the Uwezo surveys are uniquely placed to contribute data towards monitoring of the indicators for the first target of SDG 4, which aims to “ensure by 2030 that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes”.<sup>2</sup>

In addition to reporting on children's learning outcomes, this report takes stock of the lessons learned from the five rounds of the Uwezo learning assessments from 2011 to 2015 and what changes may be needed to improve future surveys. Specifically, the report seeks to:

1. Highlight the main trends in enrolment rates and learning outcomes over this period (Section 3);
2. Evaluate the extent to which primary education systems in East Africa are equitable and inclusive (Section 4)
3. Identify the main drivers of differences in learning outcomes (Section 5)
4. Present conclusions and reflect on ongoing challenges for the assessments and for education policy in the region (Section 6).

<sup>1</sup> The EFA goals were adopted internationally at the World Education Forum held in Dakar in 2000. The six goals were: Goal 1: Expand early childhood care and education; Goal 2: Provide free and compulsory primary education for all; Goal 3: Promote learning and life skills for young people and adults; Goal 4: Increase adult literacy; Goal 5: Achieve gender parity; and Goal 6: Improve the quality of education. (UNESCO, 2000).

<sup>2</sup> The indicators for Target 4.1 are: Proportion of children and young people: (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex. (Sustainable Development Knowledge Platform, United Nations Department of Economic and Social Affairs accessed at <https://sustainabledevelopment.un.org/sdg4> on 28 February 2017)

## 2. THE UWEZO LEARNING ASSESSMENTS

### Uwezo English Literacy (English) – Story and Comprehension

There was a Fox and a Crow. These friends used to hunt together in Mabira forest. One day they did not go together. Fox was walking but Crow was flying. After hunting Fox had nothing. His friend had some good piece of meat.

Crow wanted to eat alone. He flew to a nearby orange tree. Meat was in his mouth. Fox tricked Crow to sing. When Crow started singing meat fell. This was a nice trick. Fox ate all the meat.

Questions:

1. Who are the friends in the story?
2. Why did the meat fall?

The first Uwezo learning assessments in East Africa were undertaken in 2009/10. Despite being national in scale, the first survey in each country (Round 1) did not cover all regions or districts, and, as such, had a relatively small sample size. Since 2011, however, the surveys have typically incorporated much larger samples, having the objective of being statistically representative at the district level. Until 2015, the surveys were undertaken annually in each country.

This report analyzes data from the five surveys in each country undertaken from 2011 to 2015 (Rounds 2 to 6). Table 1 summarizes the coverage of these five rounds in terms of the number of children, households and districts covered in each survey.<sup>3</sup> Over the five rounds, almost 700,000 households were visited and data collected on more than 1.5 million children of school age. The coverage of districts was also extensive with the exception of the assessments in Tanzania and Uganda in 2014 when smaller samples were used. As a result, children's test performance can be examined at both national and sub-national levels either for individual years or over time.

The Uwezo surveys capture data on all children of school age up to 16 years (i.e., 6-16 years in Kenya and Uganda; 7-16 years in Tanzania), who are resident in sampled households at the time of the survey. The survey enumeration areas (villages in rural areas/streets in urban areas) and households within each district are selected randomly following established survey design practice. The collected data are also cleaned, based on a single data management protocol.<sup>4</sup> Missing observations on test scores are imputed based on a multiple regression method to reduce systematic bias.

Within each sampled household, Uwezo volunteers collected data on household characteristics (e.g., mother's level of education) as well as the current educational status of each child of school age. In addition, a set of short literacy and numeracy tests are administered to each child. All Uwezo tests are set according to the Standard 2 level curriculum for each country, i.e., to the level of literacy and numeracy that children can be expected to attain after completing two years of full-time primary education. Thus, assuming education quality standards are maintained, one would expect (most) pupils enrolled in Standard 3 or above to be able to correctly answer all the test questions.

In the literacy tests, children are asked to undertake reading tasks of increasing difficulty. They are asked to: read letters (or letter sounds) from the alphabet, read words, read a paragraph, and read a short story. Those that are able to read the story are asked to answer two comprehension questions. In this report, assessment results are presented as test pass rates. For literacy, the test pass rate refers to the proportion of children who were able to read the Standard 2 level story in any of the languages assessed. English literacy was tested in all three countries. Kiswahili literacy was assessed in Kenya and Tanzania, while literacy in four to seven local languages was tested in some regions of Uganda in specific survey rounds.

The numeracy test is structured and administered in a similar fashion. Children are asked to undertake numerical tasks of increasing difficulty. These range from basic number recognition, comparison of numbers, and the operations of addition, subtraction, multiplication, and, in Kenya and Uganda, division. The pass rate for the numeracy test is assessed differently across the three countries due to differences in the Standard 2 curriculum in each country. For Kenya and Uganda, the pass rate represents the proportion of children who are able to complete all numerical tasks up to division level. For Tanzania, the pass rate represents the proportion of children who are able to complete all numerical tasks up to multiplication level, as division is covered later in the Tanzanian curriculum.

The tests are necessarily slightly different between the three countries given differences in national curricula. However, the tests are very similar at these lower skill levels. Despite the differences in tests, the pass rates are comparable across countries. Additionally, in each country, different literacy and numeracy tests have been used in each round of the surveys in order to avoid possible contamination from repetition. Changes in the content of the tests inevitably introduce additional

noise or non-sample error into the data. However, two important measures—the Type-Token Ratio for all languages, and the Flesch-Kincaid Readability Test for English—are applied to ensure comparability in test difficulty over the years.

**TABLE 1: SUMMARY OF COVERAGE OF UWEZO SURVEY ROUNDS**

COUNTRY	YEAR	ROUND	DISTRICTS <sup>5</sup>	HOUSEHOLDS <sup>6</sup>	CHILDREN <sup>7</sup>
KENYA	2011	2	123	53,522	125,661
	2012	3	155	64,909	145,564
	2013	4	155	62,089	135,109
	2014	5	154	59,870	129,429
	2015	6	153	58,991	130,653
	<b>Total</b>	<b>2 - 6</b>	<b>-</b>	<b>299,381</b>	<b>666,416</b>
TANZANIA	2011	2	132	57,945	110,435
	2012	3	126	56,106	105,352
	2013	4	131	52,808	104,162
	2014	5	45	16,013	32,694
	2015	6	133	54,327	112,455
	<b>Total</b>	<b>2 - 6</b>	<b>-</b>	<b>237,199</b>	<b>465,098</b>
UGANDA	2011	2	79	35,331	88,373
	2012	3	80	34,667	92,188
	2013	4	80	34,013	87,339
	2014	5	28	11,670	28,147
	2015	6	112	42,058	99,617
	<b>Total</b>	<b>2 - 6</b>	<b>-</b>	<b>157,739</b>	<b>395,664</b>
<b>EAST AFRICA</b>	<b>Total</b>	<b>2 - 6</b>	<b>-</b>	<b>694,319</b>	<b>1,527,178</b>

Notes: i) In 2014, a smaller sample was collected in Uganda and Tanzania; ii) In 2014 and 2015, the Uganda and Tanzania district samples include newly created districts. The new districts were created through the administrative division of existing districts.

Source: Calculated from Uwezo data 2011-2015.

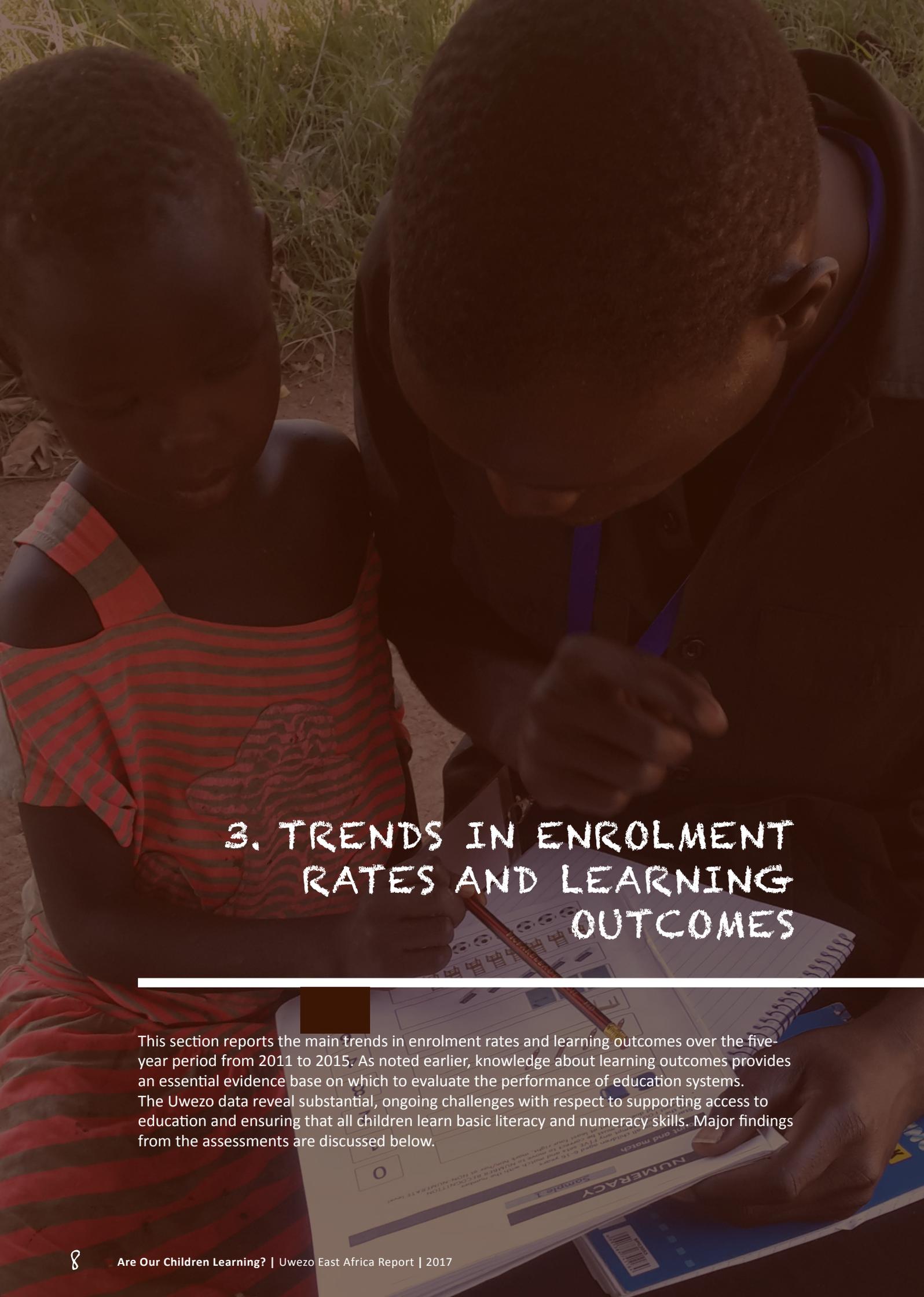
<sup>3</sup> The number of districts for Tanzania in this analysis is based on the 2012 sampling frame. Therefore, the number of districts listed in Table 1 may differ from the actual number of districts that were surveyed. In order to generate a district level profile (2011-2015) for different indicators, the recently created districts for Tanzania are collapsed back to their parent districts that existed in 2012.

<sup>4</sup> For this reason, the results reported here may be slightly different to results reported in previous regional and national reports.

<sup>5</sup> The number of districts for Tanzania in this table is based on the 2012 sample frame and may differ from the actual number of districts that were surveyed.

<sup>6</sup> The number of households is based on all households that have at least one child aged 6-16 in Kenya and Uganda and 7-16 in Tanzania.

<sup>7</sup> Total number of children aged 6-16 in Kenya and Uganda and 7-16 in Tanzania.



### 3. TRENDS IN ENROLMENT RATES AND LEARNING OUTCOMES

This section reports the main trends in enrolment rates and learning outcomes over the five-year period from 2011 to 2015. As noted earlier, knowledge about learning outcomes provides an essential evidence base on which to evaluate the performance of education systems. The Uwezo data reveal substantial, ongoing challenges with respect to supporting access to education and ensuring that all children learn basic literacy and numeracy skills. Major findings from the assessments are discussed below.

# FINDING 1

On average, enrolment rates are generally high in all three countries, but emerging evidence indicates that fewer children are being enrolled in school.

In each country, enrolment rates are generally high. As shown in Figure 1—which plots the share of children at each age that were reported to be enrolled in some form of education (i.e., pre-school, primary school or secondary school)—over 90% of school-aged children in Kenya, over 85% in Uganda, and over 80% in Tanzania were enrolled in school in 2015. This significant improvement in children’s access to school has been achieved in a relatively short period. Enrolment rates in the 1990s were much lower.

In general, the data show that children tend to enter school late for their age and dropout rates increase as children get older. However, enrolment rates in Kenya remain considerably higher among older children compared with Uganda and Tanzania. In 2015, more than 90% of 16 year-olds were still in school in Kenya compared with just over 80% in the other two countries.

Differences in dropout rates are also indicated in Figure 1 by the age-level of the peak in enrolment rates as well as the steepness of the subsequent decline. In all countries, the enrolment rates peak at around age 11. Up to this age, the positive slope of the enrolment curves indicate that more children are starting school (albeit late) than are dropping out. Conversely, when the enrolment curves decline following their peaks this indicates that more children are dropping out than entering school (for the first time). The steeper declines in enrolments in Tanzania and Uganda, occurring from age 12, roughly coincides with the expected progression of children to upper levels of primary school and/or completion of primary school. The higher drop-out rates at these ages, therefore, indicate that this progression is particularly problematic in these two countries. At the same time, these declines in school enrolment coincide with the ages at which children are able to contribute on a more independent basis to household labour, including domestic tasks. Thus, the higher dropout rates may reflect household-level decisions to trade off education against work.

**FIGURE 1: RATES OF ENROLMENT IN ANY TYPE OF EDUCATION, BY AGE OF CHILD, 2011 AND 2015**



Notes: Enrolment includes pre-school, primary and secondary school. Lines '2011' and '2015' refer to results for survey Rounds 2 and 6, respectively. Curves for each survey round are smoothed fits, based on a fractional polynomial smoother.

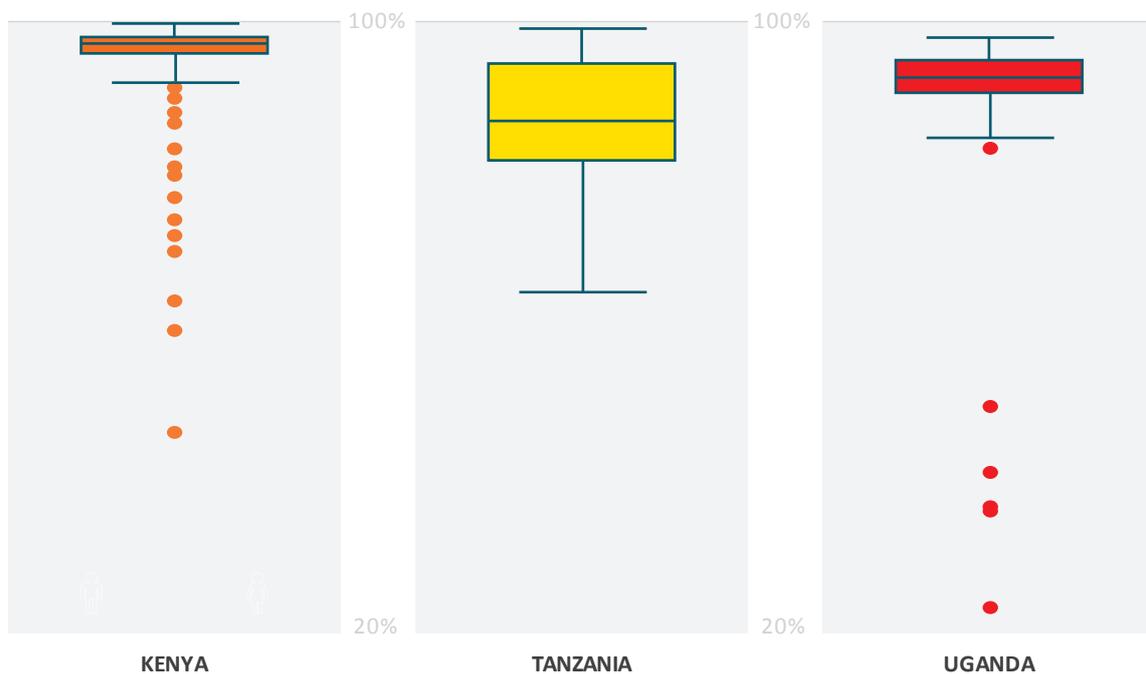
Source: Calculated from Uwezo data for 2011 and 2015.

The trend in enrolment rates shown in Figure 1 are also cause for concern. In particular, the changes in position of the enrolment curves between 2011 and 2015, especially in Tanzania and Uganda, indicate a general reduction in enrolment rates over this period. In these countries, a slightly lower proportion of children at each age are now in school compared with 2011. This trend is also found in Kenya, but only for younger children below 10 years of age. Future Uwezo assessments will closely monitor this apparent reversal in the enrolment gains made over the last two decades.

Looking beyond the aggregate enrolment figures, it is important to highlight that there are also persistent pockets of low enrolment in each country. Figure 2 plots the average enrolment rates at the district level in each country in 2015.<sup>8</sup> In Kenya, the mean enrolment rates in almost all districts are above 90%, but there were 9 “outlier” districts (in which 3% of the country’s children live) with average enrolment rates below 80%, i.e., in those districts at least one in five children is not in school. In Tanzania, over three-quarters of districts had mean enrolment rates over 80% but over 30 districts (in which 20% of the country’s children live) had low enrolment rates (below 80%). In Uganda, almost all districts had enrolment rates above 80% but 6 districts (in which 2% of the country’s children live) had enrolment rates below 50%. These results indicate that the challenge of ensuring access to education for every child has not been ‘solved’.

<sup>8</sup> Figure 2 is a box and whisker plot. This type of graph splits up a set of observations, in this case, the mean district enrolment rates, into quartiles. For each country, the bottom of the box represents the first quartile, the top of the box represents the third quartile, and the middle band in the box represents the median value (second quartile) of the observations. Therefore, for each country, 50% of the observations (i.e., the mean enrolment rates in 50% of the country’s districts) lie within the range indicated by the top and bottom of the box. The vertical lines extending from the top and bottom of the box (the whiskers) indicate the range of most observations below the first quartile and above the third quartile. Individual points below the lower whisker (or above the higher whisker) represent outlier districts, in which the enrolment rates are much lower (or much higher).

**FIGURE 2: BOX AND WHISKER PLOTS OF DISTRICT-LEVEL MEAN ENROLMENT RATES IN ANY TYPE OF EDUCATION, BY COUNTRY, 2015**



Notes: Enrolment includes pre-school, primary or secondary school. The unit of observation is the average rate of enrolment among children aged 6-16 years in each district.

Source: Calculated from Uwezo data 2011 and 2015.

# FINDING 2

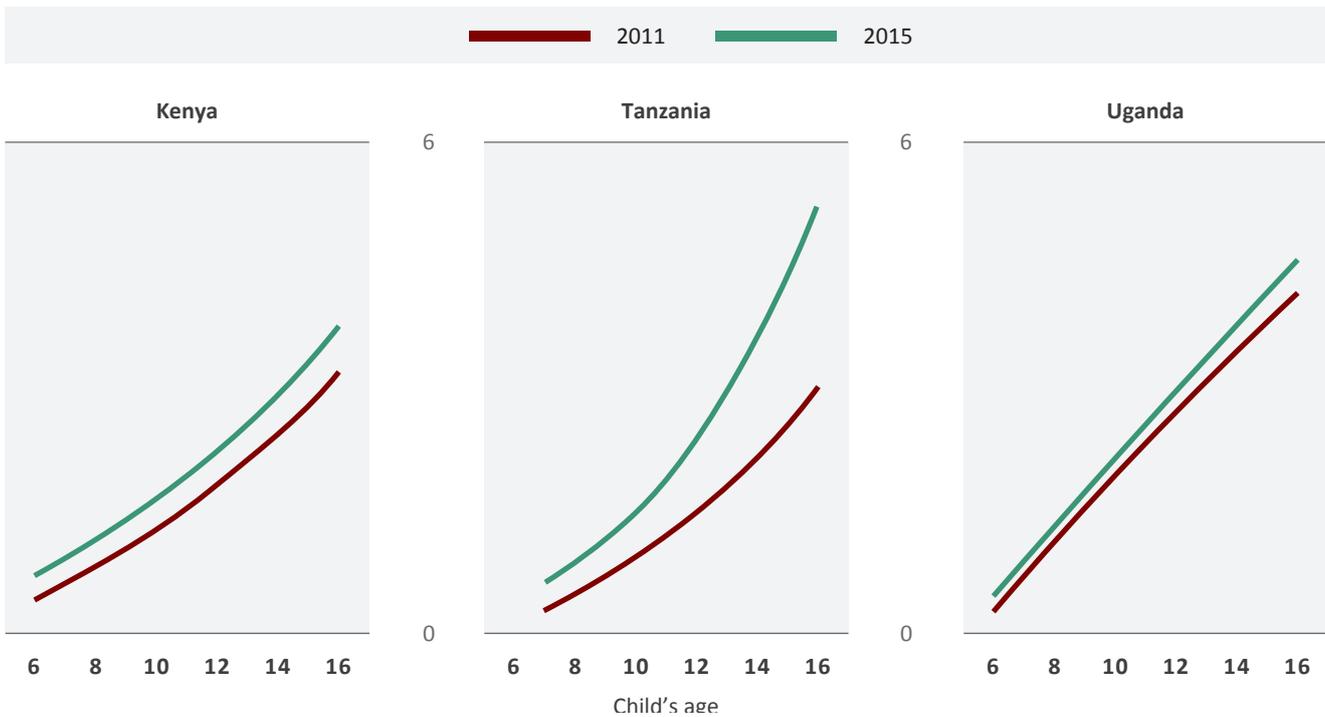
The gap between expected and actual years of schooling is large, and is widening in all countries.

Difficulties in sustaining access to a complete education can reveal themselves in two ways: either children never attend school, or, if they do attend school, they fail to progress to higher grades. Taken together, these two difficulties mean that a gap opens up between the expected grade (Standard) level that a child should be attending given their age and the actual grade that the child is enrolled in (or, in the case of a child who has dropped out, the highest grade that s/he was enrolled in). For instance, in Kenya, children aged 6 years should attend Standard 1, children aged 7 years should attend Standard 2, and so on. Thus, a child in Kenya aged 8 years who is enrolled in Standard 1 can be considered to be two years behind.

Figure 3 plots the estimated gap between the expected and actual years of schooling by age for each country based on Uwezo data for 2011 and 2015. As anticipated, the estimated gap rises with age as children fall further behind or they drop out of school. Two points stand out from the figure. First, as noted in previous Uwezo reports, the magnitude of the gap is cause for serious concern. For example, by age 10, the average child in the region is at least one grade behind. Moreover, the gap is particularly high in Uganda, likely driven by a combination of late entry and grade repetition.

Second, the gap appears to be widening over time. In Figure 3, the curves for all three countries for 2015 lie above the curves for 2011, especially so in Tanzania. In part this is simply a reflection of weakening rates of enrolment, as noted above. However, it also implies that the lower rates of enrolment are not being offset by higher rates of progression among those children remaining in school. Overall, the enrolment data captured by Uwezo reinforces the point that getting children into school and then ensuring they progress steadily through to higher grades continues to be a challenge.

**FIGURE 3: GAP BETWEEN EXPECTED YEARS OF EDUCATION AND ACTUAL YEARS OF EDUCATION, 2011 AND 2015**



Notes: (i) Expected years of education is the correct grade-for-age, assuming normal school progression; (ii) Actual years of education is the highest grade in which the child has been or is enrolled; (iii) The units on the y-axis measure the gap in years between expected and actual years of education attended. (iv) The curves for each survey round are smoothed fits, based on a fractional polynomial smoother.

Source: Calculated from Uwezo data for 2011 and 2015.

## FINDING 3

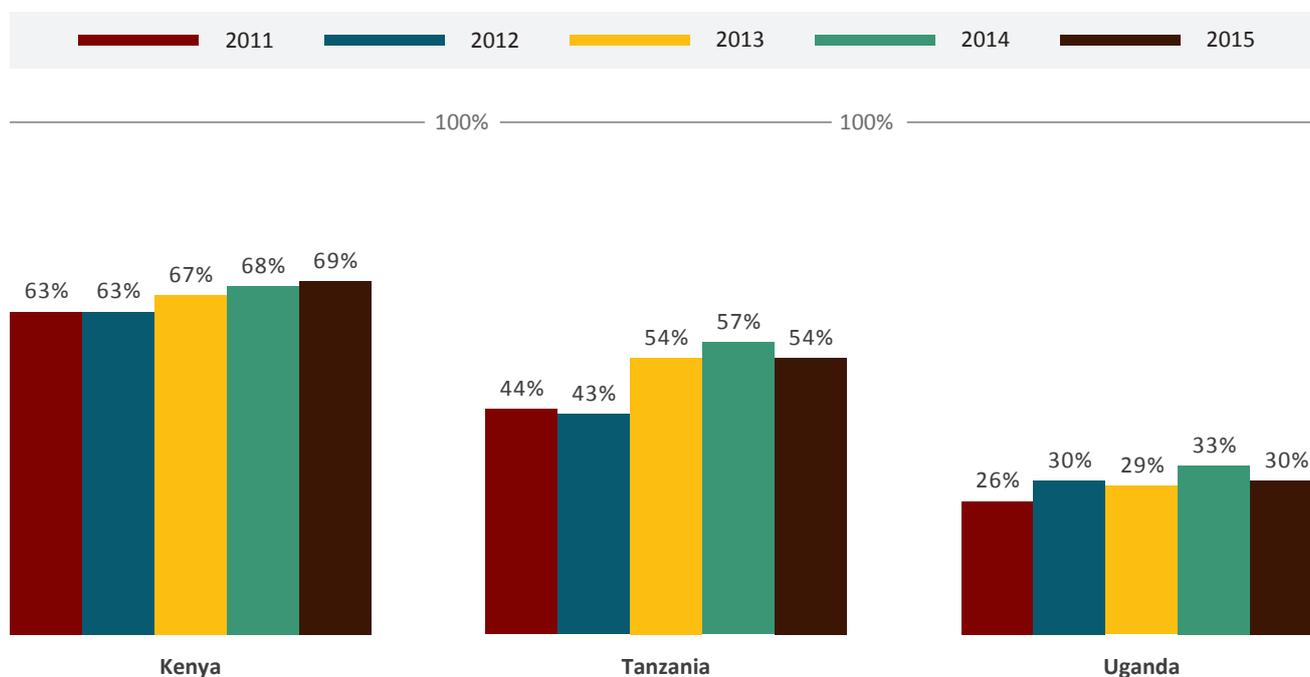
Literacy and numeracy skills are generally low, vary between countries, and show no clear signs of progress over the last five years.

Data on children's learning outcomes from the five rounds of the Uwezo assessment from 2011 to 2015 reveal a disturbing gap in educational quality. For example, among all children aged 9-13 years<sup>9</sup> assessed in 2015, 31% in Kenya, 46% in Tanzania and 70% in Uganda were unable to pass the literacy test in any of the languages assessed (see Figure 4). Pass rates on the numeracy test similarly show that significant proportions of children in each country were unable to complete Standard 2 level numerical tasks (see Figure 5). Moreover, these results are not driven to any large extent by the test performance of out-of-school children. A similar pattern of test performance emerges among children in Standard 3 i.e. school-going children.

Figures 4 and 5 also show very large differences in learning outcomes between children from the three countries. In particular, test pass rates in Uganda are persistently low; only 30% of children aged 9-13 years passed the literacy test in any of the languages assessed.<sup>10</sup> This finding holds despite robust rates of enrolment. This suggests that there may be large differences in school quality and/or parental support to education in Uganda compared with Kenya and Tanzania.

Results further indicate no clear pattern of improvement or deterioration in children's learning outcomes over time. In literacy, the trend is generally positive, with the largest increment in Tanzania, and lowest movement in Uganda. Improvements, however, are both erratic and slow. Numeracy trends present a very different story, with some progress in Kenya and Uganda, but a downward trend in Tanzania. This deterioration of numeracy outcomes in Tanzania warrants further scrutiny. Overall, the assessments have found no clear evidence of major improvements in the quality of primary education since 2011.

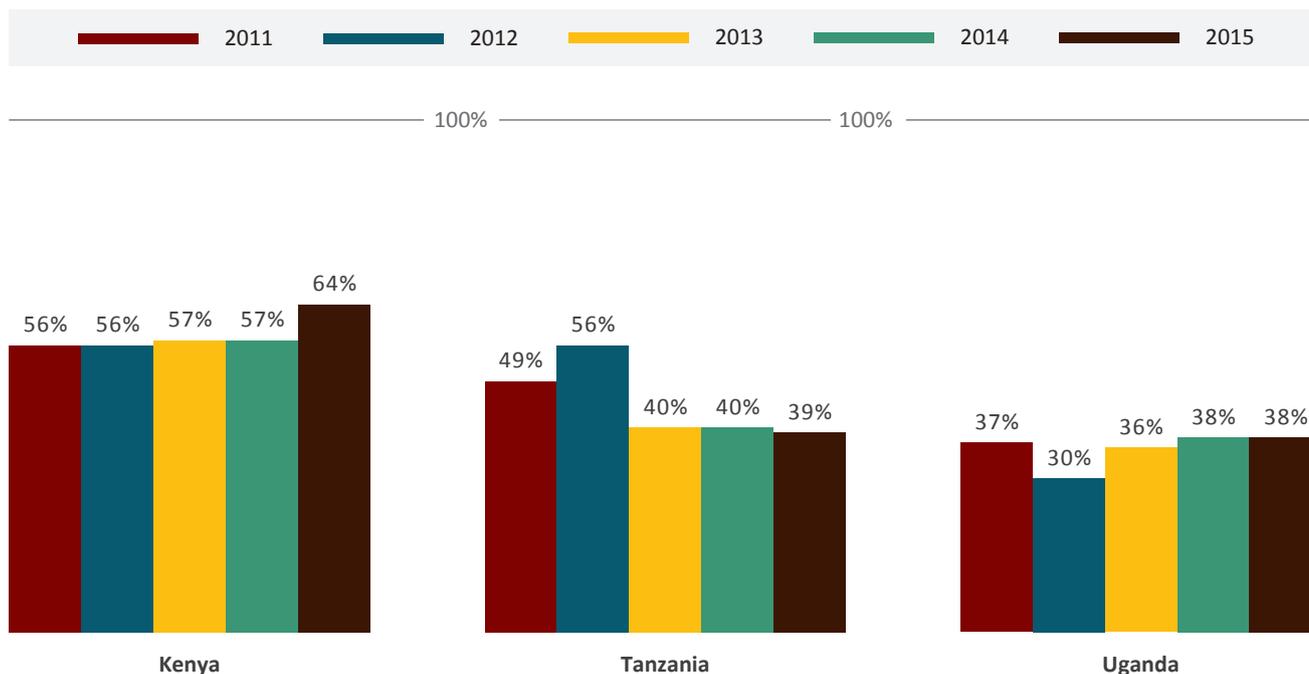
**FIGURE 4: PASS RATES ON THE UWEZO LITERACY TESTS AMONG CHILDREN AGED 9-13 YEARS, BY SURVEY ROUND, 2011-2015**



*Notes: The literacy pass rate refers to the proportion of children who were able to read the short story in any of the languages assessed.*

*Source: Calculated from Uwezo data for 2011 to 2015.*

**FIGURE 5: PASS RATES ON THE UWEZO NUMERACY TEST AMONG CHILDREN AGED 9-13 YEARS, BY SURVEY ROUND, 2011-2015**



Notes: The numeracy pass rate refers to the proportion of children who achieved the highest competency level in the Uwezo numeracy test, i.e. completed all numerical tasks up to division in Kenya and Uganda, and up to multiplication in Tanzania.

Source: Calculated from Uwezo data for 2011 to 2015.

<sup>9</sup> This age range corresponds to the third and final years of primary education meaning that the children in this group should have completed at least three years of schooling but still be in primary school.

<sup>10</sup> For many children, English is neither the language of instruction nor is it spoken at home. As a result, literacy skills are often least strong in English. In all countries, only a minority of children had demonstrably higher literacy skills in English compared with the other language assessed, i.e., Swahili in Kenya and Tanzania or a local language in Uganda. Thus, in Tanzania and Kenya the pass rates in the literacy tests are mainly capturing children's proficiency in Kiswahili. To give a sense of this, Figure A1 in Appendix A plots the share of children who achieved a higher proficiency level in English (denoted "Better in English") or who achieved the same proficiency level in English as they did in the other language tested during the survey ("Same as in English").

## 4. INDICATORS OF EQUITY AND INCLUSION

The previous section focused on aggregate trends in children's access to education and learning outcomes. These are crucial metrics but they often hide significant educational disparities *within* each country, particularly between population sub-groups. To put it crudely, education concerns individuals not averages. As such, it is equally or more important to scrutinize the extent to which there may be differences in educational attainment (i.e., an attainment or achievement gap) between children with different backgrounds and economic opportunities and whether these disparities persist over time.

Therefore, this section looks at the differences in children's literacy and numeracy skills by: 1) sex of the child; 2) household wealth; 3) type of school attended; and 4) geographic location. Again, the analysis focuses on all children aged 9-13 years (whether enrolled in school or out of school). For simplicity, data are pooled from the five rounds of the assessment from 2011 to 2015. The findings, which are presented below for each of the four domains analyzed, point to significant and persistent educational inequalities in each country.

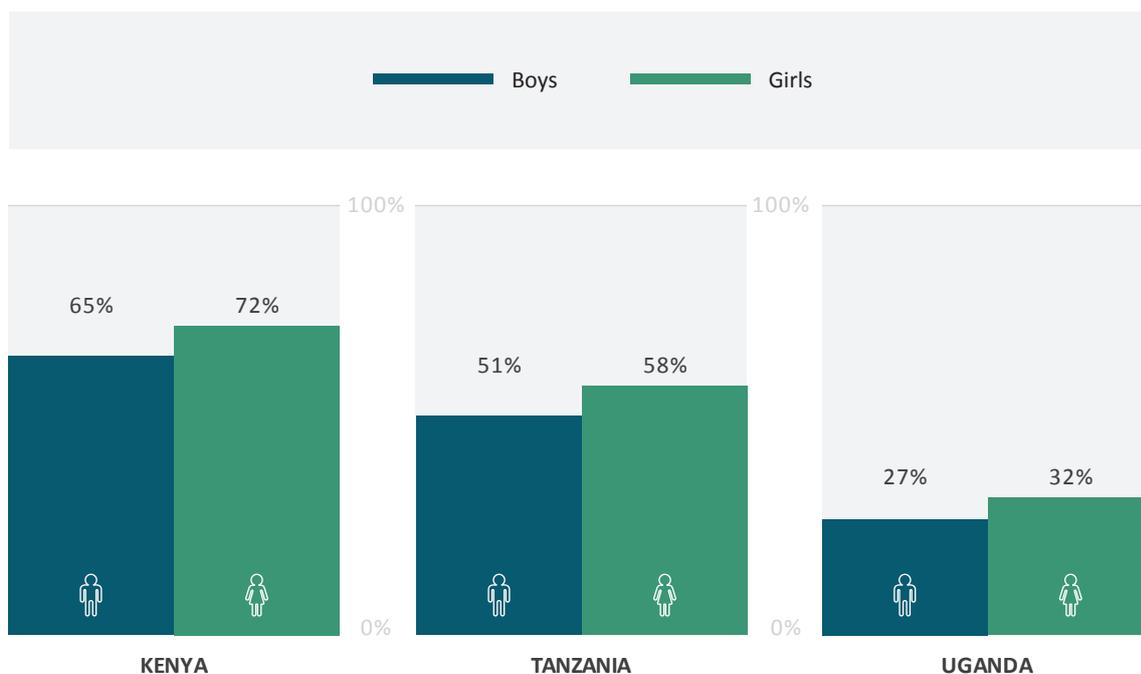
# FINDING 1

On average, girls tend to outperform boys on the Uwezo literacy and numeracy tests, but this is not consistent across all locations within each country.

Historically, there were major concerns in the region around the lower attendance and completion rates of girls in primary school. However, present evidence suggests that, following concerted national efforts, gender inequities have been largely addressed at primary school level. As illustrated in Figures 6 and 7, girls outperformed boys in the literacy and numeracy tests in all three countries. In general, the attainment gaps by gender are wider in literacy than numeracy. At the same time, the attainment gap is widest in Kenya and narrowest in Uganda.

However, national averages tend to mask substantial regional variations. Uwezo data reveal large gaps in specific regions in each country where girls remain excluded from education, notably the arid regions of Kenya as well as Northern region of Uganda. Targeted measures, therefore, will likely be needed to ensure sub-national gender parity.

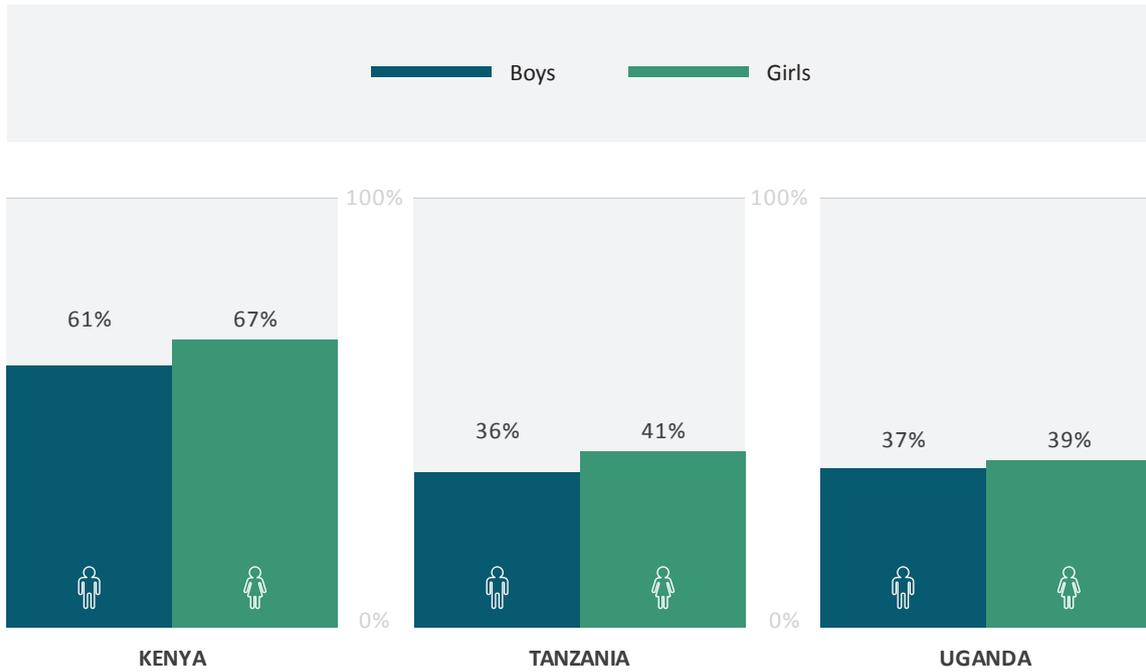
**FIGURE 6: PASS RATES ON THE UWEZO LITERACY TESTS AMONG ALL CHILDREN AGED 9-13 YEARS, BY SEX OF THE CHILD, 2011-2015**



Notes: The literacy pass rate refers to the proportion of children who were able to read the short story in any of the languages assessed.

Source: Calculated from Uwezo data for 2011 to 2015. Data are pooled for all five rounds.

**FIGURE 7: PASS RATES ON THE UWEZO NUMERACY TEST AMONG CHILDREN AGED 9-13 YEARS, BY SEX OF CHILD, 2011-2015**



Notes: The numeracy pass rate refers to the proportion of children who achieved the highest competency level in the Uwezo numeracy test, i.e. completed all numerical tasks up to division in Kenya and Uganda, and up to multiplication in Tanzania.

Source: Calculated from Uwezo data for 2011 to 2015. Data are pooled for all five rounds.

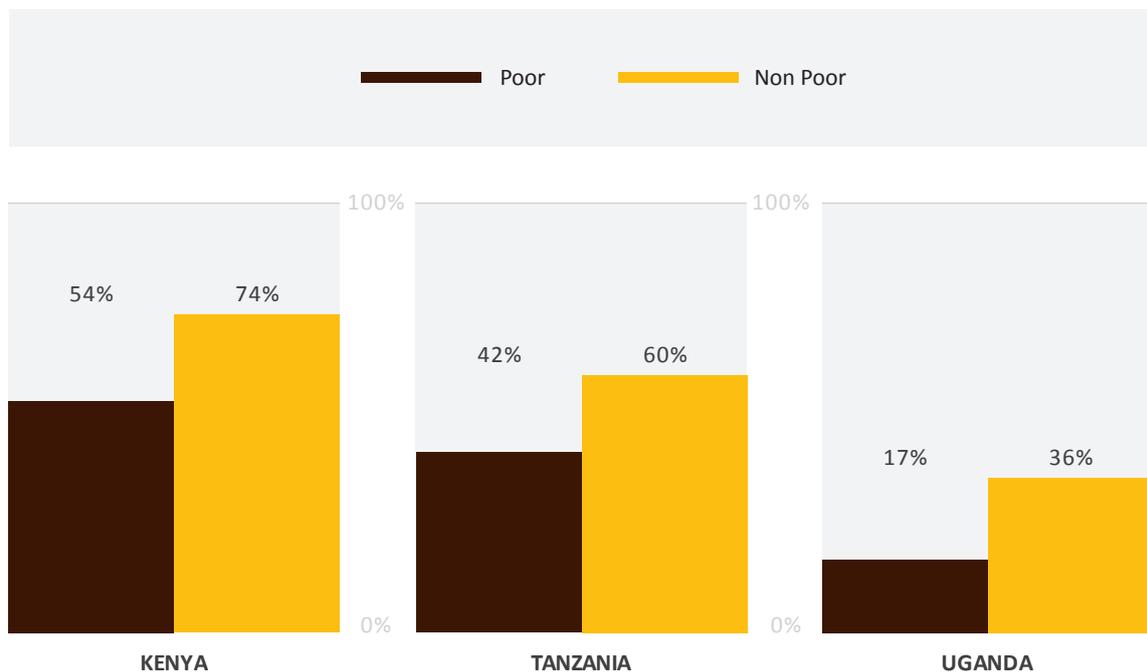
## FINDING 2

Children from poorer households perform consistently lower in the Uwezo tests, in literacy in Tanzania and Uganda

For each round, the Uwezo assessment collects data on the characteristics of the households visited by the survey, including access to water and electricity as well as ownership of various assets. To assess the effect of household wealth on learning outcomes, households were categorized as “non-poor” if they met at least three of the following six criteria: 1) access to clean water (in the home); 2) access to electricity; 3) owns a mobile phone; 4) owns a radio; 5) owns a TV; and/or 6) owns a means of transport (bicycle, motorbike or car). Households that met fewer than three of the criteria were categorized as “poor”.

Figures 8 and 9 plot the pass rates in the literacy and numeracy tests, respectively, among all children aged 9-13 years, disaggregated by household wealth category. The data indicate that the attainment gaps between children living in “non-poor” households and children living in “poor” households are significant. On the literacy tests, the difference in pass rates in each country is around 20 percentage points. On the numeracy tests, the gap is 16 percentage points in Uganda and Tanzania, and 19 percentage points in Kenya. The larger pass rate gap in literacy is noteworthy, and echoes a growing global concern. Literacy development is more prone to influence by background factors, and this disadvantages children from poorer backgrounds. Thus, promoting early literacy and numeracy development is necessary to ensure the equalization of opportunity in learning for all.

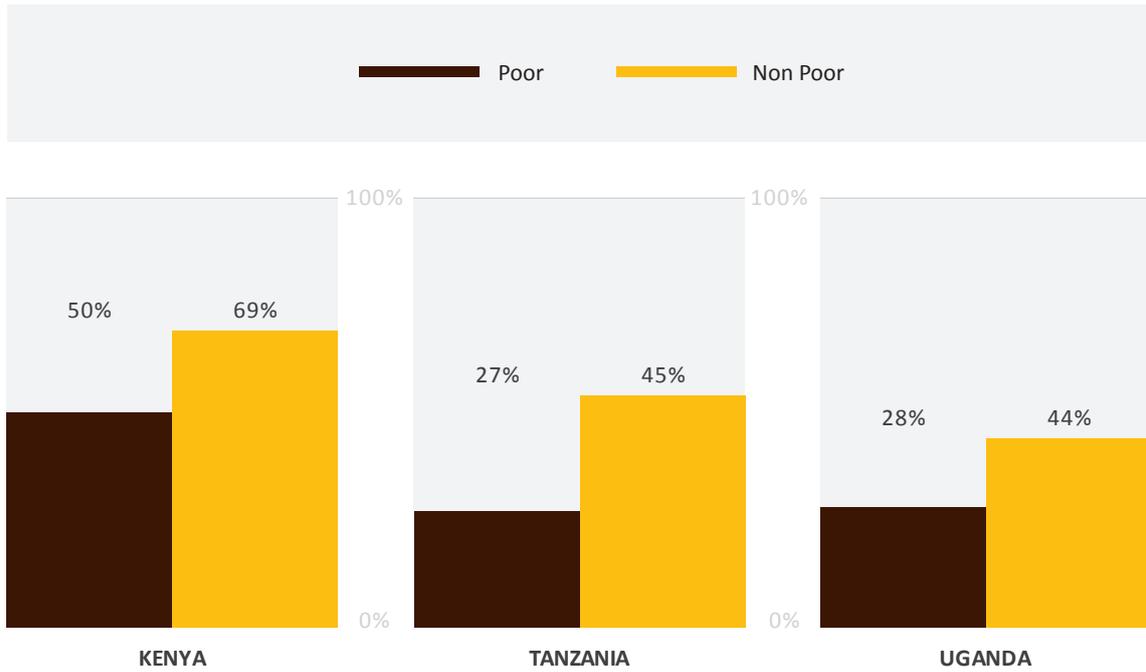
**FIGURE 8: PASS RATES ON THE UWEZO LITERACY TESTS AMONG CHILDREN AGED 9-13 YEARS, BY HOUSEHOLD WEALTH CATEGORY, 2011-2015**



Notes: The literacy pass rate refers to the proportion of children who were able to read the short story in any of the languages assessed.

Source: Calculated from Uwezo data for 2011 to 2015. Data are pooled for all five rounds.

**FIGURE 9: PASS RATES ON THE UWEZO NUMERACY TEST AMONG CHILDREN AGED 9-13 YEARS, BY HOUSEHOLD WEALTH CATEGORY, 2011-2015**



*Note: The numeracy pass rate refers to the proportion of children who achieved the highest competency level in the Uwezo numeracy test, i.e. completed all numerical tasks up to division in Kenya and Uganda, and up to multiplication in Tanzania.*

*Source: Calculated from Uwezo data for 2011 to 2015. Data are pooled for all five rounds.*

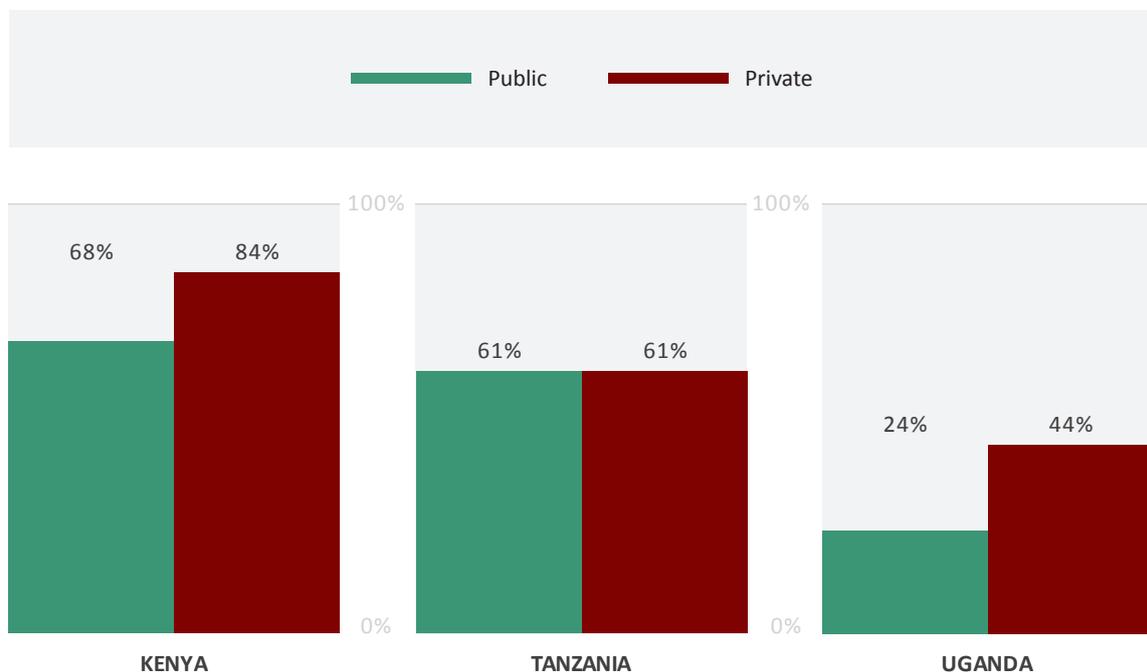
# FINDING 3

Children attending private schools outperform children attending government schools, and the difference is more pronounced in literacy.

The existence of an attainment gap between government and private schools is found in many countries, i.e., children attending private schools tend to perform better on academic tests. A relevant issue is not whether such a gap exists, but rather whether the gap only reflects differences in wealth (and/or parental education) or actually captures differences in the quality of education provided. This issue is contested and cannot be fully resolved here.

Nonetheless, some comments can be drawn from the Uwezo data. Analysis confirms the existence of a private-government school attainment gap in two countries (see Figures 10 and 11). For Kenya and Uganda, the gaps in children's learning outcomes by type of school attended are comparable to the gaps by household wealth status presented earlier. This likely confirms the sorting effect established in the literature, in that children from wealthier backgrounds are more likely to attend private schools, and vice versa. However, this finding is not supported by the Uwezo data for Tanzania, where no difference in learning outcomes was found between private and public schools. While the proportion of children attending private schools in Tanzania has grown tremendously over the last few years (from 2.6% of pupils in 2011 to 14.3% in 2015), it seems possible that the growth of private schooling in Tanzania is being driven by factors other than household wealth. At the same time, this finding warrants further scrutiny of the quality of private schools in Tanzania, especially in regard to accountability and resourcing levels.

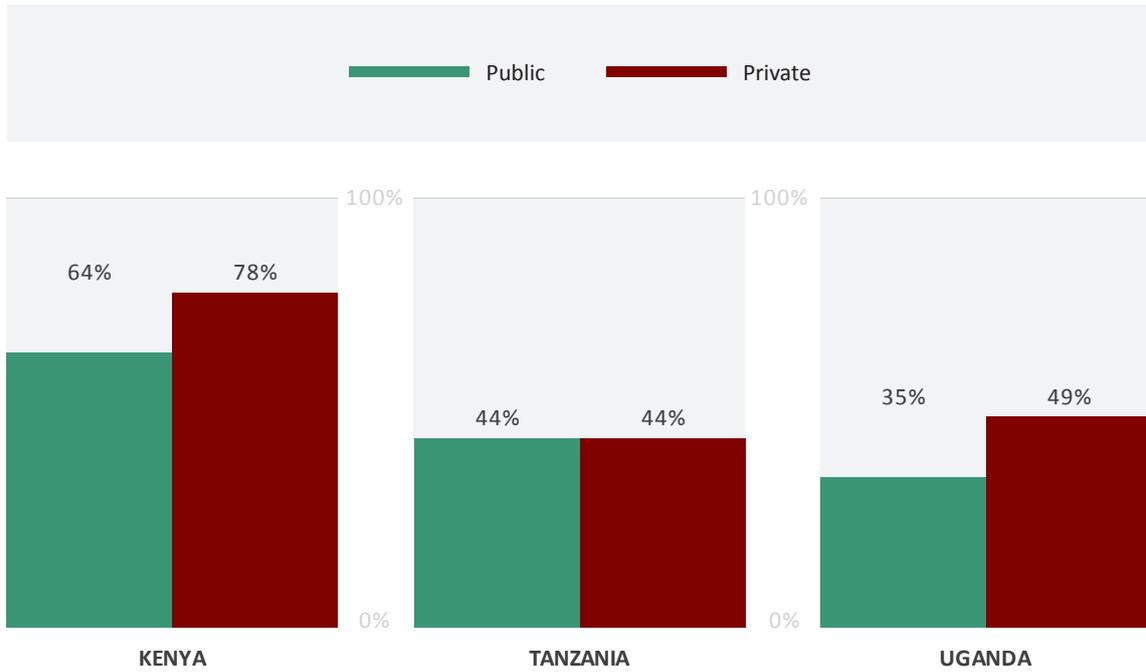
**FIGURE 10: PASS RATES ON THE UWEZO LITERACY TESTS AMONG CHILDREN AGED 9-13 YEARS, BY TYPE OF SCHOOL ATTENDED, 2011-2015**



Notes: The literacy pass rate refers to the proportion of children who were able to read the short story in any of the languages assessed.

Source: Calculated from Uwezo data for 2011 to 2015. Data are pooled for all five rounds.

**FIGURE 11: PASS RATES ON THE UWEZO NUMERACY TEST AMONG CHILDREN AGED 9-13 YEARS, BY TYPE OF SCHOOL ATTENDED, 2011-2015**



*Notes: The numeracy pass rate refers to the proportion of children who achieved the highest competency level in the Uwezo numeracy test, i.e. completed all numerical tasks up to division in Kenya and Uganda, and up to multiplication in Tanzania.*

*Source: Calculated from Uwezo data for 2011 to 2015. Data are pooled for all five rounds.*

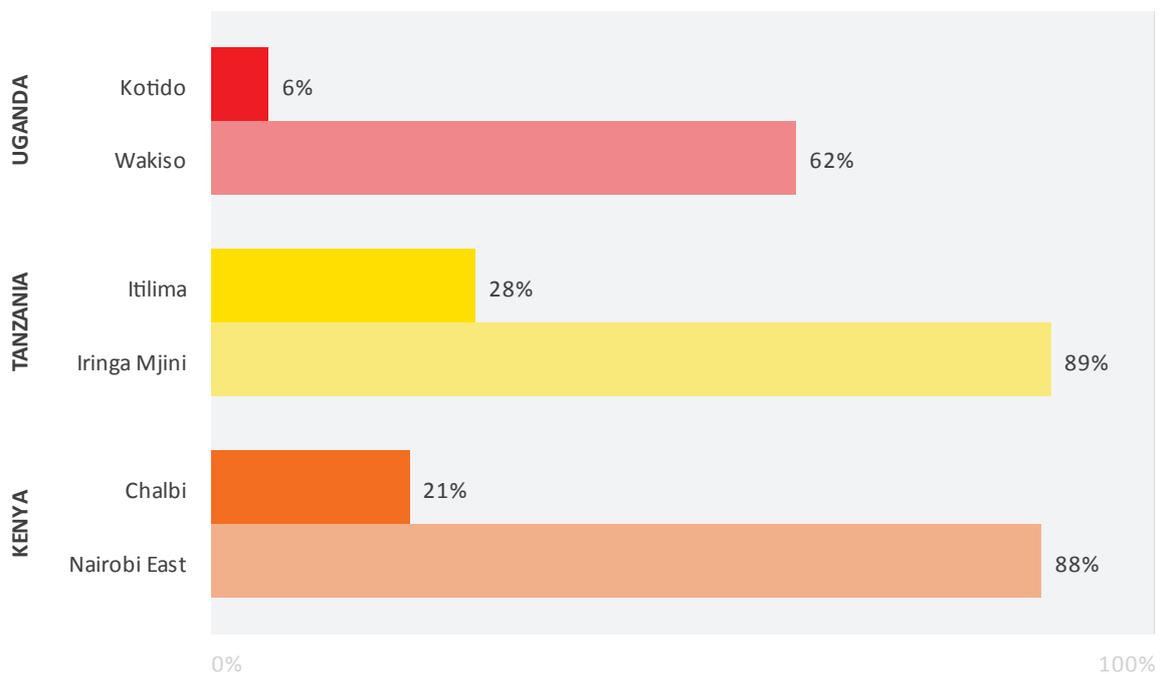
## FINDING 4

There are very large differences in literacy and numeracy skills between children residing in different districts within the same country.

Uwezo data reveal very large attainment gaps in literacy and numeracy between children residing in different districts in each country. To quantify the magnitude of the gap, the average pass rates among all children aged 9-13 years for all districts surveyed in each round were calculated. Figures 12 and 13 then plot the pass rates on the literacy and numeracy tests, respectively, for the highest and lowest ranked districts<sup>11</sup> in each country. In both Kenya and Uganda, the same districts (Chalbi and Kotido) performed 'worst' on both literacy and numeracy. In all three countries, districts with the best outcomes are in urban areas, while those with the worst outcomes are in remote, rural areas of the countries. For example, in Kotido district, which is located in the Northern region of Uganda, less than 10% of children aged 9-13 years can read or do numerical tasks at Standard 2 level.

In all countries—for both the literacy and numeracy tests—the difference in the average pass rates across districts is much larger than the gaps by household wealth status and by type of school attended. The attainment gaps between the highest and lowest ranked districts were around 60%. This suggests that educational disadvantage operates in a complex and cumulative fashion. In achieving SDG 4 in East Africa, therefore, ensuring equity in education is likely to be the biggest hurdle.

**FIGURE 12: PASS RATES ON THE UWEZO LITERACY TESTS AMONG CHILDREN AGED 9-13 YEARS, HIGHEST AND LOWEST PERFORMING DISTRICTS, 2011-2015**

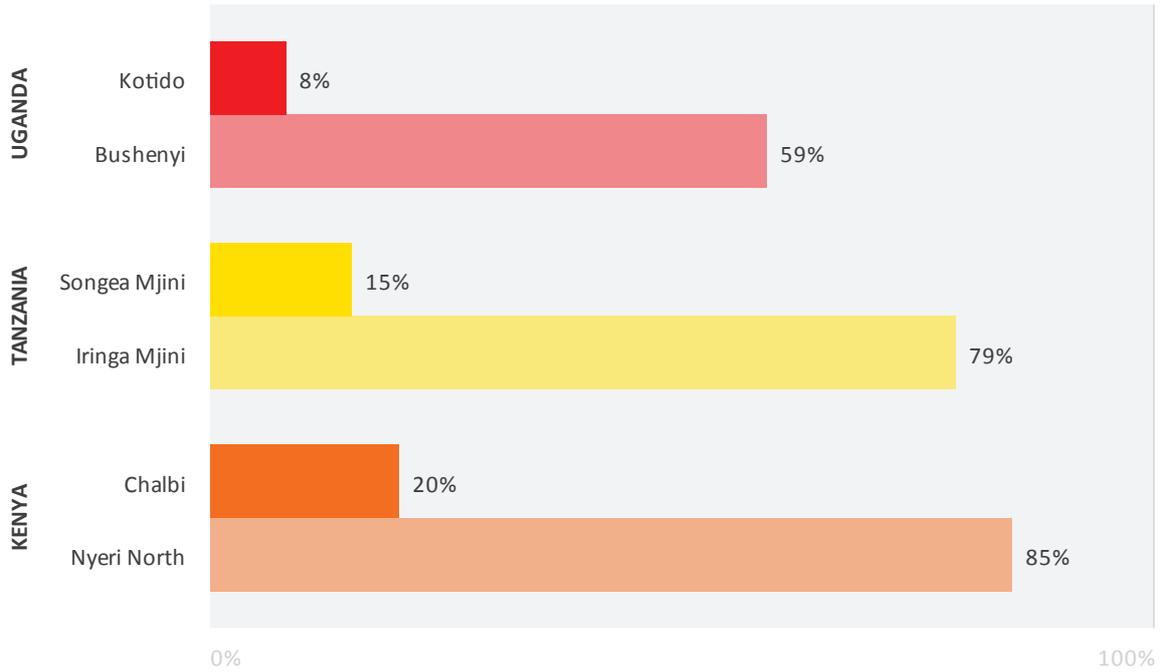


Notes: The literacy pass rate refers to the proportion of children who were able to read the short story in any of the languages assessed. The list of districts for Tanzania is based on the 2012 sampling frame.

Source: Calculated from Uwezo data for 2011 to 2015. Data are pooled for all five rounds.

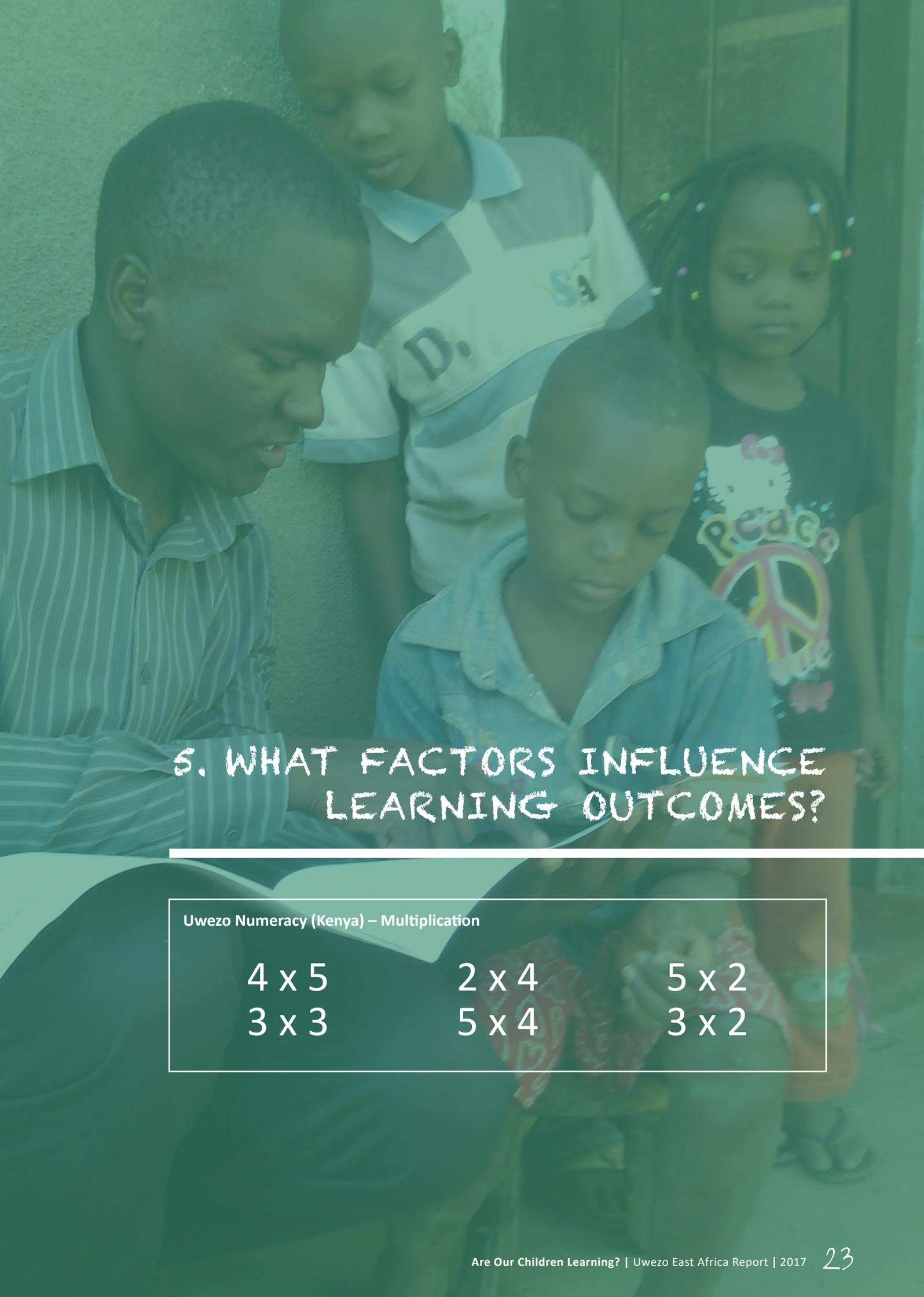
<sup>11</sup> The list of districts for Tanzania in this analysis is based on the 2012 sampling frame. Therefore, the list may differ from the actual number of districts that were surveyed.

**FIGURE 13: PASS RATES ON THE UWEZO NUMERACY TESTS AMONG CHILDREN AGED 9-13 YEARS, HIGHEST AND LOWEST PERFORMING DISTRICTS**



*Notes: The numeracy pass rate refers to the proportion of children who achieved the highest competency level in the Uwezo numeracy test, i.e. completed all numerical tasks up to division in Kenya and Uganda, and up to multiplication in Tanzania. The list of districts for Tanzania is based on the 2012 sampling frame.*

*Source: Calculated from Uwezo data for 2011 to 2015. Data are pooled for all five rounds.*

A photograph of a male teacher in a striped shirt sitting on the floor, looking at an open book. Three children are gathered around him: a boy in a white and blue school uniform with 'D.' and 'SA' on it, another boy in a blue school uniform, and a girl in a black t-shirt with a 'Hello Kitty' and 'Peace' graphic. The entire image has a green tint.

## 5. WHAT FACTORS INFLUENCE LEARNING OUTCOMES?

Uwezo Numeracy (Kenya) – Multiplication

$$4 \times 5$$

$$3 \times 3$$

$$2 \times 4$$

$$5 \times 4$$

$$5 \times 2$$

$$3 \times 2$$

The previous section investigated gaps in children’s educational attainment across a number of separate domains or factors. But as alluded to already, these domains may be inter-related, for example, children from richer households are more likely to attend a private school. Consequently, it is helpful to isolate the unique contribution of each factor on test pass rates. This can be achieved by applying a multivariate logistic regression method in which the children’s test scores are regressed against a range of explanatory variables, such as the sex of the child, different household characteristics, type of school attended, and so on.

As per the analysis in section 4, Uwezo data for the five rounds of the assessment from 2011 to 2015 were pooled. Appropriate adjustments were also made to correct for pass rate effects associated with the child’s age, grade and survey round. This was done by including fixed effects for each combination of age and survey round. The results of the fitted regression analysis for literacy and for numeracy in each country are presented in Table 2.

The table presents the odds ratios (ORs) for different variables for each test in each country. The odds ratio (OR) is a measure of association between an exposure, for example, attendance at a private school, and an outcome, in this case, passing the Uwezo literacy or numeracy tests. It represents the odds that a child will pass a specific test given a particular exposure, compared to the odds of passing the test in the absence of that exposure.

In the current analysis, the reference group used is “*boys who are attending a government school from a poor household and whose mothers have no formal education*”. The odds ratios in each row give the expected odds of a child passing the test if a single characteristic is altered from the characteristics of children in the reference group.

The data in the table can be interpreted as follows. If the odds ratio is greater than 1, it means that the odds of a child (with the different characteristic) passing the test is greater than the odds of a child from the reference group passing the test. If the odds ratio is less than 1, it means that the odds of a child (with the different characteristic) passing a test is lower than the odds of a child from the reference group passing the test. In this way, the influence of specific background characteristics of the children can be more closely assessed.

Thus, in the row for gender in Table 2, the odds ratios by country are given for *girls* attending government schools from poor households and whose mothers have no education. Thus, in Kenya, with all other factors held constant, the odds of a girl passing the literacy test is 22% higher (OR=1.22) than the odds of a boy passing the test. In contrast, the odds of a girl in Uganda passing the numeracy test (OR=0.92) were 8% lower than a boy passing the test.

Similarly, in the row of results for household socio-economic status, the odds of a boy in Tanzania living in a “non-poor” household passing the literacy test (OR=1.72) with all other factors held constant are 72% higher than a boy in Tanzania living in a “poor” household. To take another example, the odds of a boy attending a private school passing the literacy test with all other factors held constant ranges between 29% higher in Tanzania (OR=1.29) and around 130% higher in Kenya (OR=2.3) and in Uganda (OR=2.26).

Several observations can be drawn from the results. First, in keeping with the findings presented in Section 4, the analysis confirms the existence of significant differences in children’s educational attainment based on various background variables. Of the factors examined, the gaps associated with grade, household wealth status, type of school attended, and mother’s education were the largest. Second, these gaps do not disappear when other factors are controlled for.

It is also important to point out that the larger the household size the lower the odds of passing both the literacy and numeracy tests in the three countries. Thus, on average, more advantaged children residing in wealthier households, attending private schools, and born to mothers with at least secondary school education can be expected to perform much better than children from

larger, less well-off households attending government schools and born to mothers with no formal education.

**TABLE 2: MULTIPLE REGRESSION ESTIMATES OF THE CONTRIBUTION OF DIFFERENT FACTORS TO PASS RATES IN THE UWEZO LITERACY AND NUMERACY TESTS, BY COUNTRY, 2011-2015**

FACTOR	LITERACY			NUMERACY		
	KE	TZ	UG	KE	TZ	UG
	ODDS RATIO (SE)					
<b>AGE</b>						
	1.01*** (0.01)	1.04*** (0.01)	0.98 (0.01)	1.06*** (0.01)	1.05*** (0.01)	1.06*** (0.01)
<b>GRADE</b>						
	2.44*** (0.02)	1.83*** (0.01)	2.78*** (0.04)	1.87*** (0.01)	1.74*** (0.01)	2.11*** (0.02)
<b>GENDER (REF: BOYS)</b>						
Girls	1.22*** (0.02)	1.11*** (0.02)	1.08*** (0.02)	1.08*** (0.01)	1.02 (0.02)	0.92*** (0.02)
<b>HOUSEHOLD SOCIO-ECONOMIC STATUS (REF: POOR)</b>						
Non-poor	1.36*** (0.02)	1.72*** (0.03)	1.49*** (0.03)	1.27*** (0.02)	1.61*** (0.03)	1.28*** (0.02)
<b>SCHOOL TYPE (REF: PUBLIC)</b>						
Private	2.3*** (0.06)	1.29*** (0.06)	2.26*** (0.06)	1.76*** (0.04)	1.2*** (0.05)	1.74*** (0.04)
<b>GENDER OF HOUSEHOLD HEAD (REF: MALE)</b>						
Female	1 (0.01)	1.25*** (0.02)	1.18*** (0.03)	1 (0.01)	1.14*** (0.02)	1.08*** (0.02)
<b>MOTHER'S EDUCATION (REF: NO FORMAL EDUCATION)</b>						
Primary	1.09*** (0.02)	1.39*** (0.03)	1.24*** (0.03)	1.25*** (0.02)	1.37*** (0.03)	1.19*** (0.03)
Secondary	1.79*** (0.04)	2.36*** (0.09)	2.25*** (0.09)	1.63*** (0.04)	2.41*** (0.11)	1.6*** (0.06)
<b>HOUSEHOLD SIZE</b>						
	0.99*** (0)	0.99*** (0)	1.01 (0.01)	1.01*** (0)	0.99*** (0)	1.02*** (0)
<b>NO. OF CHILDREN IN THE HOUSEHOLD</b>						
	0.92*** (0)	0.94*** (0.01)	0.94*** (0.01)	0.94*** (0)	0.99 (0.01)	0.95*** (0.01)

Notes: For this analysis, children were given a literacy score of either "0" if they passed any of the Uwezo language tests or "1" if they did not pass any of the tests. Similarly, children were given a numeracy score of either "0" if they passed the Uwezo numeracy test or "1" if they did not pass the test. Cells report the multiple logistic regression odds ratios associated with specific factors. Standard errors are in parentheses.

Source: Calculated from Uwezo data for 2011 to 2015. Data are pooled for all five rounds, correcting for age and survey round effects.



## 6. CONCLUSIONS

Uwezo Numeracy (Kenya) – Division

$$4 \div 2 =$$

$$24 \div 3 =$$

$$18 \div 3 =$$

$$20 \div 2 =$$

$$6 \div 3 =$$

$$10 \div 2 =$$

## THE STATUS OF EDUCATION IN EAST AFRICA

This report takes stock of the lessons learned from the five rounds of the Uwezo learning assessments undertaken across East Africa between 2011 and 2015. Using the data collected on the 1.5 million children tested in Kenya, Tanzania and Uganda over this period, trends in children's access to school and their learning outcomes were examined.

Three main findings can be highlighted. First, evidence is emerging that the rates of enrolment in primary education are beginning to decline across most age groups in all three countries. In other words, the relatively high (average) levels of enrolment that were stimulated by educational policies over the last ten to fifteen years are not being sustained. At the same time, the Uwezo data reveal persistent pockets of very low enrolment with no discernible improvement in the last five years.

Second, learning outcomes across the region are generally low with no clear trends in a positive direction. As such, many children who have completed more than two years of education are still unable to pass literacy or numeracy tests set at the Standard 2 level.

Third, inequalities in learning within and between countries are pronounced. In addition to the general concern that children's level of literacy and numeracy is not as high as desired, results reveal worrying pockets of very low learning achievement. This suggests that a large number of children are being left behind. Some of the gaps in educational attainment are driven by household characteristics, for example, household wealth status, but very large spatial differences in children's educational attainment were also present. These spatially-driven disparities are of sufficient magnitude, even after controlling for the contribution of household characteristics, that policy efforts focusing on disadvantaged children in particular regions merit attention.

## FUTURE DEVELOPMENT OF THE UWEZO ASSESSMENTS

In completing this report, the Uwezo team also took stock of the successes, lessons learned and challenges ahead in conducting the assessments. To begin, the six rounds of the survey successfully undertaken since 2010 have built a solid foundation for future assessments, particularly in three dimensions. First, Uwezo has forged a strong coalition of over 400 district-based institutions and over 25,000 citizen volunteers across East Africa. More than 70% of these volunteers have been trained at least twice, meaning that the human and technical capacities for assessing children in literacy and numeracy have been strongly established. Second, five clean, nationwide datasets have been produced from the assessments. Though Uwezo is not a longitudinal study, these datasets allow for tracking of changes over time, including changes in key metrics at the school and household levels. Third, through our investments to disseminate the evidence to both public and policy audiences, Uwezo findings have informed policy debate nationally, regionally and globally.

Looking ahead, three main challenges have been identified that will need to be addressed so that the Uwezo assessments remain strongly relevant to stakeholders and a powerful evidence-based tool to inform the development of educational policies and programs across the region. First, sustaining the strength of the survey design and instruments will be required to ensure the rigour and comparability of assessment data within and across the three countries. In particular, comparing results remains a major challenge. This reflects a number of factors, including: the different curricula in the three countries, changes in the tests over time, and non-sample errors. Indeed, the estimates presented in the current report suggest that reasonable confidence intervals around the Uwezo test scores are quite wide. This makes it difficult to discern genuine changes in performance over time from statistical noise.

There is no magic solution to this challenge, especially given the citizen-led assessment model used. Even so, as the Uwezo assessments are adapted to emerging evidence demands (see

discussion below), the planned inclusion of both additional test items and items at higher levels of difficulty should provide more accurate evaluations at the individual level and sharpen the comparisons between children. We also plan to validate the different country tests on a cross-border basis, thereby providing more reliable evidence regarding the extent of genuine differences in learning outcomes across the three countries.

Second, the assessments will need to respond and adapt to new evidence demands, including the data needs for measuring the targets of Sustainable Development Goal 4. When Uwezo was started in 2009, little evidence on children's literacy and numeracy skills was available. Since then, the landscape has changed. In all three countries, there is widespread appreciation of the vital need to strengthen children's early acquisition of basic literacy and numeracy skills. In both Uganda and Tanzania, the national curricula have been revised to increase the focus on early reading and numeracy, and educational reform is ongoing in Kenya. Large interventions have also emerged in each of the countries. Therefore, the challenge for Uwezo lies in producing evidence in other critical areas of children's learning that are not adequately captured by other assessments while occupying the space of independent monitoring of learning outcomes.

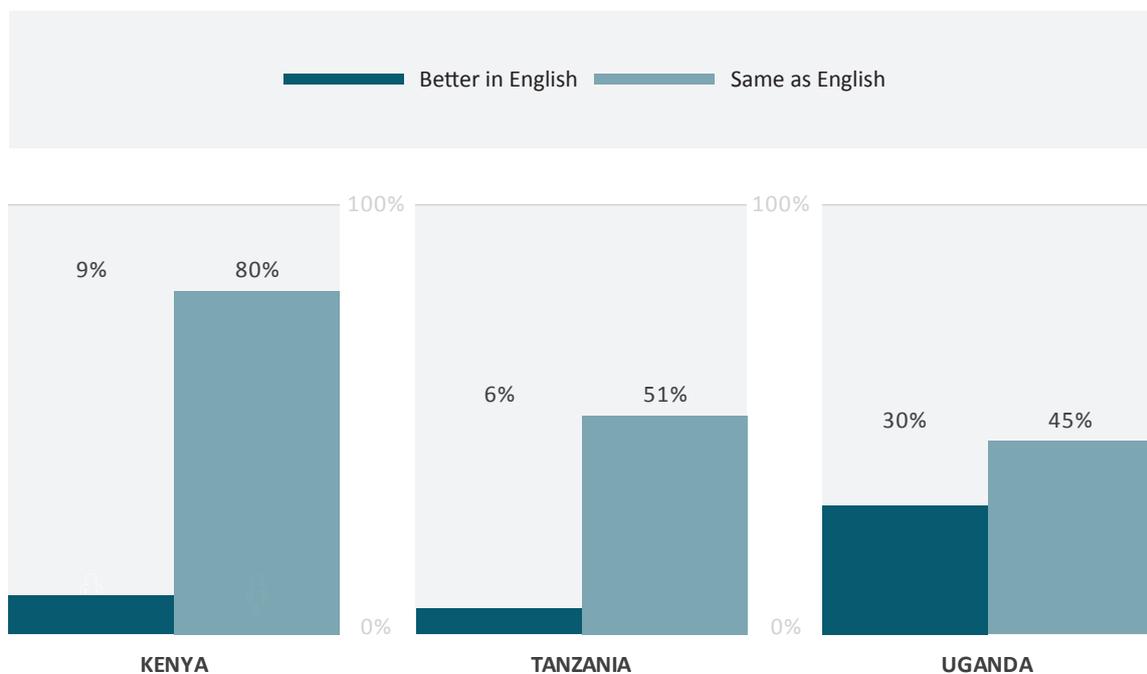
In response, Uwezo conducted a 'beyond basics' assessment in 2016, which assessed children's literacy and numeracy skills at a higher grade level (Standard 4), and broadened the measurement of numeracy to cover measurement and analysis and the measurement of literacy to cover listening and writing skills. This assessment was conducted in a random sample of 30 districts across the three countries. In addition, work has started on identifying priority indicators on inclusion, equity, quality and lifelong learning to be included in the 2017 assessment. Besides these initiatives, Twaweza plans to expand Uwezo to include priority indicators for other SDGs, especially SDG 1 (No poverty), SDG 3 (Good health and well-being), SDG 5 (Gender equality), SDG 6 (Clean water and sanitation) and SDG 16 (Peace, justice and strong institutions) from 2017 onwards.

Finally, after producing credible evidence that has informed debate regionally and globally, the question for Uwezo now becomes – what next? Ultimately, the purpose of assessment data lies in its connection to concrete actions to improve children's learning. Indeed, Twaweza's overarching rationale is connecting citizens and authorities through evidence to bring about positive change. Following the recommendation of the Results for Development (R4D) evaluation (2014), Twaweza is piloting an initiative that will leverage the work of Uwezo partners and volunteers to strengthen engagement at sub-national levels, and hopefully yield increased public agency to spur change in education. This pilot, which was commenced in 2016 in two districts of Uganda and Tanzania and two counties in Kenya, will be completed in 2017. In each country, a priority issue has been identified, and an intervention that builds on mutual accountability among authorities and citizens to improve learning is being implemented. The results of this pilot will provide valuable insight on the use of datasets like Uwezo to inspire changes in accountability relationships.

In planning and implementing these new activities, we look forward with optimism to a dynamic and productive future in which the Uwezo assessments will increasingly contribute to positive development outcomes in the region, especially, sustained and sustainable improvements in the learning opportunities for all of our children.



**FIGURE A1: COMPARISON OF LITERACY ACROSS LANGUAGES**

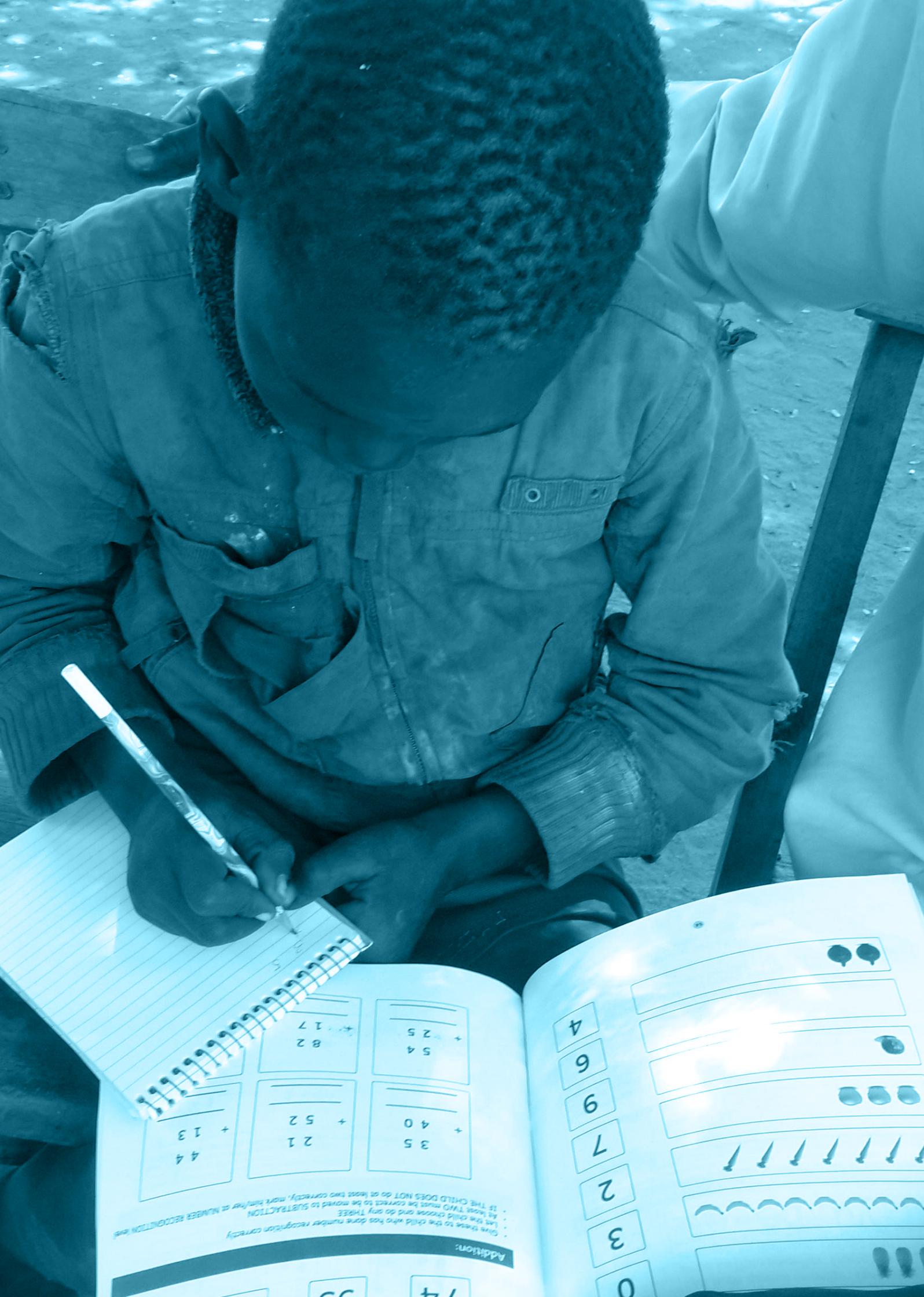


Notes: 'Better in English' reports the share of children who achieved a higher competency in English compared to Swahili (in Tanzania and Kenya) or a local language (in Uganda); 'Same as in English' reports the share of children who achieved the same competency level in English compared to Swahili (in Tanzania and Kenya) or a local language (in Uganda).

Source: Calculated from Uwezo data for 2011 to 2015. Data are pooled across rounds.







Give three to the child who has done number recognition correctly.  
Let the child choose and do any THREE.  
At least TWO must be correct to be moved to SUBTRACTION.  
If THE CHILD DOES NOT do at least two correctly, mark him/her as NUMBER RECOGNITION here.

$\begin{array}{r} 44 \\ + 13 \\ \hline \end{array}$	$\begin{array}{r} 21 \\ + 52 \\ \hline \end{array}$	$\begin{array}{r} 35 \\ + 40 \\ \hline \end{array}$
$\begin{array}{r} 82 \\ + 17 \\ \hline \end{array}$	$\begin{array}{r} 54 \\ + 25 \\ \hline \end{array}$	

- 0
- 3
- 2
- 7
- 9
- 6
- 4

Tracing and counting practice area with various shapes and patterns.

- Two small circles
- One circle
- Three circles
- Five vertical lines
- Five curved lines
- Two small circles