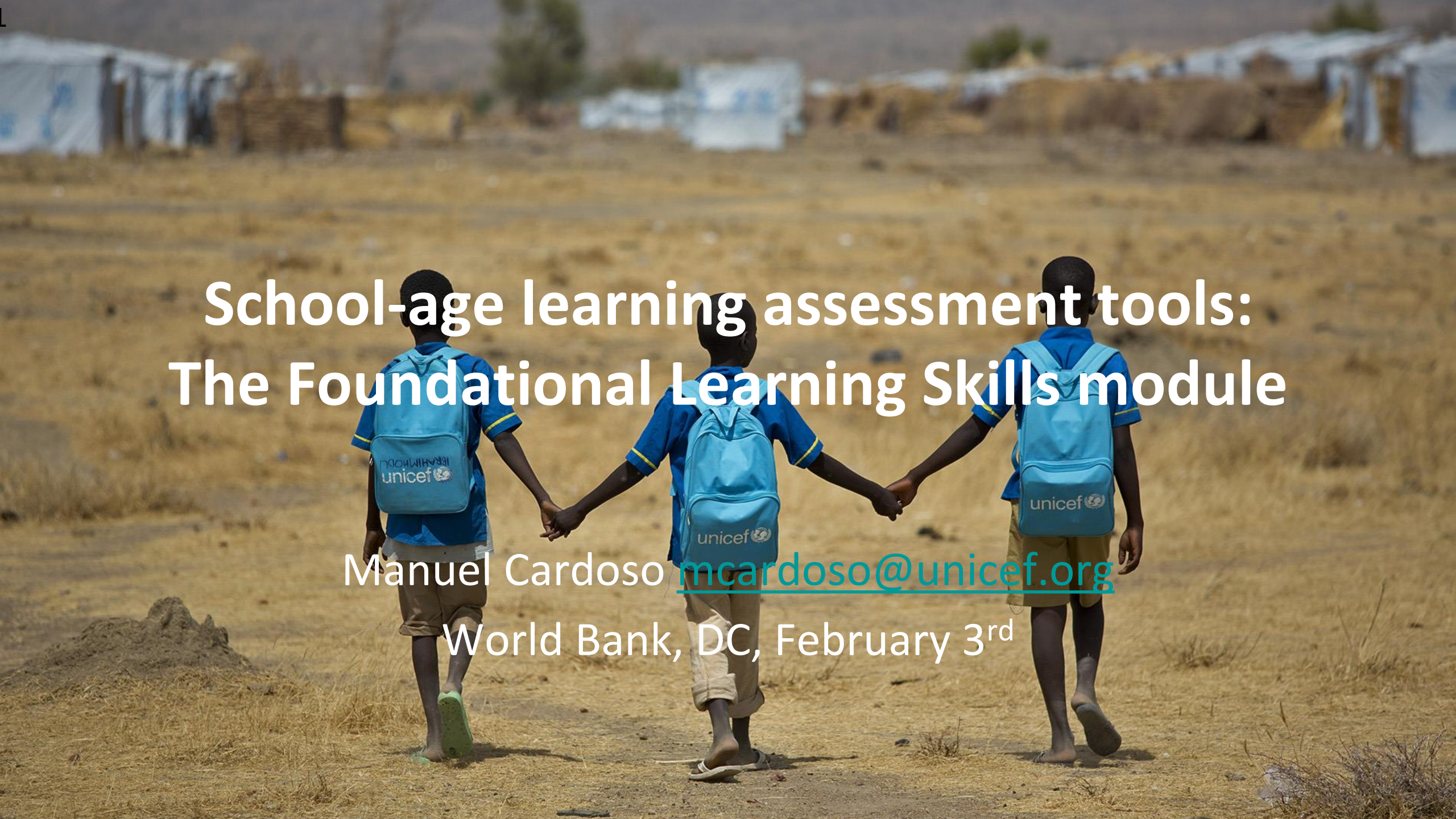


A photograph of three children walking away from the camera in a dry, open field. They are holding hands and wearing blue UNICEF backpacks. In the background, there are some makeshift structures and a hilly landscape.

School-age learning assessment tools: The Foundational Learning Skills module

Manuel Cardoso mcardoso@unicef.org

World Bank, DC, February 3rd

Questions

1. Why a Foundational Learning Skills module for household surveys?
2. How was it developed and validated?
3. What does it assess? How? What indicators does it yield?
4. Is it valid? Reliable? Fair?
5. How can its data reveal equity and education policy issues?

Learning over the life course: From early childhood to adolescents, youth and adults

Learning in the SDGs

- 4.2.1 – ECD: Early Childhood Development Index (MICS, etc.)*
- 4.1.1 – basic education
 - a) Early grades: Foundational Learning Skills (MICS, etc.)
 - b) End of primary: Regional assessments (SEA PLM)
 - c) End of lower secondary
- 4.4.2 – Digital literacy skills
- 4.6.1 – Youth and adult literacy
- 4.7.1 – Education for sustainable development and citizenship (MENA's LSCE; EAPRO's SEA PLM)

Global Alliance to Monitor Learning (GAML)

* 4.2.1 is a development indicator not focused only on learning

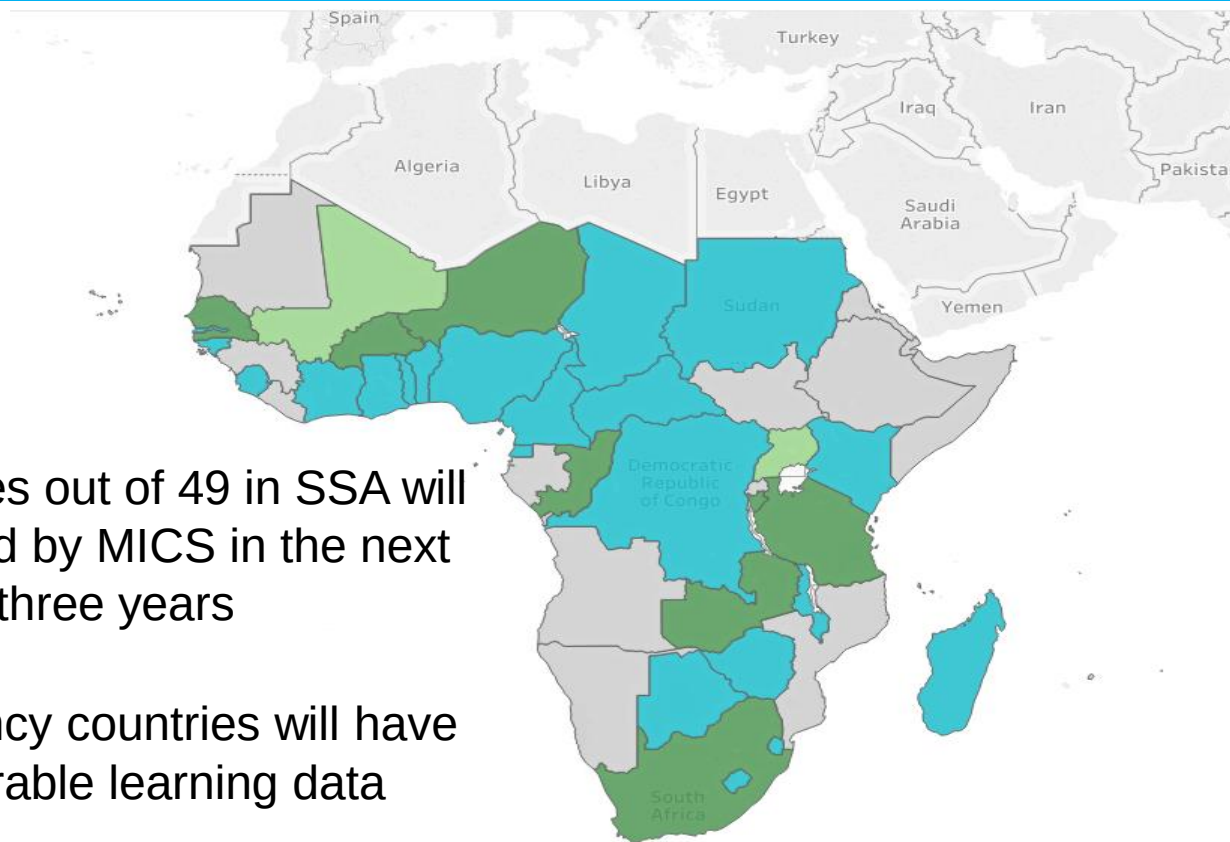
We don't know what *all* children know

Learning Assessment Capacity Index (LACI): diversification of large-scale assessments 2010-2015



MICS and FLS in sub-Saharan Africa

- **22** countries out of 49 in SSA will be covered by MICS in the next three years
- **9** emergency countries will have comparable learning data



MICS Countries SSA

Central African Republic*
Democratic Republic of the Congo*
Gambia
Ghana
Guinea-Bissau
Lesotho
Madagascar*
Malawi*
Sao Tome and Principe
Sierra Leone
Zimbabwe*
Chad*
Togo

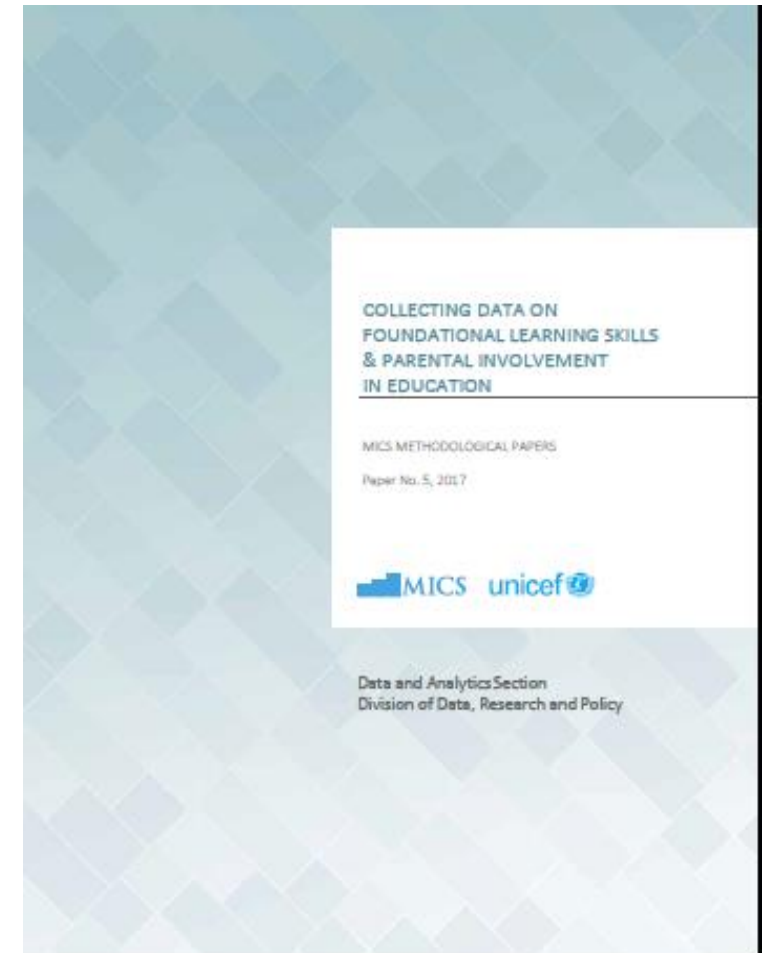
Eswatini
Botswana
Kenya*
Equatorial Guinea
Benin
Sudan
Cameroon*
Cote d'Ivoire
Nigeria *

Yet to
decide to
include FLS
module

<https://mics.unicef.org/>

MICS Methodological Paper No. 5, 2017, Collecting data on foundational learning skills & parental involvement in education

- The paper details the process of development and validation of the instruments
- Collaboration funded by the Hewlett Foundation, with inputs from ASER/Uwezo, RTI, Save the Children, GEMR, GPE, UIS, WB
- The paper describes field tests in Belize, Costa Rica, Ghana and Kenya



Foundational Learning Skills module: Structure and Indicators

- 1) Parental Participation (in child's learning) – Mothers or caregivers
- 2) Foundational Learning skills – Children aged 7-14 (one per household)
 - Unscripted rapport-building exercise
 - Learning environment – reading habits, languages at home and in school
 - **Foundational reading skills** (3 indicators + 1 overall indicator)
 1. % who read 90%+ of words in **story** (70 words, 2nd grade vocabulary)
 2. % who answer 3 out of 3 literal comprehension **questions**
 3. % who answer 2 out of 2 inferential comprehension **questions**
 - Foundational number skills (4 indicators + 1 overall indicator)

Total interviewer-child interaction: 15 minutes (on average)

Reading: What's measured and what's not in the Foundational Learning Skills module

A focus on **comprehension**: Yes, but which one(s)? (Basaraba et al. 2013)

- Assessed: Literal (3 questions); inferential (2 questions)
- Not assessed: evaluative or summary

Oral reading accuracy of connected text (Garcia et al., 2013; Grigorenko et al. 2008).

Why not...**fluency**?

- Administration in households (Dowd & Pisani, 2016)
- Comparability across languages (Piper et al., 2015)

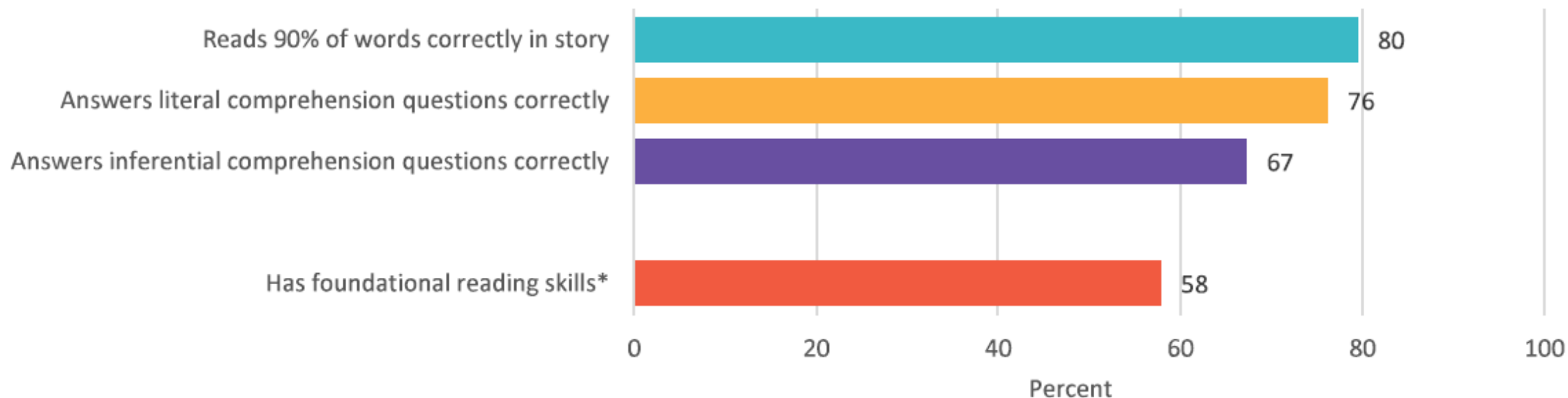
...**oral language**? Time constraints, but there is a survey question on home language

...**building blocks**? Comparability across languages

Cardoso, M. & Dowd, A.J. (2016). *Using Literacy Boost to Inform a Global, Household-Based Measure of Children's Reading Skills in Understanding What Works in Oral Reading Assessments*, UIS/GPE/Hewlett Foundation, Montreal

Foundational Reading Skills, Kyrgyzstan

Foundational Reading Skills: SDG 4.1.1.(a) (i: reading)



*Percentage of children age 7-14 who can 1) read 90% of words in a story correctly, 2) Answer three literal comprehension questions, 3) Answer two inferential comprehension questions

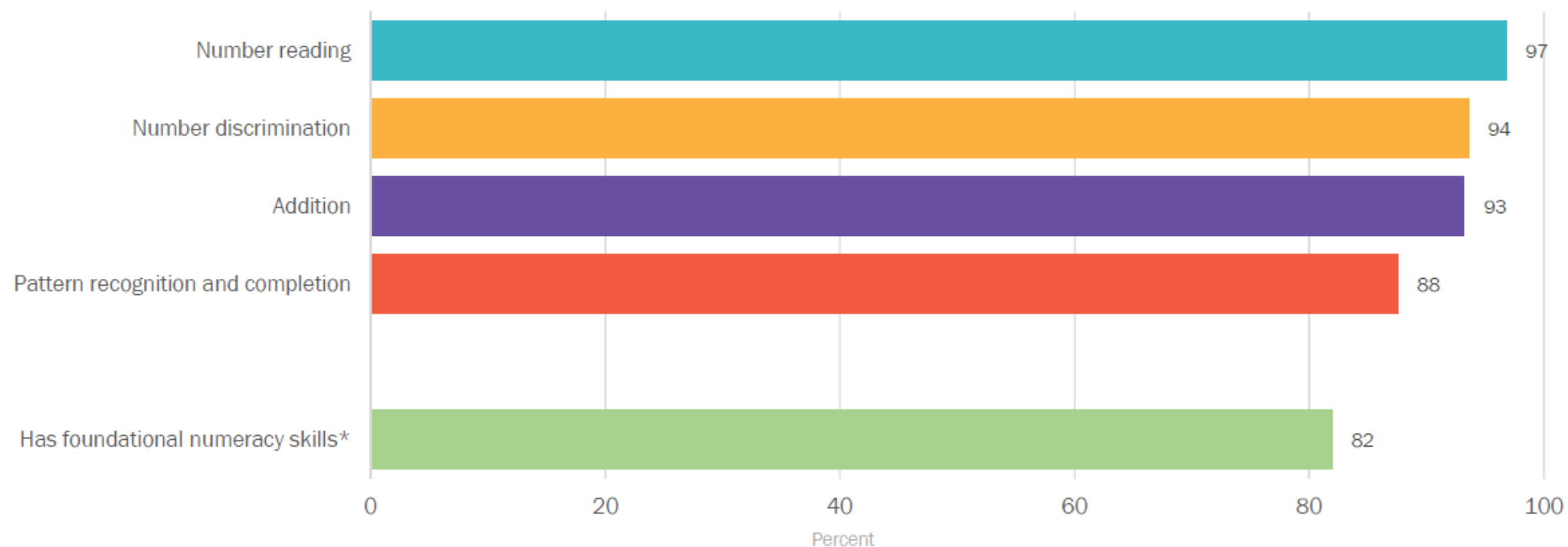
Numeracy Tasks, Foundational Learning Skills module

Task	Number of items	Last item
Number reading	6	731
Number discrimination	5	146 154
Addition	5	12 + 24 =
Pattern recognition and completion (missing number)	5	5 8 11 —

Out of the five classical domains in mathematics, the module currently focuses on one, namely Numbers. The domains of Measurement, Statistics and Algebra may be too advanced for the early grades. The possibility of adding Geometry items should be explored.

Foundational Numeracy Skills, DPRK

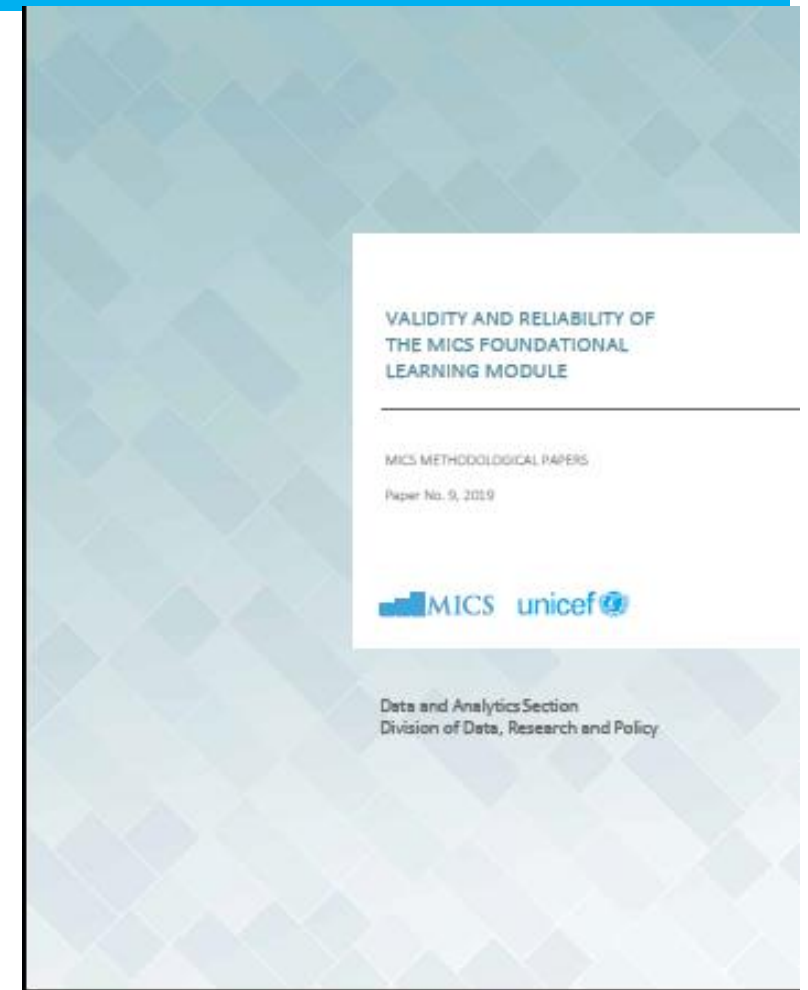
Foundational Numeracy Skills: SDG 4.1.1(a) (ii: numeracy)



*Percentage of children age 7-14 who can successfully perform 1) a number reading task, 2) a number discrimination task, 3) an addition task and 4) a pattern recognition and completion task

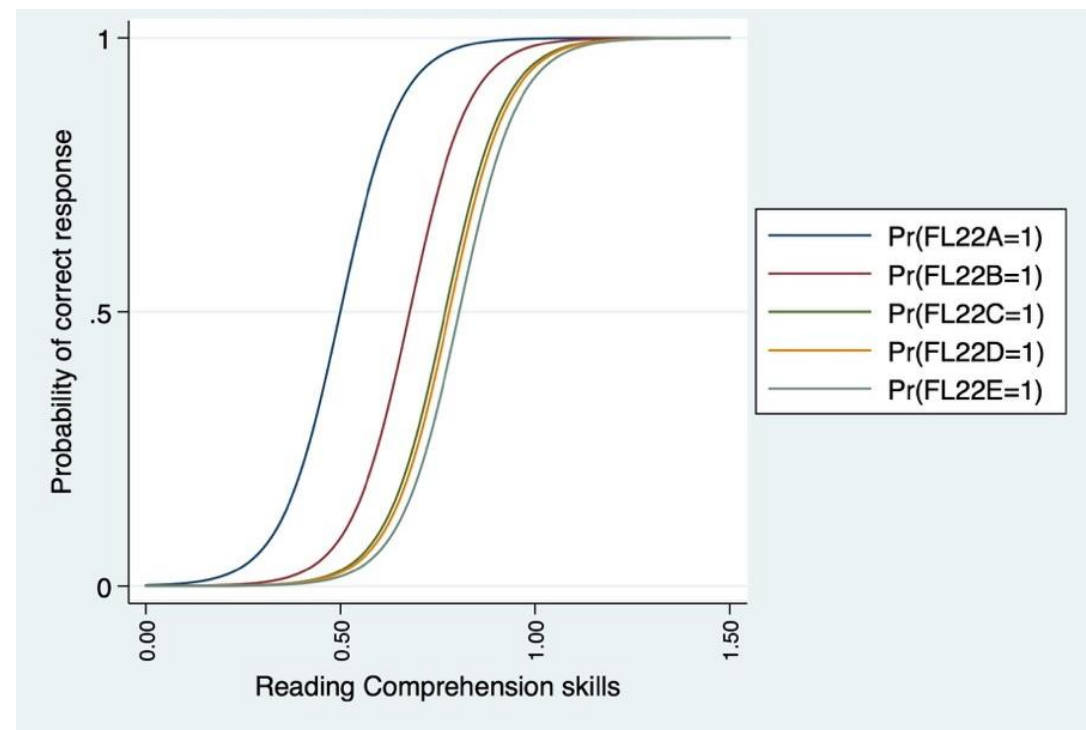
MICS Methodological Paper No. 9, 2019, Validity and reliability of the MICS foundational learning module

- Based on a special study on concurrent validity and inter-rater reliability in Kenya in 2016
- Internal consistency is high for reading comprehension, and acceptable for numeracy
- Agreement between scorers is very high, more stringent Inter-Rater Reliability measures are still high
- Concurrent validity with EGRA and EGMA is acceptable



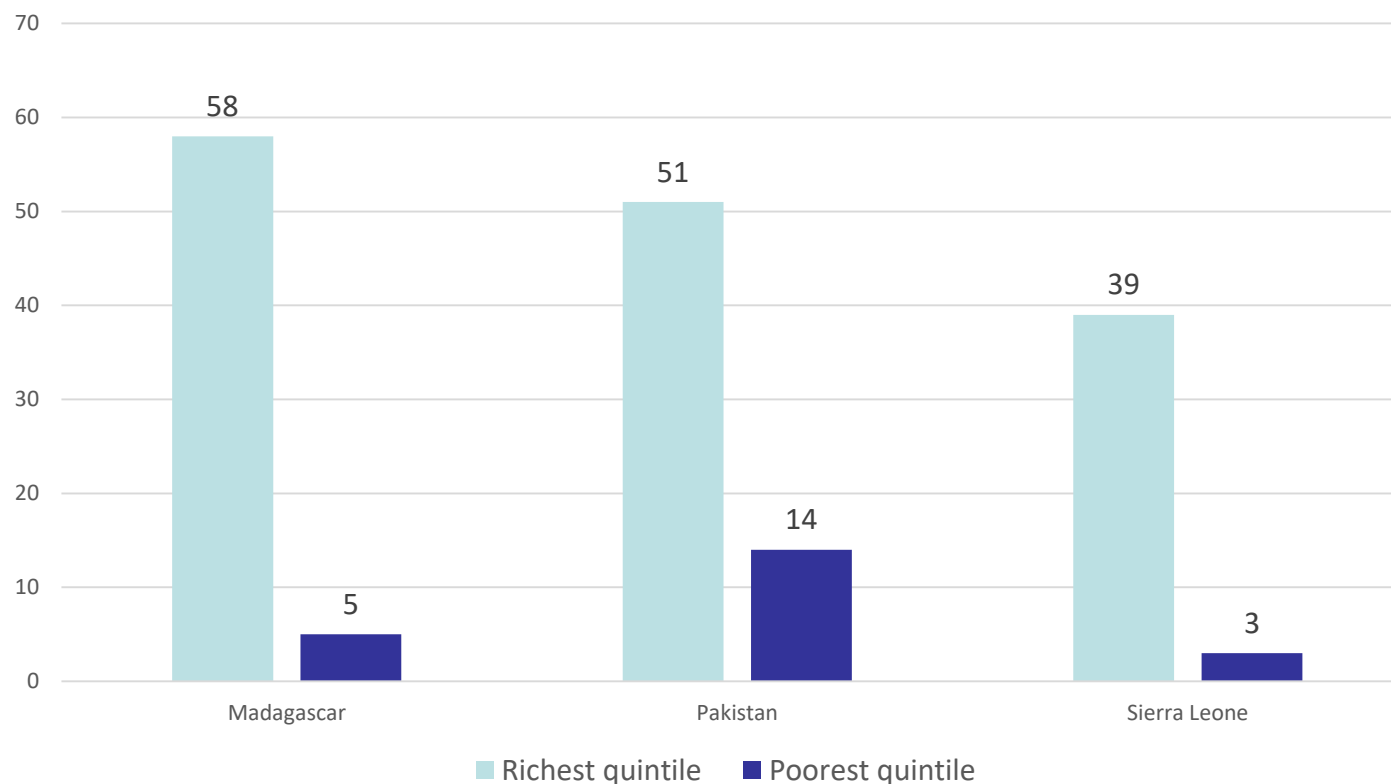
Item Response Theory analysis, reliability and Differential Item Functioning, MICS, Sierra Leone, 2017

- The reading comprehension task is highly reliable (Cronbach's alpha = 0.96)
- The reading comprehension items...
 - ...increase in difficulty as the test progresses, and as they shift from literal to inferential comprehension
 - ...contribute equally to the estimation of ability
 - ...show no signs of bias, or Differential Item Functioning (DIF), by location or gender



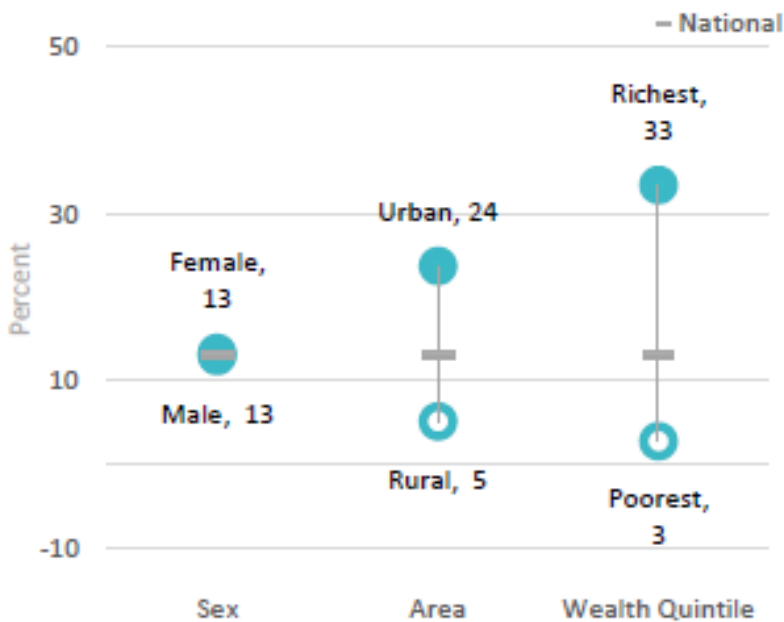
Wealth and learning poverty

Percentage of children ages 7-14 who could read a short, simple story (grade 2/3 level) and answer 5 questions about it, by wealth quintile (MICS 6)

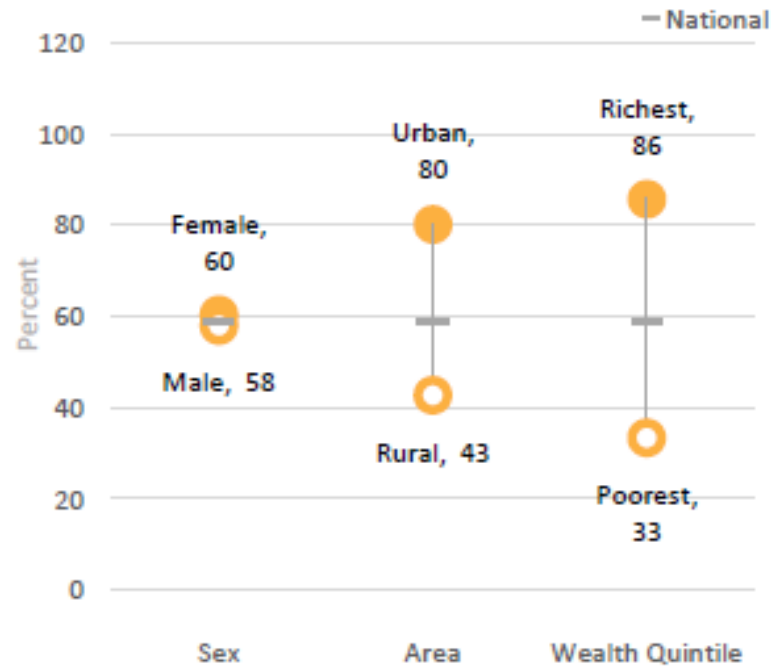


Inequities in Parental Involvement among 7-14 year olds in MICS 6, Sierra Leone, 2018

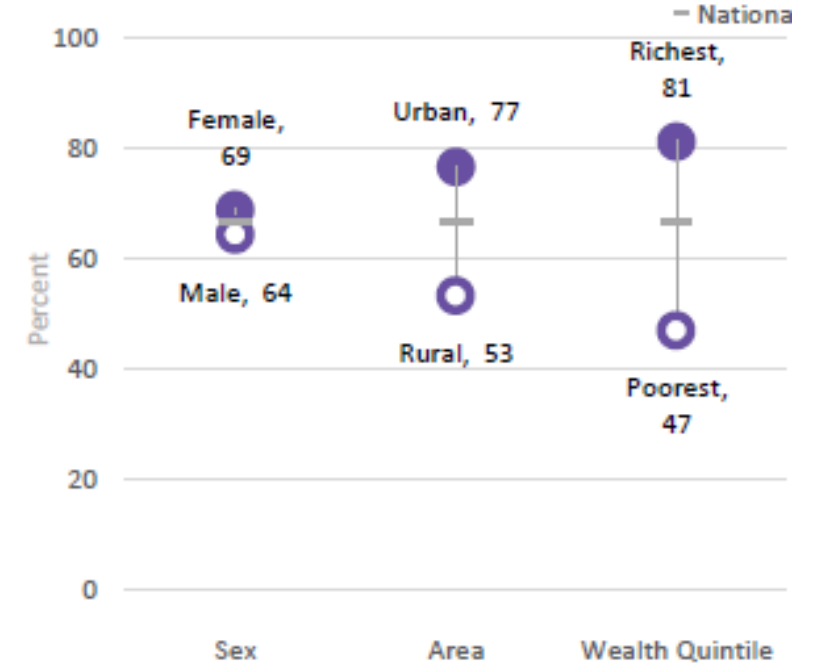
Children with 3 or more books to read at home



Children who read books or are read to at home

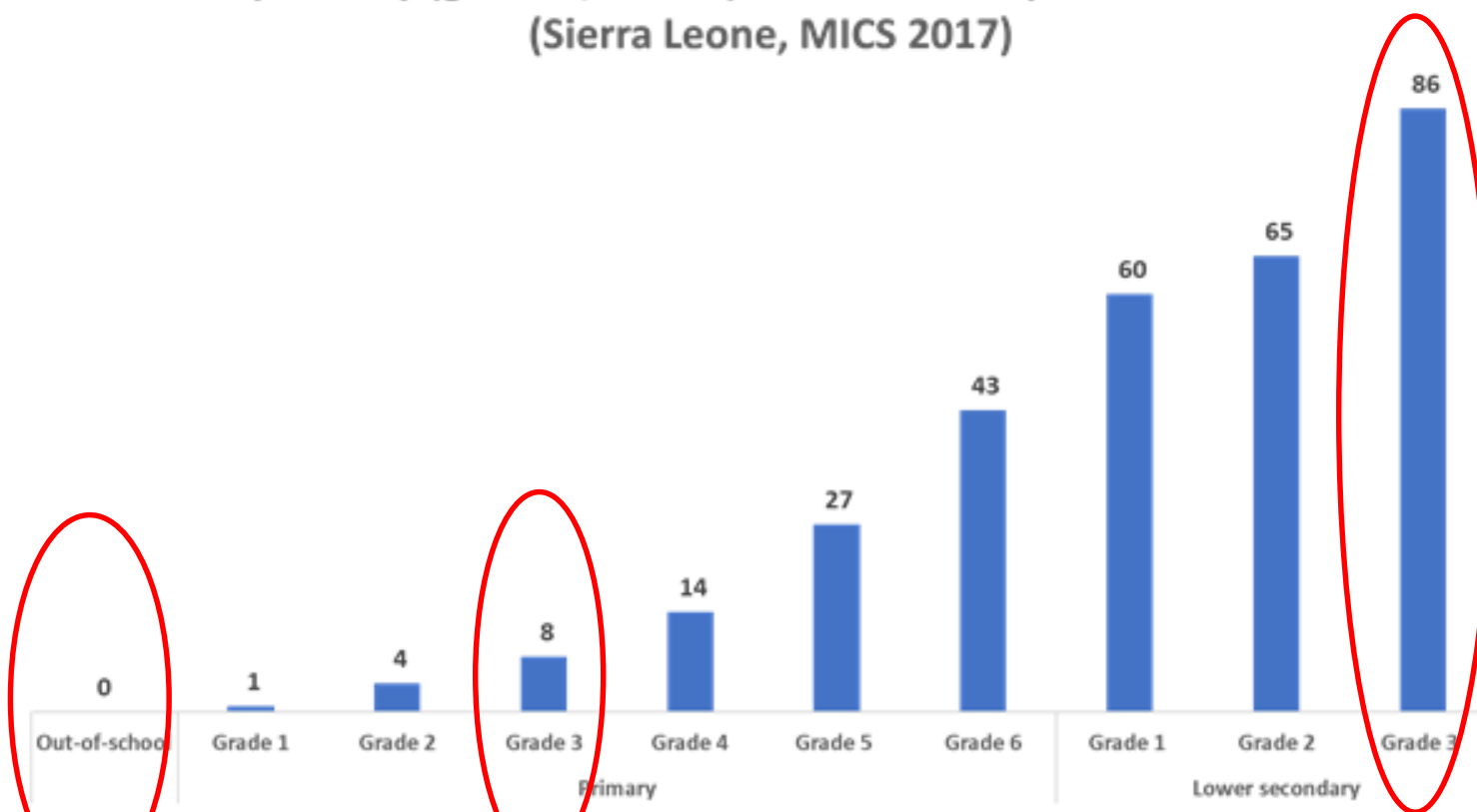


Children who receive help with homework



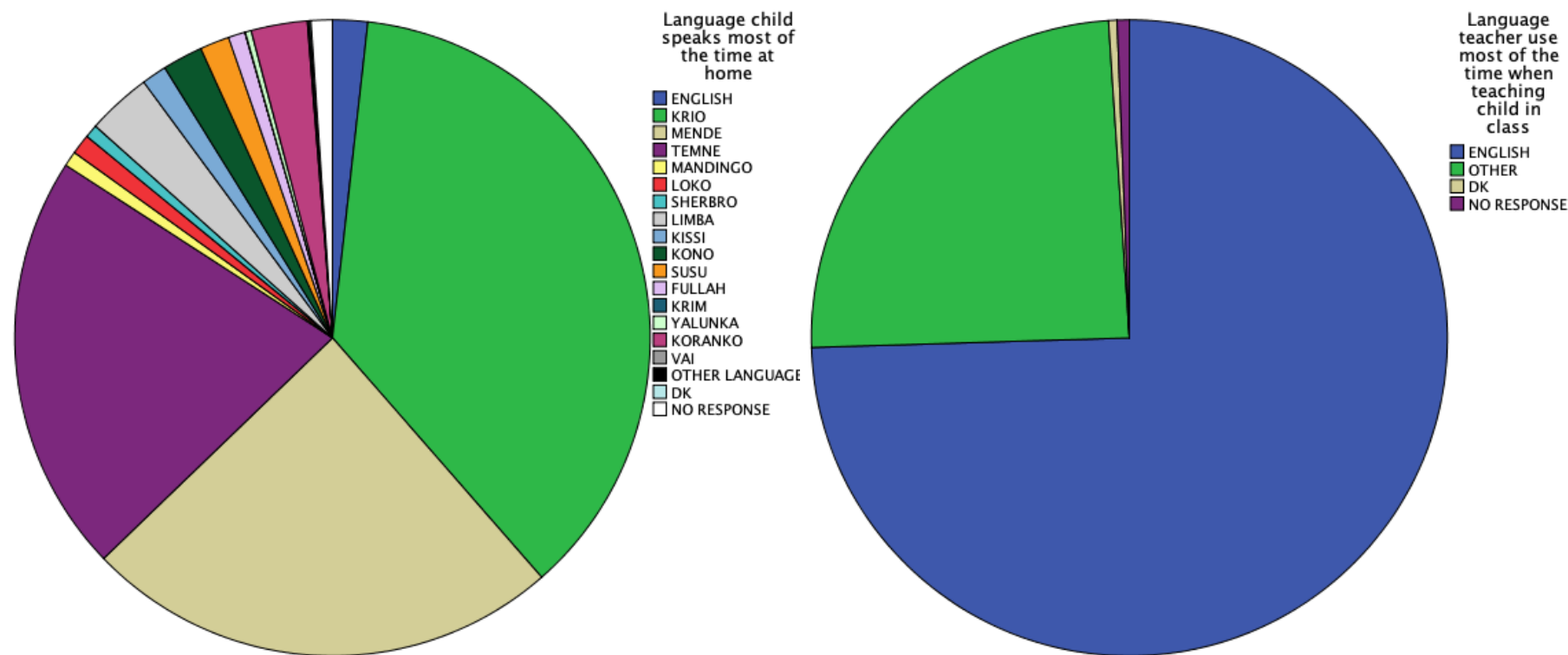
Teach every learner at their level

Percentage of children ages 7-14 who could read a short, simple story (grade 2/3 level) and answer 5 questions about it
(Sierra Leone, MICS 2017)



Teach in languages learners understand

MICS, Sierra Leone, 2018



Among children schooled in English, and after controlling for grade, household wealth and gender, speakers of Krio (an English-based creole lingua franca) were twice as likely to comprehend the English-language story as compared to speakers of Mende (a language unrelated to English)

Answers

1. Why? To feed into the SDGs and address learning poverty issues
2. How? Developed in collaboration, validated around the world
3. What? Reading (accuracy; comprehension both literal and inferential) and numeracy (number identification and discrimination, addition, missing number)
4. It is valid (concurrently with EGRA/EGMA), reliable (Cronbach's alpha) and fair (no DIF by gender or location)
5. It shows the need for more equitable, inclusive policy approaches

References

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- Piper, B., Schroeder, L. and Trudell, B. (2015). Oral reading fluency and comprehension in Kenya: reading acquisition in a multilingual environment. *Journal of Research in Reading*, Vol. 00, No. 00, pp. 1-20.



THANK YOU!

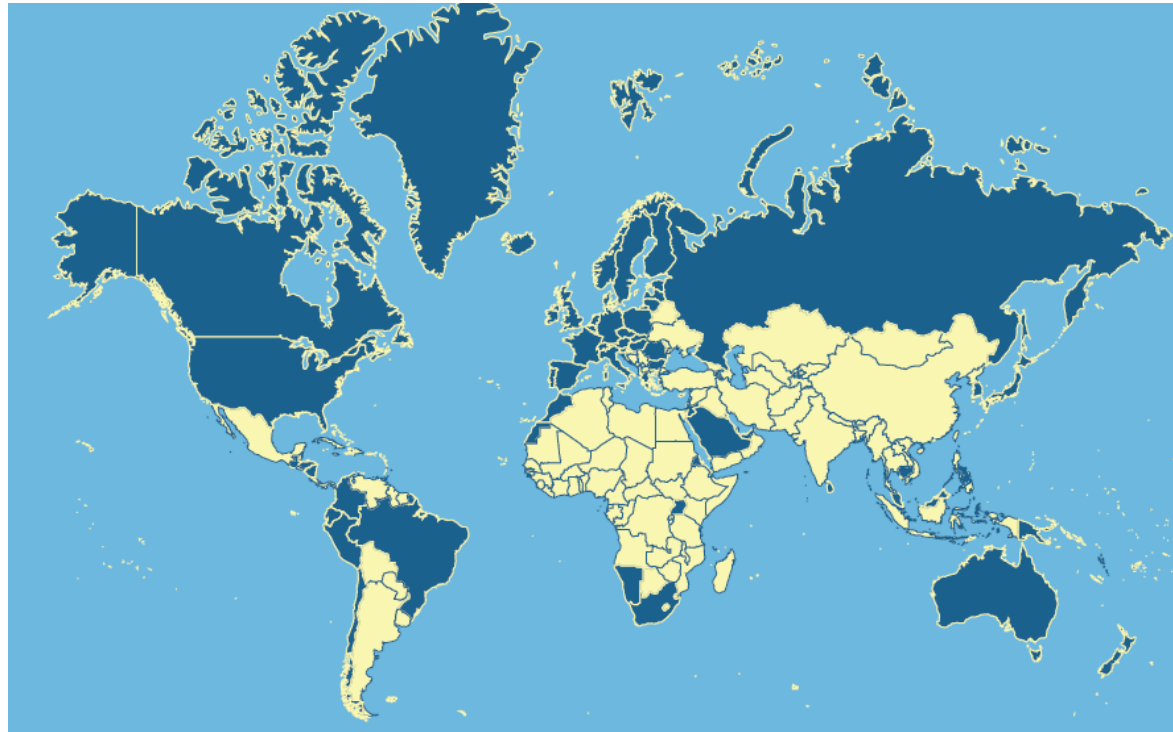
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Where is the Multiple Indicators Cluster Survey implemented?

22
years

113
countries

307
surveys



Notes: Countries with at least one MICS survey
Including sub-national surveys

Reliability (I): Internal Consistency

Foundational Learning Skills module, Kenya, 2016

MICS Foundational Learning Skills Subtests	Number of items	Cronbach's Alpha
Oral Reading Accuracy	43	.9115
Reading Comprehension	5	.8269
Foundational mathematical skills	21	.7762

Reliability (II): Inter-rater reliability

Foundational Learning Skills module, Kenya, 2016

	Kappa	PNA
Oral Reading Accuracy	.738	.761
Reading Comprehension	.873	.877
Number Identification	.937	.937
Number discrimination	.924	.940
Addition	.894	.897
Pattern recognition and completion (missing number)	.891	.902

Concurrent validity MICS/EGRA*

Foundational Learning Skills module, Kenya, 2016

	90% Accuracy	Literal Comprehension	Inferential Comprehension	Basic reading skills	Total Count
Non-/Beginning	12.5%	0%	0%	0%	16
Emergent	53.8%	33.3%	5.1%	0%	39
Reader	92.0%	94.2%	84.7%	74.5%	137
Total	77.6%	74.0%	61.5%	53.1%	192

*percentage of children in each EGRA Literacy grouping who were able to successfully complete the MICS Literacy indicator

Linguistic and SES differences between selected home languages

Krio Population: 5,732,000 in Sierra Leone, all users. L1 users: 692,000 in Sierra Leone (2016). L2 users: 5,040,000 (2016). *Classification:* Creole, English based, Atlantic, Krio.

Mende Population: 1,940,000 in Sierra Leone (2016). *Classification:* Niger-Congo, Mande, Western.

<https://www.ethnologue.com/country/SL/languages>

	Language child speaks most of the time at home	N	Mean	Std. Deviation
Combined wealth score	KRIO	5648	0.95	1.12
	MENDE	3722	-0.35	0.52

Does home language matter?

Variables in the Equation						
	B	S.E.	Wald	df	Sig.	Exp(B)
GRADE	.384	.018	451.561	1	.000	1.469
GIRL	.194	.067	8.245	1	.004	1.213
Combined wealth score	.317	.034	89.011	1	.000	1.374
KRIOHL	.718	.094	58.285	1	.000	2.050
Constant	-2.824	.129	478.271	1	.000	.059