

Policy Brief

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Southern and Eastern Africa Consortium
for Monitoring Educational Quality

Trends in Achievement Levels of Grade 6 Learners in Malawi

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Introduction

This Policy Brief provides information about levels and trends in the reading and mathematics achievement of Standard 6 pupils in Malawi that participated in two large-scale cross-national research studies of the quality of education that were conducted by the 15 school systems involved in the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ).

In 1995 the Malawi Ministry of Education decided to participate in the SACMEQ I Project. The Ministry's objective was to establish national benchmarks for the conditions of schooling and the quality of education in primary schools.

The results arising from this initial project appeared to be very alarming because they showed that the performance of Malawi's Standard 6 pupils was very poor compared to the six other SACMEQ countries that participated in the same research project.

As a result, the SACMEQ I Project raised many questions concerning different aspects of Malawi's education system. It is important to note that the SACMEQ I Project was implemented concurrently with the Policy and Investment Framework (PIF 1995-2005). The objective of the PIF was to define the Government of Malawi's policies and outline the Ministry's priority in terms of educational programmes. This objective was achieved when in 2001 the PIF document was revised in order to plan better strategies and policy directions.

Similarly, it is important to note that the SACMEQ I Project also coincided with the implementation of the Free Primary Education (FPE) policy.

In this context, the SACMEQ I Project played an important role because it provided sound data and enabled policy makers at the Ministry of Education to evaluate the relevance of the national PIF strategy.

In this way, the SACMEQ I Study proved to be very useful because the policy suggestions generated covered both: a) achievement levels in reading literacy, and b) the actions required to improve learning conditions in Malawian schools.

Subsequent research results from the SACMEQ II Project (2000) revealed a decline in the quality of education. This was illustrated by a deterioration in the reading mean score which decreased from 463 points in 1995 (SACMEQ I) to 429 points in 2000 (SACMEQ II). Compared to other countries, pupils from Malawi performed poorly, being at the bottom of the scale that represented all the SACMEQ countries' mean scores of Standard 6 pupils for both reading and mathematics.

However, the SACMEQ II findings provided insights that were taken into consideration during the development of both: a) the National Education Strategic Plan (NESP) 2008-2017 and b) the Education Sector Implementation Plan (ESIP 2009-2013). The NESP set out the Government's view of Malawi's education sector goals, objectives and proposals on how such goals and objectives would be reached in the decade 2008-2017. The ESIP served as a guide for the articulation of the broad development objectives of the NESP. It extracted strategies and activities to be undertaken in the 5-year period which would later be refined and redefined in annual work plans and budgets (MOEST, 2008; 2009).

There is a growing need to expand investigation and better understanding of the competency levels which appear to be very low. Therefore, the SACMEQ III Study was conducted in 2007 with the purpose of establishing a longitudinal analysis including potential determinants.

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 pupil 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 Malawi 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 Malawi and its education divisions 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 Malawi’s 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 education divisions of Malawi were derived from SACMEQ reading and mathematics tests that were administered in Malawi to 2,333 Standard 6 pupils from 140 primary schools for the SACMEQ II Project in 2000, and 2,781 Standard 6 pupils in 139 primary 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 Malawi as a whole, the mean score for reading remained the same even if a negligible change of 4 points was registered, from 429 points in 2000 to 433 points in 2007. In contrast, for mathematics, an increase of 14 points was recorded in the national mean score, that is, from 433 points in 2000 to 447 points in 2007.

From the red figures in **Table 1**, it can be seen that all education divisions showed low levels of reading achievement in both reading and mathematics because they were substantially below the SACMEQ average in both 2000 and 2007.

(b) Achievement Trends

From the green arrowheads in **Table 1**, it can be seen that two divisions (Central East and Northern) registered improvements in reading scores of more than 20 points even though they performed below the SACMEQ overall average. While Central West, South East and Shire Highlands registered minimal changes, the performance in South West is of serious concern as the achievement levels declined by over 10 points between 2000 and 2007.

In the case of mathematics, it can be seen that between 2000 and 2007 pupils' scores registered increases in four divisions (Central East, Central West, Northern, and South East). However, minimal changes were registered in the Shire Highlands division.

Of particular interest to note are the increases of nearly 30 points observed in the Central East and Northern education divisions. Concerning educational policy, it would be insightful to examine the factors that might have contributed to the recorded improvement in these divisions.

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 from **Table 2(a)** that the reading skills of the majority of Standard six pupils in Malawi in 2007 were concentrated at level 2 (emergent reading) and level 3 (basic reading) accounting for 63.6 percent. Nearly 20 percent of the pupils were able to read for meaning (level 4). However, less than seven percent of the pupils reached Interpretive, Inferential and Analytical reading skills. None had demonstrated critical reading skills (Levels 5, 6, and 7). The trend between 2000 and 2007 shows that there were increases in the percentages of pupils who were performing at Levels 3 to 7, as indicated by the plus (+) symbols in front of the figures in the final column of **Table 2(a)**. These increases implied a decline in the percentages of learners who were performing at lower levels of competence (Levels 1 and 2) as indicated by the minus (-) symbol in front of the figures. This meant that the percentages of pupils who were performing at higher levels of reading competence were slightly increasing.

For mathematics, **Table 2(b)** shows that most of the pupils reached the emergent and basic numeracy skill levels (84.1%). However, none of the pupils reached concrete problem solving and abstract problem solving competences (levels 7 and 8). The trend between 2000 and 2007 shows that the percentage of pupils who were performing at Level 3 (Basic Numeracy), increased by 9.3 percent, and the percentage of learners performing at Level 4 increased by (+) 4.5 percent. Therefore, the

percentages of learners performing at Levels 1 and 2 decreased by (-) 14 percent. As in reading, the trend for mathematics shows that competence levels among Standard 6 pupils were increasing but the increase was still minimal.

Summary of Results

The results discussed in this Policy Brief have shown that overall there was a minimal change in the performance of Standard 6 pupils in reading between 2000 and 2007. There were variations among the divisions with two of them showing improvement by more than 10 points. Three divisions (Central East, South East and Shire Highlands) showed negligible changes. One division (South West) declined by more than 10 points.

In mathematics, the national level performance increased by more than 10 points between 2000 and 2007. Pupils' performance improved by more than 10 points in four education divisions (Central East, Central West, Northern and South East) while in two divisions the change was minimal (Shire Highlands and South West).

The performance of pupils in Malawi in both reading and mathematics between 2000 and 2007 remained below the SACMEQ mean score of 500. This implied that the majority of pupils in Malawi operated under basic skills in both reading and mathematics in 2007.

The improvement observed in pupil achievement levels in mathematics between 2000 and 2007 can be attributed to a combination of several factors. This could mean that some of the interventions implemented by the Ministry were bearing some fruits. The examination of various interventions coupled with thorough analyses of the data might help to reveal the factors that might have contributed or not to the pupils' performance.

For example, factors such as the use of mathematics textbooks; the analyses of pupil/teacher ratio; or class/pupil ratio (see SACMEQ Policy Brief number 2 on Quality of Primary School Inputs in Malawi, www.sacmeq.org) could be considered as positive or negative factors that might influence pupils' performance. However, some of the interventions that appear to have had a positive impact on the quality of education include: in service training programmes for both teachers and school heads implemented under the Primary School Curriculum Assessment Reform (PCAR) programme, provision of basic learning

materials and improvement in the entry academic behaviour of both headteachers and teachers.

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 Malawi (433) was far below the SACMEQ overall average (512). Similarly, the average mathematics performance of Malawi's Standard 6 pupils in 2007 (447) was below the SACMEQ overall average (510).

As observed by Chimombo (2005), the core problem with primary education in Malawi is linked with the lack of education supplies. Levels of supply of textbooks, copy books, teachers, classrooms, desks, in-service training courses and inspectorate and supervisory services, among others by far have been insufficient to meet the minimum requirements necessary for the promotion of education of good quality under the Free Primary Education program. Therefore, it is recommended that the Supplies Department in the Ministry of Education takes the lead in collaboration with the Department for Basic Education, and the Department of Inspection and Supervision in order to intensify efforts in supplying and redeploying resources.

This action should be followed by a thorough monitoring of the use of educational resources, their distribution and utilisation at the school level.

2. Trends in Achievement: The trend in reading scores between 2000 and 2007 was not as positive as the trend in mathematics scores. Therefore, it is recommended that the Ministry investigates into this matter in order to come up with a way forward. At the same time, the section responsible for English in primary schools in the Department of Inspection and Supervision should take the lead in conducting a review exercise. Overall, Malawi needs to intensify efforts to improve pupils' mean scores to reach higher levels of competence.

3. **Successful Programmes:** There were a number of important education programmes and initiatives that were implemented in the period 2000- 2007. Any one of these, or all of them taken together, may have formed the springboard that supported improvements in the scores that were observed at division level. The Ministry of Education may wish to implement an evaluation programme in order to assess the supplementary inputs needed to continue improving the learning environment. In this way it will be possible to draw lessons from the most successful and effective initiatives.

4. **Information sharing and advocacy:** Improving the quality of education requires involvement of all stakeholders at central as well as at school level. In order to promote active participation in the promotion of quality education, the SACMEQ results should be disseminated widely. The Planning Department in the Ministry of Education and the development partners should provide adequate resources to support advocacy and campaign strategy.

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, Malawi has done its very best to take a long-term view of education development by developing the National Education Strategy Plan (NESP) 2008-2017 and the Education Sector Implementation Plan (ESIP), and by moving towards Sector Wide Approach (SWAp) in the education system – which has required many dedicated people to work systematically and patiently.

The results reported in this Policy Brief suggest that Malawi and its development partners should concentrate their efforts towards the improvement of quality in the education sector in order to observe an increase in pupils’ school performance. This means that Malawi needs to invest heavily in quality improvement so that Standard 6 pupils can reach higher levels of competence in both reading and mathematics.

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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 Education Divisions in Malawi

	Learner reading score			Learner mathematics score		
	2000	2007		2000	2007	
Central East	406	430	▲	418	449	▲
Central West	435	435	►	437	449	▲
Northern	417	440	▲	420	448	▲
South East	438	433	►	434	447	▲
Shire Highlands	430	427	►	436	443	►
South West	445	432	▼	451	443	►
Malawi	429	433	►	433	447	▲
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.	11.3	9.7	-1.6
2	Emergent Reading	Matches words and pictures involving prepositions and abstract concepts.	33.2	26.9	-6.3
3	Basic Reading	Interprets meaning (by matching words and phrases, completing sentences).	33.6	36.7	+3.1
4	Reading for Meaning	Reads to link and interpret information located in various parts of the text.	16.2	19.9	+3.7
5	Interpretive Reading	Interprets information from various parts of the text in association with external information.	4.5	4.8	+0.3
6	Inferential Reading	Reads to combine information from various parts of the text so as to infer the writer's purpose.	1.2	1.4	+0.2
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).	0.2	0.6	+0.4
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	0.0	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.	12.4	8.6	-3.8
2	Emergent Numeracy	Applies a two-step addition and subtraction involving carrying.	61.9	51.3	-10.6
3	Basic Numeracy	Translates verbal information into arithmetic operations.	23.5	32.8	+9.3
4	Beginning Numeracy	Translates verbal or graphic information into simple arithmetic problems.	2.1	6.6	+4.5
5	Competent Numeracy	Translates verbal, graphic, or tabular information into an arithmetic form in order to solve a given problem.	0.2	1.3	+1.1
6	Mathematically Skilled	Solves multiple-operation problems (using the correct order) involving fractions, ratios, and decimals.	0.0	0.4	+0.4
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	0.0	0.0	0.0
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	0.0