



Southern and Eastern Africa Consortium
for Monitoring Educational Quality

Trends in Achievement Levels of Grade 6 Learners in Zanzibar

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Introduction

This policy brief provides information about levels and trends in the reading and mathematics achievements of Standard 6 pupils in Zanzibar. The results are drawn from two large-scale, cross-national research studies of the quality of education conducted by the fifteen school systems involved in the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ).

In 1995, the Zanzibar Ministry of Education decided to participate in SACMEQ's foundation research programme, the SACMEQ I Project, so that it would be possible to establish benchmarks for the conditions of schooling and the quality of education in primary schools.

The results arising from this initial research were very alarming in that they showed that the performance of Zanzibar Standard 6 learners was relatively low in comparison with the other countries that participated in the SACMEQ I Project, and also that there were large inequalities in the educational achievement levels of learners across schools and regions.

The low results of the SACMEQ I Project in Zanzibar also raised some questions as to whether pupils were mastering all the required skills in other subjects as well, more than thirty years after independence.

The SACMEQ I project also resulted into heated discussions in Zanzibar's primary schools about: (a) the general poor quality of education, and (b) inequalities in both resources inputs and learning outcomes.

Later research results from the SACMEQ II Project conducted in 2000 provided similar results, though also indicated a slight improvement to the SACMEQ I project results, and consequently the Ministry of Education decided to take several important decisions related to the management and operation of the primary school system.

First, the evidence of consistently poor achievement levels among learners in all five regions was used to target extra training through Teacher Centres scattered around the country, and extra resources in all Zanzibar regions under the 'Strengthening of Primary Education Project', supported by the Zanzibar Government.

Second, the new Zanzibar Education Policy was prepared in 2006, which set the important goal that "monitoring educational programmes and learning achievement shall be developed" and that "establishing benchmark for what the ideal learning environment for a primary classroom should be" (MoEVT, 2006).

It was in the context of the above-mentioned policy and programming developments that Zanzibar embarked upon the SACMEQ III Project, which commenced in 2006. The Ministry of Education was very interested in examining whether:

- (a) Zanzibar's Standard 6 pupils were beginning to achieve at more acceptable levels in reading and mathematics, and
- (b) The general trend in the reading and mathematics achievement of Zanzibar's Standard 6 pupils between 2000 and 2007 indicated that Zanzibar's primary school system was improving, deteriorating, or staying about the same.

SACMEQ's Literacy and Numeracy Indicators

When the SACMEQ Consortium was launched in 1995, SACMEQ's Governing Board (the SACMEQ Assembly of Ministers) emphasized that the planning of improvements in the quality of education required better indicators of the "literacy" and "numeracy" skills that were being acquired by learners as they moved through the basic cycles of primary education. These indicators were considered important because they allowed senior decision-makers to assess the performance of school systems, and to provide

information that could be used for strategies aimed at improving the quality of education.

The SACMEQ Ministers interpreted the concept of “literacy” as meaning reading comprehension skills that were transmitted through school language and reading instruction programmes. They interpreted “numeracy” as meaning the numerical and mathematical reasoning skills that formed the core of school mathematics programmes. The SACMEQ Ministers wanted their school systems to be judged by the extent to which learners acquired the knowledge and skills that they were expected to acquire – as specified in official school curricula, textbooks, and teachers’ guides.

The SACMEQ Ministers decided that the design of tests for the assessment of pupils’ achievement in reading and mathematics in the SACMEQ research programme should focus on:

- (a) **Standard 6** - because (i) they wanted to monitor the "output" of their primary education systems before large numbers of the learner cohort began to leave school, and (ii) they considered that assessments held at lower grade levels would result in distorted results due to the "turbulence" in learning environments that occurred in many schools during the changeover (at around Standard 3 to 4) from the delivery of instruction in local to the official or national languages; and
- (b) **The National Language of Instruction** - because they were concerned that the acquisition of reading and mathematics skills in the national language of instruction was necessary for a successful transition to secondary schooling.

The SACMEQ reading and mathematics tests were developed from a careful analysis of the official school curricula, school syllabi, and textbooks used in both Zanzibar and other SACMEQ school systems. These tests made it possible to employ Modern Item Response Theory methods to undertake item analyses and test-scoring procedures. The test scores were transformed so that pupils from both the SACMEQ II and III Projects were placed on a single scale with the SACMEQ II scores anchored to a mean of 500 and a standard deviation of 100.

The SACMEQ reading and mathematics tests were scored in two different ways for different reporting purposes:

- (a) **Scaled Scores** – which were useful for reporting the average performance of learners at national and regional levels for both SACMEQ Projects. These scores were scaled so that meaningful comparisons

could be made across countries for each project, and across projects for each country. The average scaled scores for Zanzibar and its regions have been reported in **Table 1** for the SACMEQ II Project (2000) and the SACMEQ III Project (2007).

- (b) **Competency (or Skill) Levels** – which were useful for presenting a descriptive account of (i) the skills that pupils had acquired at eight levels of competence measured by the scaled scores, and (ii) the skills that must be acquired for pupils to move from one level of competence to a higher level. The competency levels for reading and mathematics have been described in **Table 2(a)** and **Table 2(b)**, respectively. These tables show the percentages of Zanzibar pupils at each competency level for the SACMEQ II Project (2000) and the SACMEQ III Project (2007).

Results for Average Scaled Scores

The average reading and mathematics scores of Standard 6 pupils across the five regions of Zanzibar were derived from SACMEQ reading and mathematics tests that were administered in Zanzibar to 145 Standard 6 pupils from 2,514 schools for the SACMEQ II Project in 2000, and 2,791 Standard 6 pupils in 143 schools for the SACMEQ III Project in 2007.

In order to examine **levels of achievement**, the average scores were colour-coded to show their levels relative to the SACMEQ II Project overall mean of 500. Green figures indicated ten points or more above the SACMEQ average, red figures indicated ten points or more below the SACMEQ average, and black figures indicated within ten points of the SACMEQ average.

In order to show **trends in achievement**, colour-coded arrowheads were used to show changes in average scores between 2000 and 2007. A green arrowhead denoted an increase of ten points or more, a red arrowhead denoted a decrease of ten points or more, and a grey arrowhead denoted change of less than 10 points above or below the SACMEQ mean of 500.

(a) Achievement Levels

It can be seen from **Table 1** that for Zanzibar as a whole, the mean score for reading increased by 59 points, from 478 points in 2000 to 537 points in 2007. For mathematics, there was an increase of 12 points in the national mean score, that is, from 478 points in 2000 to 490 points in 2007.

(b) Achievement Trends

From the green arrowheads in **Table 1**, it can be seen that, from 2000 to 2007, there was an overall

improvement in pupils' reading score in all regions of Zanzibar. In pupils' mathematics scores, there was an overall improvement from 2000 to 2007, with Urban-West Region improving in particular (34 points). The North Pemba Region has shown a decrease from 2000 to 2007. Although there is an overall improvement in pupils' mathematics scores, Zanzibar is still below the SACMEQ III mean.

Results for Competence Levels

Another way in which the SACMEQ results can be presented is by calculating the percentages of pupils who had reached each level of competence on a hierarchical scale of competence levels as explained below.

The reading and mathematics test items were first arranged in order of difficulty, and then examined item-by-item to describe the specific skills required in order to provide correct responses. Items were then placed in groups so that the items in each group had similar difficulty values and shared a common theme with respect to the underpinning competencies required to provide correct responses.

This "skills audit" for the reading and mathematics tests resulted in the identification of eight hierarchical levels of competence for each test (Level 1 being the lowest, and Level 8 being the highest).

The results of the skills audit have been presented in **Tables 2(a), and 2(b)**. A description or summary name was linked with each of the levels – in order to summarize the competencies associated with each group of test items. The first three competence levels in reading and mathematics employed the same prefixes (Pre, Emergent, and Basic) in order to reflect the mechanical nature of the most elementary competencies. From the fourth level upwards, the prefixes of the summary names were different for reading and mathematics, and were designed to reflect deeper levels of understanding of subject specific competencies.

The eight competence levels provided a more concrete analysis of what pupils could actually do. They also suggested instructional strategies relevant to learners who were learning at each level of competence.

For reading, it can be seen that there were increases in the percentages of pupils who were performing at Levels 5 to 8, as indicated by the plus (+) symbols in front of the figures in the final column of **Table 2(a)**.

This meant that the percentages of pupils who were performing at higher levels of reading competence were increasing, which was very pleasing. There was a corresponding decline in the percentages of learners who were performing at lower levels of competence (Levels 1-4), as indicated by the minus (-) symbol in front of the figures.

For mathematics, **Table 2(b)** showed that the percentage of pupils who were performing at Level 4 (Beginning Numeracy) increased by (+)10.7 percent, and the percentage of learners performing at Levels 1-3 decreased by (-)11.8 percent.

Summary of Results

The results discussed in this Policy Brief have shown that there was improvement in the performance of Standard 6 pupils in Zanzibar in both reading and mathematics between 2000 and 2007 in most regions, although in Mathematics there were still some regions performing below SACMEQ mean of 500.

In addition, the results showed that in both 2000 and 2007, there were very wide differences in pupil achievement across the five regions of Zanzibar.

The general improvement in learner achievement levels in Zanzibar between 2000 and 2007 in all five regions can be partially attributed to a combination of several interventions taken by the Ministry of Education through the 'Strengthening of Primary Education Programme'.

Various in-service training programmes have been conducted to head teachers, teachers, parent-teacher association committees, school inspectors, and district and regional education officers on the improvement of pupils' learning and management of schools so as to enhance the quality of education provided in primary schools.

Research-Based Conclusions

The following conclusions have been based on the results discussed in this Policy Brief concerning: (a) achievement levels for Standard 6 pupils – as measured by scaled test scores, and (b) achievement trends of Standard 6 pupils – as measured by their location in one of the 8 competency levels.

1. Levels of Achievement: In 2007 the average reading performance of Standard 6 pupils in Zanzibar (537) was well above the SACMEQ

overall mean (512), whereas the average mathematics performance of Zanzibar's Standard 6 pupils in 2007 (490) was considerably below the SACMEQ overall mean (510).

Education authorities should share this information with the Institute of Education and the Department of Teacher Education with a view of seeking ways to improve the quality of mathematics instructions in Zanzibar primary schools.

2. **Trends in Achievement:** Between 2000 and 2007 all Zanzibar regions experienced improvements in the average reading and mathematics performances of Standard 6 pupils. The only exception was North Pemba Region.

The Ministry of Education should congratulate the teaching force and teacher training institutions for these improvements, and urge all involved in the Ministry of Education to ensure that everything possible is done to ensure a continuation of these positive trends.

3: **Successful Programmes:** The major education programme (Strengthening Primary Education) launched and implemented in the period 2000-2007 formed the catalyst that initiated improvements in average reading and, to a certain extent, mathematics learning outcomes to Standard 6 pupils in Zanzibar.

The Ministry of Education and Vocational Training Zanzibar may wish to initiate an evaluation programme in order to assess which of these supplementary inputs to the learning environment were likely to have had the most impact on generating the observed improved learning outcomes especially in mathematics. This information is required so that lessons can be learned from those initiatives that were most effective.

A Concluding Comment

The task of improving the quality of education for a whole system of education must be seen as a long-term challenge. There are very few examples in the world where “quick fix” responses have resulted in system-wide positive improvements in the quality of education delivered across a nation.

For this reason Zanzibar has done its very best to take a long-term view of the development and renovation of its education system – which has required many

dedicated people to work systematically and patiently on implementing new education policy of 2006, making a national change of the official curricula as well as structure of primary schooling from seven to six years, and expanding and improving teacher education programmes.

The results reported in this Policy Brief suggest that since 2000, these efforts have started to pay dividends. The SACMEQ research results for Zanzibar in 1995 and 2000 showed that pupil achievement levels were persistently low at both national and regional levels. However, the 2007 SACMEQ research results for Zanzibar indicated substantial improvements, especially in reading.

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A copy of this Policy Brief can be downloaded from the SACMEQ Website: www.sacmeq.org

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Table 1: Levels and Trends in Pupil Achievement Across Regions Zanzibar

	Pupil reading score			Pupil mathematics score		
	2000	2007		2000	2007	
North Pemba	498	524	▲	509	490	▼
North Unguja	449	495	▲	455	458	▶
South Pemba	463	513	▲	479	474	▶
South Unguja	460	513	▲	460	471	▲
Urban West	496	572	▲	477	511	▲
ZANZIBAR	478	537	▲	478	490	▲
SACMEQ	500	512	▲	500	510	▶

Values in **Green** = 10 points or more above SACMEQ II mean of 500

Values in **Black** = less than 10 points above or below SACMEQ II mean of 500

Values in **Red** = 10 points or more below SACMEQ II mean of 500

Notes about trend:

▲ Increased by 10 points or more

▶ Minimal change (less than ±10)

▼ Decreased by 10 points or more

Table 2(a): Percentages of Learners Reaching Various Levels of Competence in Reading

Reading Skill Levels			2000	2007	Change
Level	Description	Skill/Competence	%	%	%
1	Pre-reading	Matches words and pictures involving concrete concepts and everyday objects.	6.0	3.1	-2.9
2	Emergent Reading	Matches words and pictures involving prepositions and abstract concepts.	13.8	5.9	-7.9
3	Basic Reading	Interprets meaning (by matching words and phrases, completing sentences).	21.4	12.4	-9.0
4	Reading for Meaning	Reads to link and interpret information located in various parts of the text.	27.0	16.2	-10.8
5	Interpretive Reading	Interprets information from various parts of the text in association with external information.	20.5	20.7	+0.2
6	Inferential Reading	Reads to combine information from various parts of the text so as to infer the writer's purpose.	9.3	21.3	+12.0
7	Analytical Reading	Locates information in longer texts (narrative, document or expository) in order to combine information from various parts of the text so as to infer the writer's personal beliefs (value systems, prejudices and biases).	1.9	17.4	+15.5
8	Critical Reading	Reads from various parts of the text so as to infer and evaluate what the writer has assumed about both the topic and the characteristics of the reader	0.0	3.0	+3.0

Table 2(b): Percentages of Learners Reaching Various Levels of Competence in Mathematics

Mathematics Skill Levels			2000	2007	Change
Level	Description	Skill/Competency	%	%	%
1	Pre-Numeracy	Applies single step addition and subtraction.	3.0	2.7	-0.3
2	Emergent Numeracy	Applies a two-step addition and subtraction involving carrying.	41.1	29.7	-11.4
3	Basic Numeracy	Translates verbal information into arithmetic operations.	41.1	41.0	-0.1
4	Beginning Numeracy	Translates verbal or graphic information into simple arithmetic problems.	10.0	20.7	+10.7
5	Competent Numeracy	Translates verbal, graphic, or tabular information into an arithmetic form in order to solve a given problem.	3.7	4.5	+0.8
6	Mathematically Skilled	Solves multiple-operation problems (using the correct order) involving fractions, ratios, and decimals.	1.0	1.3	+0.3
7	Concrete Problem Solving	Extracts and converts information from tables, charts and other symbolic presentations in order to identify, and then solve multi-step problems	0.1	0.1	=
8	Abstract Problem Solving	Identifies the nature of an unstated mathematical problem embedded within verbal or graphic information and then translate this into symbolic, algebraic or equation form in order to solve a problem.	0.0	0.0	=