EdData II: Education Data for Decision-Making

National Baseline Assessment for 3Rs (Reading, Writing, and Arithmetic) in Tanzania

Reading, writing, and arithmetic are the focus of the 3Rs campaign, a derivative of the *Big Results Now* initiative enacted by the Government of Tanzania in 2013. As one of the six focal areas anticipated to elevate Tanzania from a low- to middle-income country, education, particularly primary education, is receiving increased attention. In July 2013, planning commenced for the *National Baseline Assessment for 3Rs (Reading, Writing, and Arithmetic) Using Early Grade Reading Assessment (EGRA), Early Grade Mathematics Assessment (EGMA), and Snapshot of School Management Effectiveness (SSME)*. The assessment was conducted in October of the same year. The purpose of the assessment was to establish the baseline achievement levels of Grade 2 students, specifically with regard to their foundational skills in reading, writing, and arithmetic.

EGRA, EGMA, and SSME instruments were used to conduct the national baseline assessment. EGRA and EGMA are individually administered oral assessments designed to assess students' abilities in foundational reading, writing, and arithmetic skills. The SSME is designed to evaluate pedagogical and school management practices at selected schools. More information on the background and development of EGRA, EGMA, and SSME instruments is available on U.S. Agency for International Development's (USAID's) Education Data for Decision-Making (EdData) Web site at www.eddataglobal.org.

The study involved a randomly selected, nationally representative sample, and included assessments of 2,266 Grade 2 students from 200 urban and rural schools from Tanzania's three school performance bands.[1]

How Well Are Grade 2 Students in Tanzania Learning to Read and Write Kiswahili?

Sample Kiswahili Familiar Word Items

yangu	siku	lake
huu	hili	nini
wa	shati	meza
mti	na	darasa
ya	sisi	huyu

It is generally accepted that a student reads with comprehension when he or she can correctly answer 80% or more of the Reading Comprehension subtask questions in an EGRA. In Tanzania, Grade 2 students are receiving the foundational skills in learning to read and write; however, they are still struggling to read with comprehension. In Tanzania, only 8% of students could read with comprehension in Kiswahili. The national baseline assessment found that 40% of students could not answer a single reading comprehension question correctly in the Kiswahili EGRA. Among those students able to correctly answer 80% or more of the reading comprehension questions, the mean oral reading fluency scores varied between 47 and 68 correct words per minute. In comparison, among the students who could correctly answer only one of the five comprehensions questions, the mean oral reading fluency score was approximately 18 correct words per minute.

Pre-reading skills were also assessed among students. Students performed better on the Syllable Sound and Familiar Word subtasks than they did with the Invented (non) Words subtask, which examines students' decoding skills. Results from these subtasks show that of the items attempted in these subtasks, students were correct on 68% of the syllable sounds, 66% of the familiar words, and 55% of the invented words. Zero

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[1] Schools in Tanzania are ranked in three performance bands according to students' results of the school leaving exams at the end of primary school (Grade 6).

scores for these subtasks were 13%, 24%, and 28%, respectively, indicating that students were stronger in syllable and familiar words than in the invented words.

Among Grade 2 Tanzanian students, a Dictation subtask was used to assess their word and sentence writing skills. Results from this subtask indicate that students are writing in Kiswahili at a grade-appropriate level. Students performed better on the word writing portion of the Dictation subtask than they did on the punctuation component. Students had an average score of 60% correct across the Dictation component, but struggled more with punctuation, correctly punctuating the dictated sentences only 25% of the time.

Performance on EGRA (Kiswahili) Subtasks.

Subtasks	Correct Items per Minute	% Correct Attempted	% Correct	% Zero Scores
Syllable Sounds	31.4	68.2%	—	13.2%
Familiar Words	21.9	66.1%	—	23.5%
Invented (Non) Words	12.3	55.0%	—	28.0%
Oral Reading Fluency	17.9	62.4%	—	27.7%
Reading Comprehension	—	53.2%	28.9%	40.3%
Listening Comprehension	—	—	60.4%	3.4%
Dictation (words)	—	—	57.9%	26.3%
Sentence Dictation (punctuation)	—	—	24.6%	43.8%
Sentence Dictation (words)	—	—	60.2%	17.9%
Sentence Dictation (all)	—	—	46.9%	17.7%

How Well Are Grade 2 Students in Tanzania Learning to Read English?

Sample English Familiar Word Items

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goat	in	that
not	car	but
the	how	can
he	me	yes

In Grade 2, Tanzanian students are still learning English as a subject. It is not until after primary school that students transition to English as the language of instruction. In Grade 2, English focuses on vocabulary and sight words over reading or reading with comprehension. With that in mind, we can analyze the English EGRA results. The same constructs of reading with comprehension apply to English as to Kiswahili. English EGRA results indicate that Tanzanian Grade 2 students are struggling to read English at all, let alone with comprehension. Students had difficulty with all subtasks. Nearly all students (more than 94%) could not answer any reading comprehension question correctly. Only approximately 2% of students could answer a single comprehension question correctly, with less than 1% able to read English with comprehension.

Performance on EGRA (English) Subtasks.

Subtasks	Correct Items per Minute	% Correct Attempted	% Correct	% Zero Scores
Letter Sounds	8.2	24.3%	—	38.2%
Phonemic Awareness	—	—	17.0	57.0%
Familiar Words	5.6	18.1%	—	59.3%
Oral Reading Fluency	9.4	27.9%	—	37.9%
Reading Comprehension	—	3.6%	14.9	94.8%

Student performance on pre-reading skills was generally quite weak. Letter Sounds, Phonemic Awareness, and Familiar Words each had a very high percentage of zero scores. Knowing this, it is not unexpected that oral reading was poor in terms of both accuracy (28%) and fluency (9 correct words per minute).

How Well Are Grade 2 Students in Tanzania Learning to Perform Basic Mathematics?

Sample Missing Number Items
(Conceptual Task)

5	6	7	
14	15		17
20		40	50
	300	400	500
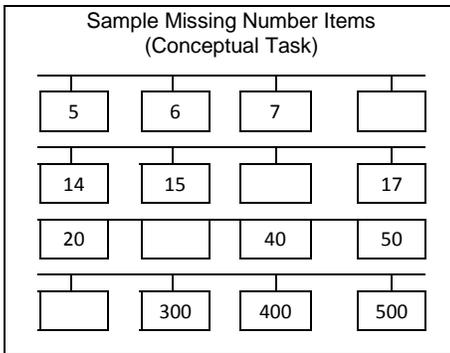
EGMA assesses a progression of foundational skills that research has shown to be predictive of future success in mathematics. The subtasks can be divided into two groups: subtasks focusing on procedural knowledge and subtasks focusing on more conceptual knowledge. The national baseline assessment found that although Tanzanian students in general performed better on the procedural items, they could not use that knowledge in the conceptual items, where they did not perform as well.

Grade 2 students in Tanzania scored nearly 60% or better on EGMA's procedural items. However, there was a sharp decline in the scores of the more conceptual tasks, in which nearly 58% of students were unable to respond correctly to a single item. The difference between the abilities on the procedural and conceptual tasks likely indicates how Grade 2 students experience mathematics in the classroom. The results suggest that mathematics is presented as a subject in which students must memorize the answers to problems, rather than developing strategies to solve them.

Sample Addition and Subtraction
Level 1 Items (Procedural Task)

$1 + 3 =$ ☐	$4 - 1 =$ ☐
$3 + 2 =$ ☐	$5 - 2 =$ ☐
$6 + 2 =$ ☐	$8 - 2 =$ ☐
$7 + 3 =$ ☐	$10 - 3 =$ ☐
$8 + 7 =$ ☐	$15 - 7 =$ ☐

Performance on EGMA Subtasks.

Subtasks	Number Correct per Minute	% Correct Attempted	% Correct	% Zero Scores
Addition (Level 1)	7.6	71.8%	—	12.3%
Subtraction (Level 1)	5.5	61.1%	—	21.9%
Quantity Discrimination	—	—	61.8%	5.3%
Missing Number	—	—	26.1%	10.9%
Addition (Level 2)	—	—	26.1%	47.7%
Subtraction (Level 2)	—	—	19.0%	57.9%
Word Problems	—	—	38.7%	23.5%

Tanzanian Student Performance in Comparison to Other Nations in Southern and Eastern Africa

The Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) studies provide insight into regional and national student achievements and provide measurements of student performance for Grade 6 students in 15 countries in southern and eastern Africa.[2] The SACMEQ studies investigate student performance in reading and mathematics toward the end of the Grade 6 school year.

When compared to EGRA scores from other African nations, the number of students with zero scores for the Grade 2 Kiswahili EGRA in Tanzania was very low. Scores from Tanzanian students indicated that they are receiving a solid base of foundational skills; however, this is not translating to comprehension, so there is still much work to do. Although Tanzania may have some challenges, Tanzanian students are still out performing pupils in other southern and eastern African countries in later schooling years, as evidenced by the SACMEQ data. SACMEQ III results showed that Tanzanian students had the highest reading scores out of the 15 participating nations. Results from SACMEQ III also showed that in mathematics, Tanzanian students ranked third out of the 15 nations (SACMEQ, 2010).[3]

How Effective Are Tanzanian Primary Schools?

Having appropriate and well-managed resources, instructional practices, and school conditions are all important factors that influence the success of student learning. The suite of SSME instruments provides rich

[2] The most recent study (SACMEQ III) included 15 nations: Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zanzibar, and Zimbabwe.
[3] SACMEQ (Southern and Eastern Africa Consortium for Monitoring Educational Quality). 2010. *SACMEQ III Project Results: Pupil Achievement Levels in Reading and Mathematics*. Available at http://www.sacmeq.org/reports

contextual information about the classrooms, schools, teachers, and Head Teachers composing the learning environment of students. The study also captures data on key student characteristics. The study indicates a wide array of factors that contribute to, and to some extent explain, the underperformance of students on EGRA and EGMA.

Frequency of Being Read to and Reading to Others at Home (All Income Quartiles).
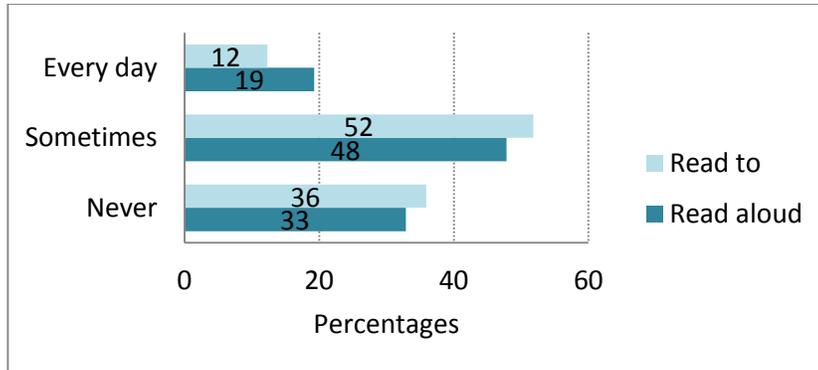
Learning to read takes time, access to text, and practice. However, in the schools participating in this study, it was observed that only approximately 7 minutes of the standard 30-minute Kiswahili lesson was spent reading. On the day of assessment, most students did not have their Kiswahili or English readers (92% did not have their Kiswahili readers). Specific behaviors and practices such as reading aloud at home or being read to at home strongly predict success on EGRA and EGMA. From among the students in the lowest wealth quartile, 45% indicated that they did not read aloud at home and that no one read to them. By comparison, students from the highest wealth quartile reported that only 9% never read at home and only 17% reported that no one reads to them at home. Additionally, teacher–student interactions in the classroom, factors such as teachers checking for student understanding, students responding to questions posed by the teacher, and teachers marking student work, were associated with higher EGRA and EGMA performance. For example, students whose teacher checked for understanding during a mathematics lesson were 6.6 times more likely to be high performers than those students whose teachers did not interact with them in this way. These factors provide key insights into areas where recommendations and changes can be made to impact and improve reading, writing, and arithmetic scores for primary grade students in Tanzania.

Conclusions

The national baseline assessment for the 3Rs indicates that students are receiving a strong foundation for basic reading, writing, and arithmetic skills, yet there is still much work to do. One of the key areas for change appears to be not what the students are learning, but how they are learning. Evidence from EGRA and EGMA assessments indicates that students seem to be performing well on procedural tasks and memorized information, yet they struggle to engage with concepts and make meaning from what they learn. Additionally, to make improvements, there are needs for sufficient and appropriate learning materials and more time devoted to practicing the foundational skills in and out of the classroom. There is also the important role of engaging parents and communities as resources and support for the 3Rs campaign. If improvements such as these are brought to action, the path will be laid for students to make improvements from current performance toward meeting the benchmarks designated as a result of this assessment.