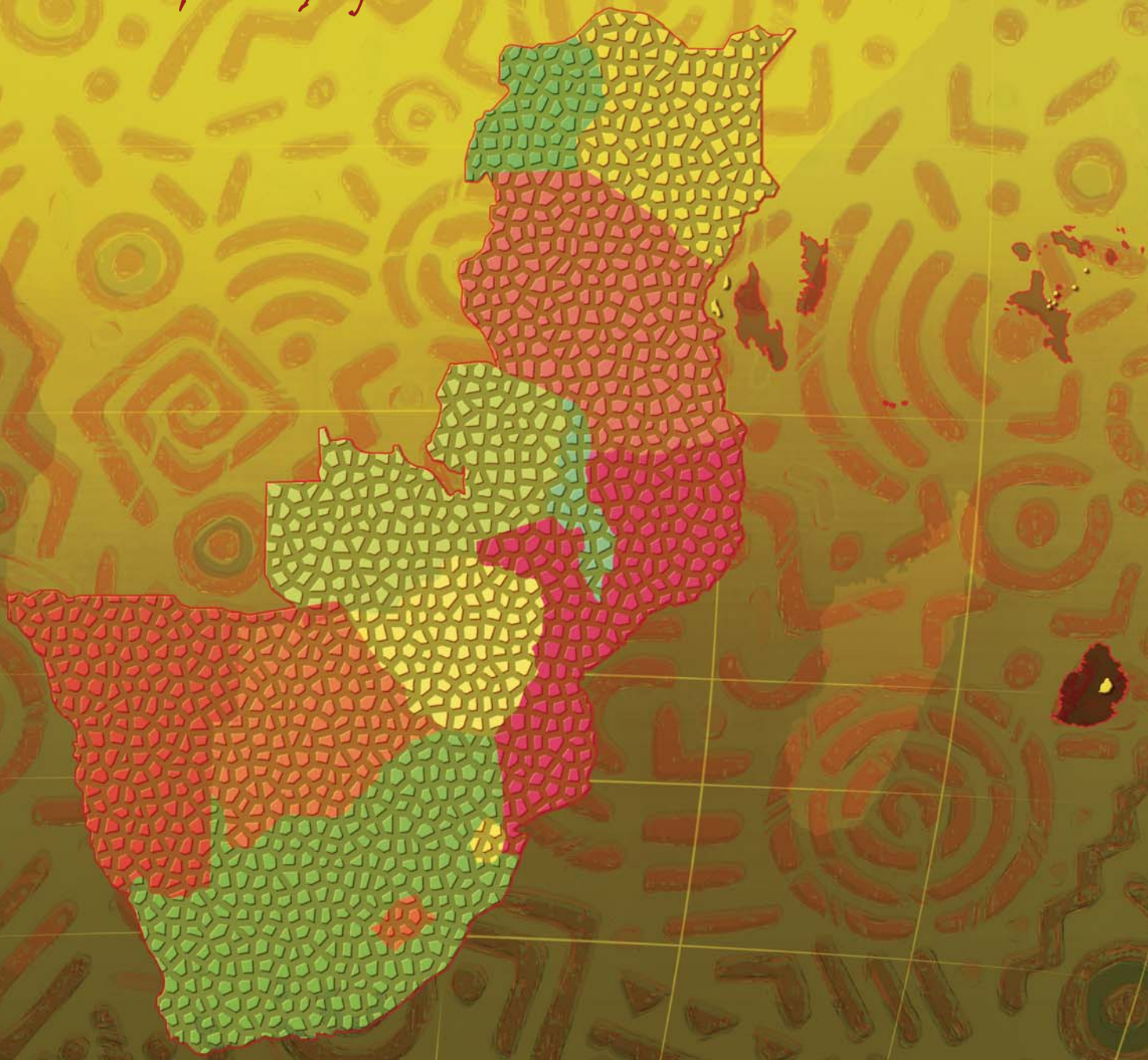
The SACMEQ III project in

SOUTH AFRICA

A study of the conditions of schooling and the quality of education



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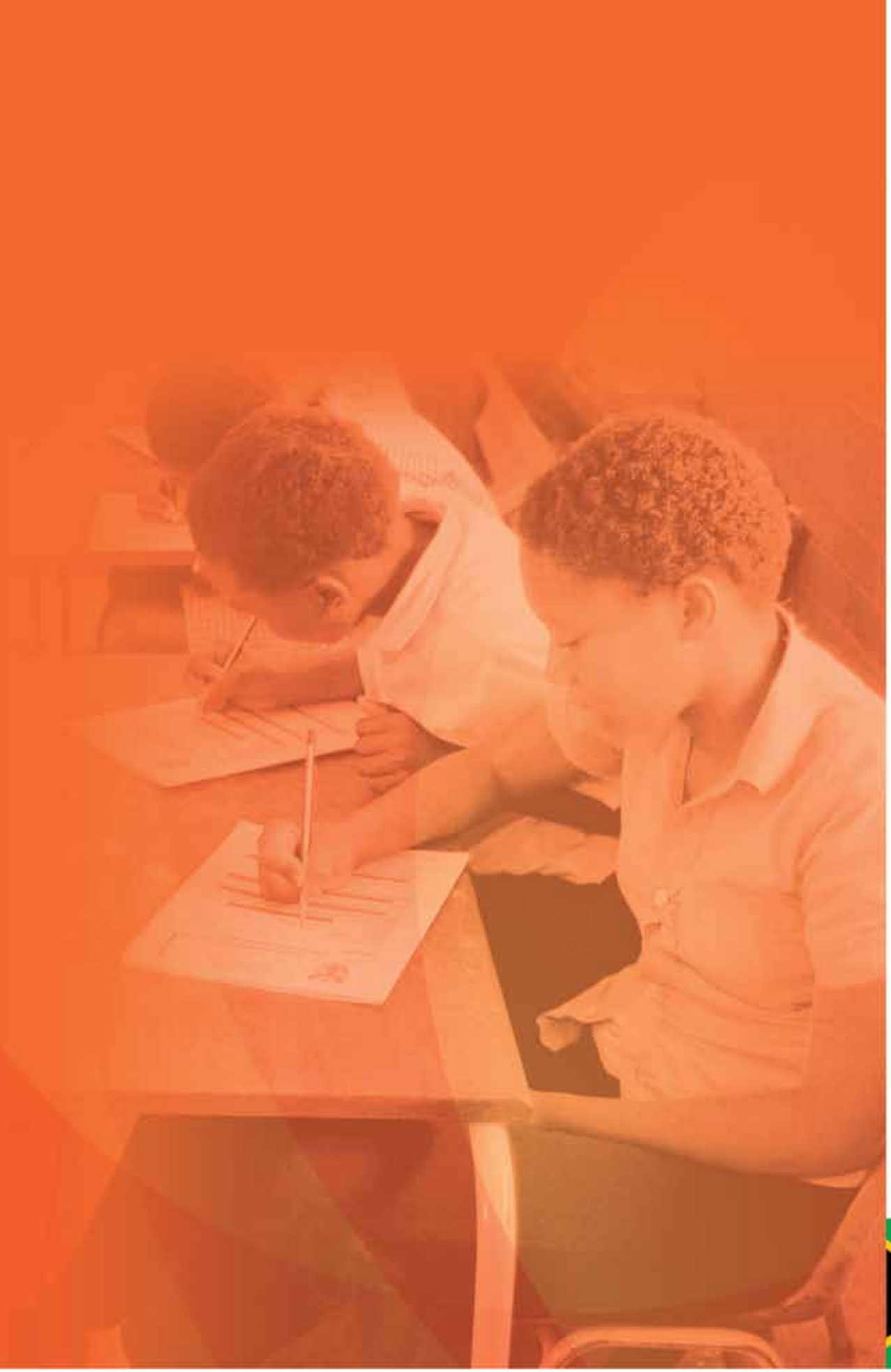

The SACMEQ III Project in South Africa: A Study of the Conditions of Schooling and the Quality of Education

South Africa • Country Report

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The SACMEQ III Project in South Africa: A Study of the Conditions of Schooling and the Quality of Education

South Africa • Country Report

by

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Foreword by the Minister of Basic Education

The challenge of providing quality basic education for all our children is not only at the heart of the Millennium Development Goals (MDG) set by the international community, but it is actually a social commitment which every government owes the citizens of its country. Our continued participation in SACMEQ as South Africa is based on the recognition of the valuable information which this regional (African) initiative provides to help us track if our policies are helping us deliver on the goals that we have set for ourselves.

In many instances the SACMEQ III report has confirmed, in a scientific way, some of the challenges which continue to undermine our efforts to transform the lives of our people. As reflected in the report, the levels and quality of educational outcomes achieved by our learners are evidently still far below our national targets. There is no disputing the fact that early acquisition of the foundational skills of reading and numeracy is a critical goal that requires focused attention in our schools and sustained support from parents.

The report shows that, beyond overall under-performance, there are serious performance disparities which tend to run along poverty lines as seen in relatively poorer performance in rural schools and schools that are at the lower end of the socio-economic scale. For a society that is largely rural with limited resources, this points to the need to prioritize interventions in farm, rural and township schools and ensure they are functional and are adequately equipped to deliver high quality education to the communities that they serve.

It is of great concern that the report shows that learners' knowledge of basic concepts and awareness of potentially life-threatening issues related to the ravaging scourge of the HIV and Aids pandemic is far below the desirable levels. Given the stubbornness of the pandemic and the vital decisions that our adolescent children have to make, it is important that society joins hands with the Ministry of Education in ensuring that our schools become centres of holistic development which stimulate intellectual, social and emotional development.

We cannot over-emphasize that education is and must be treated as a societal issue.

Mrs Angie Motshekga, MP

Minister of Basic Education

Statement by the Director-General

The SACMEQ III report is released at an opportune time when the Department of Basic Education is focusing all attention and resources on improving the quality of educational outcomes in our public schooling system. The research findings will feed fittingly into our *Action Plan 2014 Towards Schooling 2025* and its goals. With the useful information that the report provides on the conditions of learning and teaching in our schools, the Department will be better equipped to make informed choices and prudently select priorities that need to be considered in our interventions for the needed improvement.

We have particularly noted the striking resemblance between the findings in this report and the results of our own national assessments in terms of the unacceptably low levels and quality of competencies demonstrated by the majority of our learners in the foundational skills of literacy and numeracy. This is a challenge which calls for intensifying and accelerating our current plans which include, among others, strengthening support and relevant in-service training of teachers, ensuring that teachers and learners complete all due curriculum work in their yearly programmes, providing every learner with a textbook for each subject that they do, specifying and monitoring management responsibilities that are required for school functionality and providing minimum funding for every school. We have more than enough evidence to justify and push these initiatives.

Participation in SACMEQ does not only help us as a country to benchmark the quality of our education against other comparable systems in the southern and eastern Africa region, but the transfer of skills which is a recommendable feature of the SACMEQ projects helps us strengthen national capacity to evaluate our schooling system using appropriate methods and valid instruments. This is critical for producing credible evidence which then forms the basis of our planning and delivery.

Mr Bobby Soobrayan

Director-General

Department of Basic Education

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Executive Summary

The third Southern and East Africa Consortium for Monitoring Educational Quality (SACMEQ III) report represents a study of the critical aspects relating to the conditions of schooling and the quality of education offered at a primary school level.

The SACMEQ III Project was conducted in 2007 and represented South Africa's second participation in the regional study involving 15 member countries: Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania (Mainland), Tanzania, (Zanzibar), Uganda, Zambia, and Zimbabwe. South Africa's first participation in SACMEQ was in 2000. The main purpose of the SACMEQ III Project was to gather information that could be used by ministries of education to track trends in a) the general conditions of schooling, b) the reading and mathematics achievement levels of Grade 6 learners and their teachers, and c) the knowledge that learners and their teachers have about HIV and AIDS.

An important principle applied in the SACMEQ projects was that the methodology and instruments that were used in the SACMEQ III project in 2007 were the same as in SACMEQ II. This ensured comparability of the conditions of schooling and achievement results of Grade 6 learners from 2000 to 2007.

Against the country's own set benchmarks, South Africa scored poorly in the provision of basic learning materials, and scored satisfactorily in the provision of classrooms. In addition, in comparison with the overall situation among SACMEQ countries, South Africa's score on the provision of mathematics textbooks was rather disappointing. However, the country scored well on learner-teacher ratios (which is a sign of adequate supply of teachers).

However, the study did show that South Africa had vastly improved in the provision of basic learning materials between 2000 and 2007. It is likely that this improvement was due to the Government's pro-poor focus on ensuring the schools from the poorest communities receive high funding mechanisms and basic school packages through its Quality Improvement and Development Upliftment Programme (QIDS-UP) initiative. An area of concern was the decline in the levels of mathematics textbooks between 2000 and 2007. However, this decline could be attributed to the phasing in of the new curriculum (which started in 1997) which de-emphasised the need for learners to have sole use of textbooks. Nevertheless, the textbook situation among primary school learners is likely to have improved considerably since this study was concluded. This is because, as from 2010, the government started providing each learner in Grades 1 to 6 with textbooks for all core subjects.

The achievement results of the study indicated that there is a need to expose learners to examples of applying skills associated with the higher SACMEQ levels in both reading literacy and mathematics. In the national curriculum statement emphasis is placed on teachers designing tasks in such a way as to ensure that a variety of skills are assessed. The eight SACMEQ levels for reading literacy and mathematics presented in this report provide an appropriate benchmark to model assessments and to structure learning such that learners may be exposed to the expected range of competencies for their age group.

In terms of our progress towards gender equality, the participation of both boys and girls in the South African

schooling system has maintained a reasonably equitable gender balance. However, there are worryingly low levels and wide gender inequalities in the areas of learner achievement of acceptable educational outcomes, participation of females in school leadership positions as well as the provision of adequate safety and sanitation facilities which are particularly critical for retaining girls in schools. Properly implemented, the recommendations of this report could accelerate the pace of South Africa's effort of improving gender equality in education.

The achievement results further indicate that the extent of participation in pre-school programmes by learners who were in Grade 6 in 2007 has a significant impact on learner achievement in reading and mathematics. This observation further strengthens the strategy of the DBE to increase year on year the access of children to quality pre-school educational programmes. The SACMEQ findings provide credible reasons for the DBE to strive harder towards the provision of early childhood development in all schools.

The study also clearly pointed out that it was necessary to take stock of the impact the current HIV and AIDS prevention education programmes had on the young people in South Africa. The SACMEQ results showed that during 2007 two-thirds of Grade 6 learners did not have the minimal level of knowledge about HIV and AIDS that was required to motivate them to choose healthy life-styles. This was indeed alarming because Grade 6 learners in South Africa (with an average age of 12.9 years) are entering a stage of development where they may become sexually active, and/or may choose to become involved in high-risk behaviours. The Department of Basic Education should therefore take immediate action to: (a) address the research-based conclusions presented above, and (b) facilitate the development and implementation of more effective HIV and AIDS prevention education programmes that focus on the upper grades of primary school.

The report concludes by presenting the next steps emanating from the findings of the study in the form of an agenda for action. Here, the research-based findings of the report are summarised as policy suggestions and grouped according to the following categories: 1) quality of the learning environment, 2) reading and mathematics achievement levels of learners, 3) promotion of gender equality, 4) provision of effective pre-school education exposure and learner and teacher knowledge on HIV and AIDS. As the Department of Basic Education strives to improve the conditions of schooling and the quality of education offered to learners, the SACMEQ III South Africa country report provides a valuable source of credible information for educational planners and policy makers to utilize in the continuous endeavour to bring about excellence in the education system.

Chapter 1

The Setting of the Study

Introduction

This report on South Africa's participation in the third study of the Southern and East Africa Consortium for Monitoring Educational Quality (SACMEQ III) is a sequel to the SACMEQ II report which was published in 2005 (Moloi and Strauss, 2005). The South African SACMEQ III report tracks developments in the levels and quality of educational outcomes and the conditions that might have impacted on the quality of education since the release of the SACMEQ II report.

Significant developments have taken place in South Africa since the release of the SACMEQ II report. The context in which education delivery was taking place during the SACMEQ III study has been described in this chapter. The context includes a brief description of the national education system and the changes that it had undergone in the period of reporting, including the structure and administration of the school system, some of the strategies employed by the government to finance education, enhance governance and teacher training and to improve the quality of educational outcomes.

South Africa as a nation

At the time the SACMEQ III research project was conducted the population of South Africa had grown to approximately 49 million people. This was an increase of 8,2 percent on the 1996 statistics which were used in SACMEQ II research. According to the Community Survey 2007[1], the percentage of the population who were 20 years and older and had post-school qualifications (above Grade 12) was 9,1 percent, which was an increase of 3,1 percent in the period between 1996 and 2007. In the same age category the percentage of the population whose highest qualification was primary school only had decreased from 24% to 5,9 percent while the percentage of those who had no schooling at all had dropped from 19% to 10,3% in the same period.

With regard to income distribution in South Africa during the period between the SACMEQ II and SACMEQ III studies, Leibrandt *et al* (2010: 2) summarized the trend as follows:

> *"… South Africa's high aggregate level of income inequality increased between 1993 and 2008. The same is true of inequality within each of South Africa's four major racial groups (Whites, Indians, Coloureds and Africans). Income poverty has fallen slightly in the aggregate but it persists at acute levels for the African and Coloured racial groups. Poverty in urban areas has increased".*

1 http://www.statssa.gov.za/community_new/content.asp, accessed on 27 August 2011.

Although there had been significant strides taken to transform the nation from the pre-1994 apartheid political, social and economic divisions and inequalities, by the time of SACMEQ III South Africa was still confronted with a mix of successes and challenges on the educational front in particular. Key among the successes has been remarkable improvements in opening up access to basic education for the majority of children of school-going age. South Africa's Gross Enrolment Ratio (GER) stood at 99% in 2007[2], which was virtually unchanged since the SACMEQ II study. The main challenge that remained almost intact was improving the levels and quality of educational outcomes as measured by the Reading and Mathematics Rasch scores obtained by the Grade 6 learners in SACMEQ tests.

The structure of the school system

The structure of the South African school system comprises three (3) broad bands, viz. the General Education and Training (GET), Further Education and Training (FET) and Higher Education (HE) which spanned Level 1, Levels 2-4 and Levels 5-8, respectively, on the National Qualification Framework (NQF). This arrangement remained virtually unchanged between the SACMEQ II and SACMEQ III studies.

A new structural arrangement was the full scale inclusion of Grade R (five to six year olds) into the mainstream public school system. Prior to 2007 the provision of Grade R was a shared responsibility between two government departments: the Department of Education and the Department of Social Welfare. This arrangement proved non-viable since accountability often got lost in this duality, particularly in the areas of who should provide appropriate human and material resources. The revised arrangement meant that the Department of Education took full responsibility for providing education to this category of children. In 2007[3] there were approximately 26 065 schools that provided education to over 12 million learners in South Africa. Four percent of the schools were independent or privately run. The total number of educators who served all the schools was 394 225.

The administration of school education

The constitution of the Republic of South Africa assigns the administration of public education in South Africa to both the national Ministry of Education and the nine (9) provincial departments. In practice the national department develops policies while provincial departments are charged with the responsibility to implement the policies. The administrative tier between the province and the school is the district or region in some instances. Being at the point where the education system interfaces directly with learning sites, districts are ideally positioned to provide administrative and professional support to schools. However, this tier continues to pose an efficiency challenge, both in terms of its definition and capacity. and by 2007 there were already debates and proposals on how best to define and resource it for optimal efficiency. Districts are expected to provide management and professional support to schools to improve and maintain high quality teaching and learning standards.

2 Education Statistics in South Africa, 2007.

3 http://www.southafricaweb.co.za/page/primary-and-secondary-education-south-africa, accessed on 27 August 2011.

Financing of education

On average, expenditure on public education in South Africa had decreased from 21% to around 16% of the total government expenditure and from 6 percent to just over 5 percent of the Gross Domestic Product (GDP) between 2000 and 2007. Personnel costs dropped from 90% to 84% of the education budget in the same period, a slight improvement but still falling short of the targeted 80% in order to free some funds for non-personnel expenditure (Taylor *et al*, : 2008).

Notwithstanding the remarkable improvements that the pro-poor equitable share formula (ESF) strategy of redressing historical resource allocation inequalities has produced, there had been recognition that by 2007 too many South African children still could not access education because of inhibitive user costs such as transportation and books. Consequently, the government voted additional funding to finance the poorest schools so that they would not charge fees on their learners (fee-free schools) and also to exempt deserving individual learners from paying fees so that they could access education in spite of their socio-economic backgrounds.

The initiatives culminated in the formal launch of the Foundations for Learning Campaign (FFL) whose main focus was to redress, in practical and concerted ways, the relics of inequality, poverty and under-performance which continued to frustrate the transformation efforts in education. The key thrust of the FFL was to a) provide the poorest schools with minimum resource packages for effective teaching and learning b) support and empower principals to manage schools effectively and c) give directives on how curriculum delivery was to be managed by schools and supported by districts, provinces the national level of education and communities at large. Although the full impact of these initiatives may not have been realized by the time SACMEQ III was conducted, it is important to take them into cognizance in interpreting the results of the study.

Curriculum implementation developments

The period between the SACMEQ II and SACMEQ III projects (and beyond) saw significant moves by the government of South Africa to revise, strengthen and simplify the national curriculum. The key criticisms against the original outcomes-based design were leveled at a design that integrated a wide range of subjects under one learning area and thus compromised the specific content that had to be taught and learnt at each grade. For example, a learning area termed “Mathematical language, mathematics and mathematical sciences (MLMMS)” was an integration of general numeracy, arithmetic, mathematics and statistics, with no definite scope of the expected content to teach and learn under each of these subjects. This led to huge challenges for teaching and assessment since the teachers who had to mediate the new curriculum had been trained in a different dispensation that specified subjects and content to be learnt at each grade.

By the time of conducting the SACMEQ III project there had been a significant revision of the national curriculum, mainly making the curriculum more manageable by teachers and better focused to improve prospects of effective learning. In the main the initiatives were to prioritise the development of the necessary skills and knowledge, and at the primary school level these would be the foundational skills of literacy and numeracy (reading and mathematics).

Governance of schools

The governance of schools is a competence of elected school governing bodies (SGBs) in terms of the South African Schools Acts (SASA) of 1996. By 2007 the system of electing SGBs had stabilized and their operations were fairly regular. However, for the majority of the schools, mostly in rural and semi-urban township contexts, there were still serious challenges in terms of the capacity of the SGB members to discharge their responsibilities in ways that enhanced the functionality of the schools. For example, SGBs in the said contexts tended to compare unfavourably in terms of relevant skills in comparison to their counterparts in urban contexts and this could contribute to entrenching inequalities among the schools.

Educator training

South Africa has developed a comprehensive teacher development strategy to meet the needs in the demand, supply and utilization of teachers in the system. The strategy recognizes and addresses equally the importance of both the initial (pre-service) and the continuous professional development (in-service) training of teachers.

(a) Pre-service training

Formal initial (pre-service) training of educators in South Africa is the responsibility of the institutions of higher learning, viz. universities and technikons. The duration of training is four years and includes sessions of exposing trainees to real teaching situations. There has been growing concern that the turnaround rate of trained educators does not meet the requirements of the education system. The low turnaround has been attributed partly to the relatively small number of higher education institutions that offer training and partly to the smaller number of students who show interest in and follow teaching as a career. The result has been acute shortages in the numbers and quality of suitably qualified teachers. The most acute shortages have been in teachers of mathematics, natural sciences, the Foundation Phase (grades 1-3) and in the teachers of indigenous languages. To promote teaching as a career of choice and attract bright students into the profession, the government has been offering full-study bursaries to students, especially those who choose to teach the rare subjects such as mathematics, science and indigenous languages.

(b) In-service training

In-service training or continuous professional teacher development (CPTD) is an integral component of the comprehensive teacher development strategy in South Africa. The Department of Basic Education has the responsibility to ensure that every teacher receives a minimum amount of in-service training in a defined period of time. For example every teacher is by law entitled to a defined number of hours of in-service training every year. While the Department has the responsibility to provide CPTD, the terrain of providing this service is open to non-governmental organizations as well. The Department reserves the right to monitor and evaluate the relevance and quality of the offerings.

Educational policy reviews and reforms in 2007

By and large educational policies have remained fairly stable in South Africa. By 2007 the main focus of the Department was to strengthen the implementation of the national curriculum to make it easier for teachers to teach and for learners to learn effectively. The revised curriculum specified more clearly the knowledge to be taught, how assessment was to be carried out and specified appropriate learning and teaching support materials to be developed and used. The period also saw intensified provision of learning and teaching materials to the poorest schools. These were also focused interventions to improve the professional competency of teachers.

The main policy concerns of the Ministry of Education in 2007 and beyond

The main concern of the Ministry of Education in 2007 and beyond has been positioning the education system to improve the levels and quality of educational outcomes in the country. Results from both national and international assessments of learner performance continued to show that South African learners tended to under-perform.

The value of South Africa's participation in SACMEQ

SACMEQ's mission is to assist educational planners and researchers to undertake studies of the quality of their education systems by working in a cooperative manner that encourages them to share their experiences and to learn from each other. South Africa's continued participation in SACMEQ has not only helped develop local capacity for conducting evaluations of the quality of education, but participation also helps the country to benchmark its performance against countries in comparable circumstances.

The structure and contents of this report

Chapter 1 mapped the setting for this study. The conduct of the study, which includes an account of SACMEQ's general approach to educational policy research, an explanation of how the instruments were constructed and the sampling process are the subject of Chapter 2. In Chapter 3 the sample learners' characteristics and the quality of their learning environments have been described. This chapter includes issues of equity in the allocation of essential physical and human and resources among and within provinces. Chapter 4 is an account of the Reading and Mathematics achievement levels of learners and their educators. Chapter 5 deals with the knowledge levels of learners and teachers on HIV and AIDS. The conclusion and the agenda for action have been presented in Chapter 6.

Chapter 2
The Conduct of the SACMEQ III Project

Introduction

Over the years since its first project in 1995, SACMEQ has developed research instruments and collected useful information using advanced research methods. An important principle in the studies is to ensure that SACMEQ is able to generate valid measures of levels and changes in achievement: (a) across countries at single time points, and (b) across time points for individual countries. To achieve this goal SACMEQ follows virtually the same methodologies across studies and uses the same instruments which must be kept confidential to remain valid. The methodology and instruments that were used in the SACMEQ III project in 2007 were, therefore, the same as in SACMEQ II. For a detailed account of the study design, sampling techniques and the development of the instruments reference should be made to the second chapter of the SACMEQ II report. A unique feature of the SACMEQ III research project was the inclusion of the HIV and AIDS knowledge test (HAKT) for Grade 6 learners and their teachers.

The SACMEQ III project did however represent a major increase in the scale and complexity of SACMEQ's research and training programmes. The focus of the project was on conditions of schooling and the quality of education in fifteen school systems: Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania (Mainland), Tanzania (Zanzibar), Uganda, Zambia, and Zimbabwe.[4] The purpose of the project was to gather information on a) the general conditions of schooling, b) the reading and mathematics achievement levels of Grade 6 learners and their teachers, and c) the knowledge that learners and their teachers have about HIV and AIDS. The main data collection for the project covered a total of around 60 000 pupils, 8 000 teachers, and 2 800 school heads. In South Africa, the coverage was 9 071 pupils, 1 068 teachers and 392 school heads (IIEP Newsletter, 2010).

In this chapter specific aspects of the methodology followed in the SACMEQ III project have been outlined and this includes a description of the sample used, data collection, cleaning and analysis.

The study population

The definition of the study population included the desired, the defined and the excluded populations.

(a) Desired Target Population

The desired target population definition for the SACMEQ III Project was exactly the same (except for the year) as was employed for the SACMEQ II Project. This consistency was maintained in order to be able to make valid cross-

4 For additional on SACMEQ, please visit www.SACMEQ.org

national and cross-time estimates of "change" in the conditions of schooling and the quality of education.

The desired target population definition for the SACMEQ III Project was as follows.

> *"All learners at Grade 6 level in 2007 (at the first week of the eighth month of the school year) who were attending registered mainstream (primary) schools."*

(b) Excluded Target Population

One of the rules followed by SACMEQ for ensuring valid data in large-scale studies is that no more than 5 percent of the learners in the desired target population may be excluded from the defined target population. Like in SACMEQ II, special schools which provide education to learners with severe educational needs were excluded from the SACMEQ III sample. "Small" mainstream schools which had less than 15 learners enrolled in Grade 6 in 2007 were also allocated to the excluded population to reduce data collection costs – without the risk of leading to major distortions in the study population.

(c) Defined Target Population

The "defined target population" was constructed by removing the "excluded target population" from the "desired target population".

In **Table 2.1** the numbers of schools and learners in the desired, defined and excluded populations for South Africa have been presented.

Table 2.1: Desired, Defined, and Excluded Populations for South Africa

	Desired		Defined		Excluded		
	Schools	**Learners**	**Schools**	**Learners**	**Schools**	**Learners**	**Learners %**
South Africa	17 936	920 187	13 221	876 536	4 715	43 651	4.74%

From the last column of **Table 2.1** it can be observed that the excluded population of learners was 4,74 percent which was less than the stipulated 5 percent to meet the SACMEQ criteria for accuracy in large-scale assessment data.

Data Collection

In this report "Data Collection" includes preparations before the field work, the actual field work and activities that followed field work.

Preparations for the Main Data Collection

Preparations focused on instrument review, communication to schools, printing and distribution of instruments and training of data collectors.

(a) Instrument review

As soon as the SACMEQ Assembly of Ministers took a decision to conduct the SACMEQ III project in 2007 the National Research Teams (NRTs), under the auspices of the SACMEQ Coordinating Centre in Paris, set out to prepare and update the instruments (tests and questionnaires). Between 2005 and 2006 the SACMEQ Coordinating Centre hosted at least three working sessions for the NRTs in Cape Town, Paris and Botswana, that were focused on reviewing existing test items and ensuring that, where there had been curriculum changes, the items were still relevant. Invariably, there were no significant changes on the Reading and Mathematics test items. The HIV and Aids items, which were new, were piloted, first in a few primary schools in Botswana and then in individual member countries. The pilot study was intended to ensure that the language in the HAKT test was accessible to learners, that there were no cultural biases in the items and learners could follow how to write their responses.

In South Africa the tests were subsequently “versioned” into Afrikaans for learners who were taught in this language. “Versioning” was commissioned to specialists in both languages and assessment at the University of Pretoria. Care was taken that the English and Afrikaans versions of the tests were equivalent to avoid unfair advantage in either language.

The final statistical and content validity and reliability checks of the instruments were carried out by specialists at the SACMEQ Coordinating Centre who then declared the instruments ready to print and take to the field.

(b) Communication to schools

The office of the Director-General for the Department of Education (DoE) notified the sampled schools through the offices of the Heads of Provincial Departments of Education (PEDs) at the beginning of 2007. In addition, each PED identified a coordinator for data collection and teams of data collectors from provincial and district officials. The teams were responsible for distributing the data collection schedules, intensifying and monitoring communication to schools in their respective provinces and districts.

(c) Printing and distribution of data collection instruments

Data collection instruments included a) School Head Booklets, b) School Information Forms, c) Teacher Booklets, d) Learner Booklets and e) Learner Name Forms. Each participating country received print-ready copies from the Coordinating Centre and were responsible for printing correct numbers of copies for their respective schools. In South Africa the services of the Government Printers were procured to print the materials.

When all instruments were printed, the NRTs conducted a "hand check" of all materials so as to verify that there were no missing pages or misprints or omissions. All work related to the printing and packaging of the data collection instruments was undertaken under strict security arrangements – so that there was no possibility of a "leakage" of information about the content of the learner and teacher Reading and Mathematics tests.

The printed materials were distributed to leaders of teams that were assigned to collect data in each province. The Team leaders were responsible for checking the accuracy of the instruments in terms correctness of numbers and languages before carrying the instruments to the schools. The first level of checking was during the data collection training sessions and the data collectors were charged to do further and final checks a day before the data collection.

(d) Training of data collectors

In South Africa 174 data collectors were trained. On the first day of training the NRC presented a "simulated" data collection exercise in which he/she acted as a data collector and the trainees took the roles of learners, teachers, and School Heads. The second day involved an intensive study of the Manual for Data Collectors. This document set down, in sequential order, all of the actions to be taken by the data collector from the time of receiving packages of data collection instruments from the Ministry of Education to the time when the data collector had completed the data collection and was preparing all materials for return. The third day involved a second "simulated" data collection whereby the trainees supervised a full-fledged data collection in several schools that were not involved in the main data collection. The experiences gathered during these exercises were shared and discussed during a later meeting so that all data collectors understood the procedures to be completed within schools.

Main Data Collection

"Main Data Collection" in this report refers to the actual field work. Two trained data collectors were assigned to each sampled school to administer the instruments. Special effort was made to ensure that the data collections were conducted according to explicit and fully-scripted steps so that the same verbal instructions were used (for learners, teachers, and School Heads) by the data collectors in all sample schools in all countries for each aspect of the data collection. This was a very important feature of the study because the validity of cross-national comparisons arising from the data analyses depended, in large part, on achieving carefully structured and standardized data collection environments.

The main SACMEQ III data collection occurred for most SACMEQ Ministries of Education in the period September to December 2007. In South African data was collected in September 2007 in 392 sample schools that were involved.

Two days of data collection were required for each sample school. On the first day the data collectors had to sample learners from all the Grade 6 classes in the sampled schools, using a list of provided random numbers. The sampled learners were then given the learner questionnaire, the HAKT and the Reading test. On the second day they were given the Mathematics test. Part of the learner questionnaire required learners to get confirmation of the accuracy of the information from their parents and so the questionnaire was taken home and returned the following day.

In addition to completing a questionnaire, one teacher who taught the majority of the sampled learners for each of Reading, Mathematics and Life Orientation (for the HIV and Aids test) also completed the relevant tests.

The data collectors were provided with a 40-point checklist in order to ensure that they completed all important tasks that were required before, during, and after their visits to schools. Each task was cross-referenced to specific pages of instructions in the data collectors' manual. The data collectors also checked all completed questionnaires (learner, teacher, and School Head) and, if necessary, obtained any missing or incomplete information on the second day before they left the school. The materials were then handed over to the provincial coordinator for safekeeping, "hand editing" and dispatching to the National Research Coordinator (NRC) in Pretoria as soon as all data collection was completed.

Sampling and the sample characteristics

A two-stage sampling design was employed. In the first stage schools in the defined target population were sampled on a "probability-proportional-to-size" (PPS) basis from sampling frames that individual countries submitted to the SACMEQ Coordinating Centre. The PPS sampling technique meant that relatively large schools had a higher probability of being selected than smaller schools. In the second stage of sampling learners were sampled from all the Grade 6 classes in each of the sampled schools using computer-generated random numbers. Twenty five (25) learners (minimum cluster size) were sampled where the total number of all enrolled Grade 6 learners at the time of data collection was greater than 25. Where the number of Grade 6 learners was 25 or less than 25 in a school, all the Grade 6 learners were included in the sample.

For a detailed account of how the sampling of schools and learners was carried out, including the software that was used, in the SACMEQ III project the reader may refer to Ross and Saito (in press). The numbers of schools and learners in the planned and actually achieved South African sample have been presented in **Table 2.2**.

Table 2.2: Planned and Achieved Samples for SACMEQ III in South Africa

South Africa	SACMEQ III			
	Schools		Learners	
	Planned	Achieved	Planned	Achieved
	400	392	10 000	9 071

From **Table 2.2** the planned South African sample was 400 schools and 10 000 learners. The achieved sample comprised of 392 schools and 9 071 learners. Reasons for non-participation by the eight sampled schools ranged from schools that had since either ceased to exist or were merged into other schools, one school had since phased out the primary section, another school had a tragedy of learners who lost their lives in a road accident a day before the data collection and few other reasons that were considered valid. Because South Africa had actually over-sampled schools, replacements were considered not necessary on the advice of the SACMEQ Coordinating Centre. Similarly, learners who were sampled in the sampled schools but were not available on the day of data collection were not replaced.

Response Rates, Design Effects, Effective Sample Sizes

The size and the quality of the sample are critical to the accuracy of the research. The response rate, the design effect and the effective sample size are some of the characteristics that SACMEQ monitors in all the projects. The response rates, design effects and effective sample sizes for the SACMEQ III project in South Africa have been presented in **Table 2.3**.

The figures in first two columns under the heading "% Achieved" in **Table 2.3** are the response rates for schools and learners, respectively. The third, fourth and fifth columns under the heading "Design Effects" are numbers (ratios) that indicate the amount of "sampling error" associated with the two-stage sample for each of Reading, Mathematics and HAKT estimates. Columns six, seven and eight under the heading "Effective Sample Sizes" are numbers of sample units (learners) in a simple random sample that would give the same level of accuracy as the two-stage sample that was used in the study for each of Reading, Mathematics and HAKT.

Table 2.3: Response Rates, Design Effects, Effective Sample Sizes for South Africa in SACMEQ III

% Achieved		Design Effect			Effective Sample Size[1]		
Schools	Pupils	Reading	Maths	HAKT	Reading	Maths	HAKT
98%	91%	13.9	13.7	12.2	652	663	739

The following observations can be made from **Table 2.3**:

Response rate in surveys refers to the percentage of the total sample units that were planned who actually participate in the study. The SACMEQ rule is that the overall response rate for both the schools and the learners should not be less than 90%. In the SACMEQ III project the South African overall response rates for schools and learners were 98% and 96,7%, respectively. The overall response rate in SACMEQ III was higher than in SACMEQ II which stood at 91% for schools and 85% for learners.

Design effect is a number (ratio) which indicates the amount of "sampling error" that is introduced by the use of a clustered (two-stage) sampling method in relation to the "sampling error" that would result if a simple random sample of the same size had been used. Alternatively, the "design effect" is the ratio of the variance (of the sample mean) for a multi-stage sample to the variance for a simple random sample of the same size. Applied to SACMEQ III, this means that for Reading the achieved two-stage sample of 9 062 had a variance (of the sample mean) which was 13,9 times the variance that would be realized if a simple random sample of the same size was used. For Mathematics this ratio was 13,7 while for HAKT it was 12,2. Generally, the inaccuracy associated with a multi-stage sample is many times greater than the inaccuracy associated with a simple random sample of the same size.

Effective sample size is calculated from the design effect. It is the size of a simple random sample that would be required to give the same level of accuracy as the given multi-stage sample. For Reading in this case, a simple random sample of 652 learners would have given the same level of accuracy as the two-stage sample of 9 062 learners. The "Effective Sample Size" for Reading = 9 062/13,9 = 652 learners. The "Effective Sample Sizes" of each of Mathematics and HAKT can be calculated in the same way provided care is taken to use the correct values. Generally, the "Effective Sample Size" will be smaller than the given actual multi-stage sample.

The sample designs used in the SACMEQ III Project were selected so as to meet the standards set down by the International Association for the Evaluation of Educational Achievement (IEA). These standards require that sample estimates of important learner population parameters in multi-stage designs should have sampling accuracy that was at least equivalent to a simple random sample of 400 learners (thereby guaranteeing 95 percent confidence limits for sample means of plus or minus one tenth of a learner standard deviation unit). In SACMEQ III, unlike in SACMEQ II, the South African sample sizes exceeded this threshold in all the three tests that were administered.

Data Checking, Data Entry, and Data Cleaning

In this section the processes that were followed at national level to check, enter and clean the data have been described.

(a) Data Checking and Data Entry

The South African NRT received the completed materials from the provincial coordinators and kept these safely while they were being checked, entered into computers, and then "cleaned" to remove errors prior to data analysis. Data-checking involved the "hand editing" of data collection instruments by a team of trained staff. The staff checked that: (i) all expected questionnaires, tests, and forms had been received, (ii) the identification numbers on all instruments were complete and accurate, and (iii) certain logical linkages between questions made sense (for example, they had to verify if the two questions to School Heads concerning "Do you have a school library?" and "How many books do you have in your school library?" were answered consistently).

Trained data capturers, supervised by the NRT, entered data into computers using the WINDEM software that was supplied by the SACMEQ Coordinating Centre. Data were "double entered" in order to monitor accuracy. Individual data capturers worked for maximum of six hours per day, and the whole data entry operation for South Africa was estimated to involve around 75 person days of data entry work.

(b) Data Cleaning

During December 2007 the SACMEQ Coordinating Centre organized a training programme for all NRTs. The teams were led step-by-step through the required data cleaning procedures that they were to follow in their respective countries.

At individual country level, NRTs followed a "cyclical" process whereby data files were cleaned by the NRT and then emailed to the Coordinating Centre for checking and then emailed back to the NRC for further cleaning. The entire data cleaning process lasted seven months, starting in January 2008 and was complete by 31 July 2008. This was much shorter than the 18 months taken to clean the data for the SACMEQ II project.

To clean the data, using the WINDEM software, the NRTs followed specific directions to (i) identify major errors in the sequence of identification numbers, (ii) cross-check identification numbers across files (for example, to ensure that all learners were linked with their own Reading and Mathematics teachers), (iii) ensure that all schools listed on the original sampling frame also had valid data collection instruments and vice-versa, (iv) check for "wild codes" that occurred when some variables had values that fell outside pre-specified reasonable limits, and (v) validate that variables used as linkage devices in later file merges were available and accurate.

Merging and Weighting

When data cleaning was complete, the NRT merged the data from all the sources. The merging process required the construction of a single data file in which learners were the units of analysis and the rest of the data from the other respondents and linked to the learner data. That is, each record of the final data file for the country consisted of the following four components: (a) the questionnaire and test data for an individual learner, (b) the questionnaire and test data for his/her Mathematics and Reading teacher, (c) the questionnaire data for his/her School Head, and (d) school and learner "tracking forms" that were required for data cleaning purposes.

To illustrate, with the merged file it was possible to examine questions of the following kind: "What are the average Reading and Mathematics test scores (based on information taken from the learner tests) for groups of learners who attend urban or rural schools (based on information taken from the School Head questionnaire), and who are taught by male or female teachers (based on information taken from the teacher questionnaire)?"

The calculation of sampling weights could only be conducted after all files had been cleaned and merged. Sampling weights were used to adjust for missing data and for variations in probabilities of selection that arose from the application of stratified multi-stage sample designs. There were also certain country-specific aspects of the sampling procedures, and these had to be reflected in the calculation of sampling weights.

Two forms of sampling weights were prepared for the SACMEQ III Project. The first sampling weight (RF2) was the inverse of the probability of selecting a learner into the sample. These "raising factors" were equal to the number of learners in the defined target population that were "represented by a single learner" in the sample. The second sampling weight (pweight2) was obtained by multiplying the raising factors by a constant so that the sum of the sampling weights was equal to the achieved sample size. A detailed account of weighting procedures can be found in Ross et al (2003).

Analysing the Data

The data analyses for the SACMEQ III Project were very clearly defined because they were focussed specifically on generating results that could be used to "fill in the blank entries" in given Dummy Tables. There were two main tasks in this area. First, SPSS software was used to construct new variables (often referred to as "indices") or to re-code existing variables. For example, an index of "socioeconomic level" was constructed by combining re-coded

variables that described the educational level of the learners' parents, the materials used in the construction of learners' homes, and the number of possessions in learners' homes. Second, the Coordinating Centre's specialized data analysis software, IIEPJACK, was used to "fill" the Dummy Tables with appropriate estimates and corresponding sampling errors.

Writing the SACMEQ II Policy Reports

The NRT commenced the process of drafting their national educational policy reports during 2009. Two workshops held in Paris during September 2009 and September 2010 were organized to support the NRT in this work. These workshops permitted the NRT to work together and exchange ideas concerning the policy implications of the research results.

Conclusion

The aim of this Chapter was to describe the research procedures that were applied for the execution of the SACMEQ III project. The Chapter was prepared to give an overview of how the study was conducted in South Africa. The sample design procedures and the construction of the Reading and Mathematics tests for learners and their teachers were to a large extent modelled on the SACMEQ II project.

Following the trend started in the SACMEQ II project, the third SACMEQ III project moved away from traditional approaches to the calculation of test scores (based on numbers of correct responses to test items) towards the use of Modern Item Response Theory to generate descriptions of "levels of increasing learner competence". This approach to describing learner Reading and Mathematics achievement offered a mechanism for describing the performance of learners in a manner that was more meaningful within a teaching and learning context.

One of the important messages that emerged from this part of the Project was that the speed at which a cross-national research project proceeds is strongly influenced by the speed with which the slowest country can complete all aspects of its data collection and data preparation.

Chapter 3

Learners and the Learning Environment

3.1 Introduction

In this chapter a description has been given of some of the characteristics of the sampled learners and the learning environment that they experienced. Social, political and economic contexts in which schooling takes place are known to have considerable impact on learning. There is universal agreement that the kinds of skills, knowledge, values and attitudes that learners develop are influenced, to a large extent, by the kinds of interactions that take place between learner's personal characteristics and their social environment. A comprehensive description of learners' personal characteristics and a clearly mapped out account of the context in which learning and teaching take place will assist, first in a meaningful interpretation of the Grade 6 learners' scholastic achievements as presented in Chapter 4 and secondly, in planning appropriate and targeted intervention strategies.

The presentation has been organised to respond to five general policy concerns and related specific research questions that guided the manner in which the data on learners' personal characteristics and their learning environment was interrogated. The findings for South Africa overall and the individual provinces have been presented. Some explanatory observations and, where appropriate, policy suggestions were made in response to the findings.

3.2 A note on the interpretation of the data analyses in this report

The data in this report have been presented to provide baseline information on the "context" of teaching and learning at the Grade 6 level. The baseline information will be used to track trends in the levels and distribution of data over time.

As it was explained in Chapter 2, the sample was drawn in order to yield standard errors of sampling for learners in Grade 6 in South Africa, such that a sample estimate of a population percentage would have a standard error (SE) of ±2,5 percent. It is very important, therefore, that each statistic is interpreted in association with its sampling error. For this level of sampling accuracy we can be sure 19 times out of 20 that the population value of a percentage lies within ±5 percent (±2 x 2,5% = ±5%) of the estimate derived from the sample. The sampling errors for means have also been given in the tables and the same principle applies.

In interpreting the values in the tables throughout this report, it is important to remember that the percentages and means have been presented in terms of learners. That is, learners were the units of analysis - even though some variables in this report referred to teachers or schools. For example, where a percentage for a variable that describes educators has been presented, this percentage should be interpreted as 'the stated percentage of learners was in schools with teachers having the particular characteristic'. Similarly, a percentage for a variable that describes schools should be interpreted as 'the stated percentage of learners that were in schools with the particular characteristic'.

3.3 General Policy Concern 1:

What were the personal characteristics and home background characteristics of Grade 6 learners that might have implications for monitoring equity, and/or that might impact upon teaching and learning?

Studies conducted at different times in different education systems have shown that, in addition to personal characteristics, a learner's home background has a significant effect on learner achievement. Home background includes - but may not be limited to - measures such as the level of material possessions at home, the education of parents and the nutrition that learners have to sustain their physical health. Whilst no claim of causal relationships between these measures and learner achievement in schoolwork is made, it is logical to expect that, for instance, learners from homes with higher levels of possessions and higher levels of parents' education would have more opportunities and learning support than those from homes with lower levels of these resources. The following specific research questions pertaining to the personal characteristics and home background of learners that might impact upon equity in teaching and learning were explored.

3.3.1 What was the age distribution of learners?

The average ages and corresponding standard errors of the Grade 6 learners (in months) for South Africa overall and the provinces have been presented in **Table 3.1** for both 2000 and 2007. In **Table 3.1** the provinces have been presented in the rows while the ages and the corresponding standard errors have been given in the columns. For example, in the Eastern Cape the average Grade 6 learner was 164,2 months in 2000 and 160,5 months in 2007.

Table 3.1 Average age of learners in 2000 and 2007

	2000				2007			
	Learner age (months)		Female Learner		Learner age (months)		Female Learner	
	Mean	SE	%	SE	Mean	SE	%	SE
Eastern Cape	164.2	2.01	49.1	2.57	160.5	1.04	50.9	1.86
Free State	160.7	1.82	50.9	1.63	155.5	0.63	50.7	1.35
Gauteng	151.4	1.42	52.7	3.28	150.1	0.42	51.3	1.86
KwaZulu-Natal	155.1	1.49	53.4	2.24	152.6	0.81	51.3	1.43
Mpumalanga	160.6	1.86	49.0	1.67	158.5	0.99	48.2	1.36
Limpopo	159.7	2.73	45.8	3.62	155.6	0.74	50.1	1.16
Northern Cape	161.3	1.59	56.4	3.28	155.1	1.09	49.0	1.68
North West	149.0	2.38	52.0	2.15	154.9	1.27	51.1	1.52
Western Cape	149.5	1.12	56.2	2.44	150.7	0.56	52.0	1.34
South Africa	**156.9**	**0.69**	**52.5**	**1.00**	**154.6**	**0.33**	**50.8**	**0.61**

From **Table 3.1**, in 2007 the average Grade 6 learner in South Africa was 154,6 months old (12 years and eleven months). According to the national admission policy, learners should start school when they turn seven (7) years of age, which means that by the end of the year that they are in Grade 6 they should be 12 years of age. In this case, therefore, the average Grade 6 learner was eleven (11) months older than would be expected. On average the oldest learner was in the Eastern Cape while the youngest was in the Western Cape. Generally, the average Grade 6 learner was younger in 2007 than in 2000, which could mean that either there was improved compliance with the admission policy or there was a decrease in grade repetition rates. Exceptions were in the North West and Western Cape where the average age of the Grade 6 learner had increased by 5,9 months and 2,4 months, respectively, between the two SACMEQ studies.

3.3.2 What was the gender distribution of learners in 2000 and 2007?

The percentages of Grade 6 female learners in South Africa overall and the provinces have been presented in the fourth and eighth columns of **Table 3.1**, for 2000 and 2007, respectively. Each percentage is followed by a corresponding standard error in the fifth and ninth columns, respectively.

As can be observed in **Table 3.1**, for South Africa overall in 2007 girls constituted 50,8% of the Grade 6 learner population.. With a standard error of 0,61 it can be inferred with a 95% level of confidence that in 2007 South African Grade 6 female learners in public schools constituted between 49,6% and 52,0% of the Grade 6 learner population.

3.4 General Policy Concern 2:

Did Grade 6 learners have sufficient access to essential classroom materials in order to participate meaningfully in their lessons?

Learning is a process where learners make meaning of the learning content by interacting partly with peers and teachers but mainly with resources and materials in the learning environment. Learners who have access to adequate learning support materials are more likely to perform better than those who do not. To examine this general policy concern two specific research questions were asked: What percentage of Grade 6 learners had Reading and Mathematics textbooks, and what percentage had adequate basic classroom materials to aid learning.

3.4.1 What percentage of learners had Reading and Mathematics textbooks?

Information on the distribution of learners' Reading and Mathematics textbooks has been reported in **Table 3.3**. In 2007 the average Grade 6 learner was in a school where 45% of the learners had Reading books and 36,4% had Mathematics textbooks. This means that Grade 6 learners were in schools where 55% of them either had no Reading book or shared a book with someone else. For Mathematics textbooks the situation was worse as the corresponding percentage was 64,6%. Whilst the situation was unsatisfactory in most provinces, for both Reading

and Mathematics KwaZulu-Natal had the lowest percentage of schools where the average Grade 6 learner had a textbook to themselves.

Between 2000 and 2007 the overall percentage of schools in which the average Grade 6 learner had exclusive access to a Reading book remained virtually low and unchanged. In Mathematics there was a definite drop from 41,0% to 36,4%. Provinces that saw significant drops in the schools where the average learner had exclusive use of a textbook were Gauteng, KwaZulu-Natal, Free State and Eastern Cape.

3.4.2 What percentage of learners had adequate essential classroom resources?

Principals of the sampled schools were given a list of items and were asked to indicate which items in the list were available in their classrooms. There were two categories of items, labeled as “Teaching and Learning Materials” and “Equipment and facilities”, respectively, which the researchers considered to be essential for the running of a school. “Teaching and Learning Materials” included a teacher’s guide for each of Reading and Mathematics and at least one dictionary for the use of teachers. For the same category, learners were asked if they owned exercise books, pens/pencils and erasers, whether they had their own Reading and Mathematics text book. The category of “Equipment and facilities” included a writing board, sitting and writing places for learners (desks and chairs), a table and a chair for the teacher, a library, a radio and running water.

The percentages of learners who were in schools where each of the essential classroom resources was available have been shown in Table 3.3 for 2000 and 2007. In Table 3.3 the level, the spread across the provinces as well as the trends over time of each resource have been shown.

Table 3.3: Percentages for Essential Classroom Resources for South Africa (SACMEQ II and SACMEQ III)

	TEACHING & LEARNING MATERIALS												EQUIPMENT & FACILITIES											
2000	**Teacher Guide** (Reading)		**Teacher Guide** (Math)		**Dictionary**		**Exercise Book & Pen/Pencil & Ruler**		**Own Reading Textbooks**		**Own Math Textbooks**		**Writing Board**		**Learner Sitting & Writing Place**		**Teacher Table & Chair**		**Library** (Class/School)		**Radio**		**Water**	
	%	**SE**	**%**	**SE**	**%**	**SE**	**%**	**SE**	**%**	**SE**	**%**	**SE**	**%**	**SE**	**%**	**SE**	**%**	**SE**	**%**	**SE**	**%**	**SE**	**%**	**SE**
EC	68.8	9.23	66.8	9.75	66.1	9.31	64.7	5.38	42.2	4.85	42.4	4.84	95.0	4.93	87.8	4.47	79.0	8.17	54.1	10.14	15.5	6.74	73.7	8.67
FS	78.3	14.67	59.8	15.02	61.1	14.95	68.8	5.65	60.9	9.44	49.1	11.64	85.1	13.78	97.2	1.27	92.8	7.23	51.7	15.18	73.0	12.64	100.0	0.00
Gau	81.3	9.60	90.5	6.75	92.7	3.94	81.3	6.34	55.3	11.49	50.7	12.11	97.8	2.17	100.0	0.00	93.3	4.68	77.1	11.96	45.9	14.54	96.2	3.97
KZN	85.8	7.63	66.0	10.97	76.5	9.36	77.4	5.40	40.3	6.99	39.9	7.65	96.1	3.91	94.8	1.91	91.3	6.19	84.2	7.10	46.7	10.44	85.1	6.81
Mpu	61.0	14.13	58.0	14.12	35.5	13.06	47.6	10.88	44.8	7.66	34.6	6.53	100.0	0.00	97.2	1.43	85.1	9.10	36.5	13.82	92.1	7.82	77.6	11.99
NC	47.8	13.32	78.2	10.66	84.2	10.59	65.6	6.29	29.9	7.72	28.4	7.24	75.3	12.66	98.8	1.18	75.3	12.66	60.4	13.42	32.0	13.47	100.0	0.00
Lim	61.3	11.52	50.6	11.57	50.2	11.44	50.7	8.66	44.2	5.72	43.1	7.43	100.0	0.00	95.0	2.54	73.4	11.08	63.7	11.38	41.9	10.99	85.8	7.43
NW	55.4	14.35	54.0	13.80	65.5	14.15	76.7	6.35	35.4	6.43	24.7	6.46	100.0	0.00	97.0	1.13	82.4	11.16	56.3	13.67	56.9	13.55	78.9	11.30
WC	84.7	10.47	84.7	10.47	100.0	0.00	71.3	6.86	49.1	11.00	36.9	9.22	100.0	0.00	97.9	1.10	100.0	0.00	100.0	0.00	70.2	14.09	89.7	9.96
SA	**73.1**	**3.85**	**67.4**	**4.06**	**70.3**	**3.68**	**68.1**	**2.58**	**45.5**	**2.80**	**41.0**	**2.99**	**96.6**	**1.53**	**95.4**	**0.96**	**86.2**	**2.91**	**67.8**	**3.89**	**48.4**	**4.24**	**85.5**	**2.88**

2007	TEACHING & LEARNING MATERIALS												EQUIPMENT & FACILITIES											
	Teacher Guide (Reading)		Teacher Guide (Math)		Dictionary		Exercise Book & Pen/Pencil & Ruler		Own Reading Textbooks		Own Math Textbooks		Writing Board		Learner Sitting & Writing Place		Teacher Table & Chair		Library (Class/School)		Radio		Water	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
EC	74.3	7.12	62.0	7.61	55.6	7.79	66.6	3.74	43.2	4.87	33.3	4.24	83.2	6.35	94.0	2.90	44.1	7.70	42.4	7.80	20.2	5.76	86.1	4.74
FS	95.1	2.92	88.6	4.94	79.7	5.91	80.0	4.09	39.7	5.56	36.9	5.96	93.5	3.28	98.5	0.49	85.3	5.44	76.0	6.90	86.0	5.66	88.9	5.53
Gau	86.6	3.95	82.8	5.10	87.6	4.43	84.5	2.30	44.6	5.02	33.3	5.40	92.3	2.76	99.3	0.27	91.4	2.84	86.2	5.14	95.4	3.21	84.0	5.48
KZN	95.3	2.13	87.8	3.67	84.5	4.39	90.6	1.40	32.1	4.11	24.9	3.79	92.7	3.10	99.4	0.34	87.3	3.92	58.7	6.39	56.4	6.44	85.9	4.41
Mpu	88.0	5.27	82.6	6.59	86.2	5.49	79.2	3.53	62.2	4.91	53.0	6.03	92.8	3.80	99.4	0.26	52.0	8.46	59.2	8.44	72.2	7.72	83.3	6.98
NC	81.0	6.37	84.7	5.25	70.4	7.60	79.8	2.48	38.7	5.28	30.9	5.15	87.5	5.01	99.5	0.27	80.7	6.18	77.6	6.88	70.4	7.81	98.0	1.97
Lim	83.2	6.19	81.1	6.44	68.4	8.11	93.0	1.76	51.7	6.75	46.7	6.88	97.8	2.17	99.8	0.24	70.6	8.02	35.2	7.89	47.1	8.30	90.5	4.86
NW	96.8	2.30	94.1	2.86	92.5	3.75	82.3	3.74	39.4	5.89	40.8	6.68	96.8	2.27	99.6	0.20	91.2	4.44	60.1	8.25	93.2	3.97	100.0	0.00
WC	78.7	5.81	80.8	5.71	84.9	5.07	73.5	2.88	67.8	4.19	46.4	5.03	83.1	5.28	99.6	0.20	81.4	5.40	99.5	0.45	72.1	7.27	92.1	4.47
SA	**86.8**	**1.78**	**81.4**	**2.10**	**78.6**	**2.25**	**82.4**	**0.97**	**45.0**	**1.91**	**36.4**	**1.92**	**91.3**	**1.48**	**98.5**	**0.48**	**75.7**	**2.23**	**62.4**	**2.63**	**62.5**	**2.46**	**87.7**	**1.88**

From **Table 3.3** the following observations can be made:

a) Levels and Trends in Available "Teaching and Learning Materials"

Comparing the SACMEQ II (2000) and SACMEQ III (2007) data shows that more schools reported that they had access to essential teaching and learning materials in 2007. There were a few exceptions, most notably the decrease in the exclusive ownership of reading and mathematics textbooks by learners.

Resource increases between 2000 and 2007 were observed in available a) Teachers Guides for Reading from 73% to 87%, b) Teacher Guides for Mathematics from 67% to 81%, c) dictionaries for teachers from 70% to 79% and d) learner writing materials (exercise books, pens/pencils and rulers) from 68% to 82%. For most of these resources the standard error (SE) values were generally higher in 2000 than in 2007, indicating narrower variance and higher levels of confidence in the 2007 statistics than in those of 2000. For example, the SE value for Teacher Guides in Reading was 3,85 in 2000 and only 1,78 in 2007. This means that the availability of these Teacher Guides ranged between 66,0% and 80,3% in 2000 whereas in 2007 the range was between 83,2% and 90,4%.

In the same period, there was, however, either no change or a decrease in the percentages of learners who owned a textbook that they did not share with someone else. About 45% of learners had sole use of a Reading textbook and this had not changed between 2000 and 2007. Sole ownership of a Mathematics textbook decreased from 41,0% to 36,4%.

At provincial level there were corresponding increases in the levels of available Teaching **and Learning Materials** in this period, especially in the available exercise books, pens/pencils and rulers for learners. The following were exceptions:

a) In the Western Cape available Teacher Guides for Reading decreased by 6 percent from 85% to 79%.

b) In the Eastern Cape, Gauteng and Western Cape available Teacher Guides for Mathematics decreased by 4,8 percent, 7,7 percent and 3,9 percent, respectively.

c) In the Eastern Cape, Gauteng, Northern Cape and Western Cape available dictionaries for teachers decreased by 10.5%, 5,1 percent, 13,8% and 15,1%, respectively.

Provinces that saw **noteworthy decreases** in percentages of learners who had sole ownership of either a Reading or a Mathematics textbook or both were Eastern Cape, Free State, Gauteng and KwaZulu-Natal, with the highest decrease in sole ownership of a Mathematics textbook (27%) occurring in Gauteng.

Overall, the decreases at provincial level could be explained partly by unpredictable changes in learner populations due to known movements of learners among schools and across provinces. This phenomenon is particularly common in provinces such as Western Cape and Gauteng which have seen decreases in most of the items under **Teaching and Learning Materials.** The phenomenon often results in unpredictable numbers of learners outstripping planned resources. There is need to verify possible factors to explain the observed decreases.

b) Levels and Trends in Available "Equipment and Facilities"

For South Africa overall the levels of "Equipment and Facilities" in South Africa were reasonably high both in 2000 and in 2007, most over 50%. Between 2000 and 2007 there were **increases** in the percentages of learners in schools where the following items were available:-

a) Learners' sitting and writing places (school furniture) increased by 3,1 percent from 95,4% to 98.5%,

b) Access to a radio at school increased by 14,1 percent from 48,4% to 62,5%,

c) Access to running water increased by 2.2 percent from 85,5% to 87,7%.

However, in this period there were also overall **decreases** in the percentages of learners who were in schools where the following items were available:-

a) Usable writing boards decreased by 5.3 percent from 96,6% to 91,3%,

b) Teacher's table and chair (furniture for teacher use) decreased by 10,5% from 86,2% to 75,7%,

c) Library with books for use in the classroom or classroom book corner decreased by 5,4 percent from 67,8% to 62,4%.

At provincial level there was general decrease in available usable writing boards in this period except in Free State and Northern Cape where the availability of this item increased by 8,4 percent and 12,2%, respectively. In all provinces there has been an increase in available sitting and writing places for learners (school furniture) except in Gauteng where the availability of this item decreased from 100% in 2000 to 99,3% in 2007. In all the provinces, except in Northern Cape and North West, there was a general decrease - very significant in some instances – in levels of available furniture for use by teachers (Teacher Table and Chair). This decrease was very significant in some instances, for example 'Teacher Table and Chair' decreased from 85.1% in 2000 to 52% in 2007 in Mpumalanga. The two provinces that reported an increase in 'Teacher Table and Chair' were the Northern Cape (increase of 5,4 percent from 75,3% to 80,7%), and the North West (an increase of 8,8 percent from 82,4% to 91,2%).

In three provinces, viz. Eastern Cape, KwaZulu-Natal and Limpopo, there were significant decreases in available school libraries. Between 2000 and 2007 the percentage of learners who were in schools that had a library dropped by 11,7% in the Eastern Cape, by 25,5% in KwaZulu-Natal and 28,5% in Limpopo. The availability of a radio increased across all the provinces except in Mpumalanga where this facility decreased from the highest percentage of 92,1% in 2000 to 72,2% in 2007. Although generally of high availability in all the provinces, three provinces experienced a decrease in available running water in the period under review. Available running water decreased in Free State, Gauteng and Northern Cape by 1,1 percent, 12,2% and 2 percent, respectively.

In summary, for South Africa overall, resources that increased between 2000 and 2007 were a) Teacher Guides (both Reading and Mathematics), b) dictionaries for teachers, c) writing materials for learners, d) sitting and writing places for learners, e) radios and f) running water. Learner sole ownership of a textbook remained low and unchanged for Reading but definitely decreased for Mathematics. Other resources that saw significant decreases were writing boards, furniture for teachers and libraries. Provinces that were particularly affected by decreases in libraries were

Eastern Cape, KwaZulu-Natal and Limpopo. Not only did their library levels decrease, but the level of availability of this important resource was generally low in these provinces.

3.5 General Policy Concern 3:

What were the desirable physical and human resources experienced by Grade 6 learners that might impact upon teaching/learning and the general functioning of the school?

Principals of the sampled schools were asked to indicate the availability of buildings and other facilities which were considered to be desirable for the normal functioning of a school. The desirable physical resources included availability of buildings and "Equipment and Facilities". Under buildings were included buildings that were in good condition, a principal's office, staffrooms and a school hall. "Equipment and Facilities" for the school included class cupboards, class bookshelves, sports grounds, school fence, availability of electricity, a television set, a photocopier and a computer.

The percentages as well as the corresponding standard errors of Grade 6 learners who were in schools that had the desirable physical resources have been summarized in **Table 3.4** in terms of level, spread across provinces and the trends over time. The provinces have been entered in the rows of the table while the percentages and standard errors for each of the resources appear in the columns. For example, Eastern Cape has been entered in the first row for each of 2000 and 2007. In the first column under the heading "**Building Conditions**" appear two entries: the percentage (%) of Grade 6 learners who were in Eastern Cape schools that had buildings that were in good condition and the corresponding standard error (SE) and the specific values are 44,1 and 10,24, respectively. Corresponding values for South Africa overall are 55,4% and 4,07, respectively.

Table 3.4: Percentages for Desirable Physical Resources for South Africa (SACMEQ II and SACMEQ III)

	BUILDINGS								EQUIPMENT & FACILITIES															
2000	Building Conditions		School Head Office		Staff Room		Meeting Hall		Class Cupboard		Class Bookshelf		Sports/Play Ground		School Fence		Electricity		Television		Photocopier		Computer	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
EC	44.1	10.24	57.1	10.10	40.1	10.17	23.8	8.29	86.3	6.61	23.2	8.37	59.5	10.05	69.1	9.63	57.7	10.06	21.9	8.82	8.3	5.81	8.3	5.81
FS	43.1	15.29	83.0	11.51	94.8	5.36	34.3	13.81	69.8	12.76	22.2	12.11	85.9	9.91	84.7	10.46	92.8	7.23	58.2	14.59	91.9	8.10	42.5	15.29
Gau	74.5	12.60	97.8	2.32	87.8	7.60	57.3	14.45	72.2	11.63	59.6	14.18	71.0	12.93	100.0	0.00	95.4	4.72	63.3	13.81	94.0	4.65	97.8	2.32
KZN	65.8	9.83	100.0	0.00	53.5	10.42	46.5	10.42	78.2	8.99	50.4	10.64	73.4	9.22	78.7	8.07	68.0	9.47	34.7	10.06	46.2	10.41	32.8	9.76
Mpu	51.8	14.18	57.1	14.14	62.4	13.41	16.9	11.14	19.7	12.67	8.8	8.60	49.4	14.18	96.5	3.59	58.5	13.82	15.4	10.33	27.7	12.49	19.8	10.92
NC	84.2	10.58	100.0	0.00	80.4	10.95	23.5	12.28	69.3	13.24	25.5	10.89	78.5	11.60	94.7	5.43	100.0	0.00	94.3	5.75	87.3	8.91	64.1	13.55
Lim	19.8	8.45	47.5	11.21	22.3	9.15	20.8	8.78	34.7	10.80	16.2	7.94	56.5	11.19	68.5	10.74	76.5	8.97	4.2	4.24	15.0	8.66	4.2	4.24
NW	38.7	13.74	50.0	13.85	44.8	13.74	18.6	10.53	83.5	11.26	38.3	13.66	57.1	13.79	73.6	12.24	82.7	10.10	19.0	10.67	37.1	13.54	21.8	11.51
WC	100.0	0.00	87.0	12.23	79.1	13.51	30.5	12.71	100.0	0.00	79.8	11.10	80.4	13.15	100.0	0.00	100.0	0.00	93.4	6.69	100.0	0.00	100.0	0.00
SA	**55.4**	**4.07**	**75.0**	**3.32**	**56.9**	**4.04**	**33.3**	**4.31**	**69.2**	**3.69**	**38.2**	**4.26**	**66.4**	**4.17**	**82.3**	**3.14**	**77.1**	**3.36**	**37.3**	**3.98**	**48.5**	**3.57**	**39.5**	**3.40**

	BUILDINGS								EQUIPMENT & FACILITIES															
2007	Building Conditions		School Head Office		Staff Room		Meeting Hall		Class Cupboard		Class Bookshelf		Sports/Play Ground		School Fence		Electricity		Television		Photocopier		Computer	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
EC	42.6	7.57	55.9	7.40	57.8	7.37	16.4	5.72	47.7	7.82	4.9	2.94	56.0	7.51	76.2	6.32	65.6	7.32	30.7	6.89	43.9	7.46	29.8	6.81
FS	80.2	6.49	84.0	5.53	88.1	4.84	37.9	8.04	84.4	5.72	36.8	7.43	62.2	7.90	100.0	0.00	100.0	0.00	94.8	3.62	100.0	0.00	100.0	0.00
Gau	82.3	5.72	91.7	4.09	88.6	4.96	44.0	8.23	86.8	4.51	65.1	6.75	81.3	5.93	92.9	4.08	97.8	2.24	95.0	3.53	97.8	2.24	97.8	2.24
KZN	56.8	6.46	75.6	5.60	59.1	6.35	36.8	6.22	78.3	5.18	32.4	5.58	57.3	6.46	87.0	4.71	84.8	4.57	66.6	6.09	77.1	5.31	77.9	5.19
Mpu	37.0	8.04	53.5	8.50	53.1	8.52	17.6	6.27	62.8	8.16	31.3	7.85	63.4	8.35	79.8	6.98	93.2	4.76	52.0	8.54	85.4	6.21	84.7	6.40
NC	62.4	8.18	89.4	5.21	84.0	5.76	44.5	8.18	89.6	4.66	51.7	7.94	74.4	7.25	92.0	3.98	97.5	2.53	93.4	3.79	97.5	2.53	97.5	2.53
Lim	43.0	8.22	49.0	8.31	22.8	6.84	13.3	5.23	85.8	5.55	33.4	7.83	58.8	8.17	85.2	6.23	88.8	5.23	48.8	8.31	70.1	8.03	67.0	8.03
NW	62.0	8.19	83.5	5.94	66.3	7.88	45.5	8.37	82.0	6.05	57.2	8.11	69.8	7.83	91.6	4.72	95.4	3.25	72.1	7.69	93.0	4.02	95.4	3.25
WC	71.1	7.27	100.0	0.00	95.3	3.41	49.3	8.10	82.3	5.27	52.1	6.95	86.2	5.78	100.0	0.00	100.0	0.00	95.4	3.23	95.3	3.28	100.0	0.00
SA	**58.0**	**2.72**	**72.8**	**2.41**	**63.8**	**2.52**	**31.6**	**2.61**	**75.9**	**2.28**	**37.7**	**2.47**	**65.5**	**2.70**	**87.4**	**1.99**	**88.0**	**1.89**	**66.5**	**2.47**	**78.9**	**2.24**	**76.9**	**2.17**

From **Table 3.4** the following observations can be made:

3.5.1 Availability of buildings

For South Africa overall the percentage of Grade 6 learners who were in schools that had buildings in good condition was 58% in 2007, a slight **increase** of 2,6 percent from the level in 2000. At individual province level Free State and Gauteng improved the conditions of their buildings significantly in this period, the former almost twofold from 43,1% to 80,2% and the latter by almost 8 percent from 74,5% to 82,4%. Provinces that also realized modest improvements in the condition of their school buildings were Limpopo and North West, even though the improved levels, 43,0% and 62,0%, respectively, still leave much to be desired, especially in Limpopo. There were, however, particularly worrying **declines** in buildings that were in good condition in the Eastern Cape and KwaZulu-Natal, considering that these are provinces with the highest learner populations in South Africa. Other provinces that saw serious to modest declines in school buildings that are in good condition were Mpumalanga and Northern Cape, respectively.

72.8% of schools had offices for principals which represented a small decrease of 2,2 percent since 2000. Provinces that contributed significantly to the decrease were KwaZulu-Natal and Northern Cape who both saw decreases from 100% to 75,6% and 89,4%, respectively. Offices for principals facilitate effective school management and provision of this facility should be given the due attention.

Availability of staffrooms **increased** reasonably by 6,9 percent from 56,9% in 2000 to 63,8% in 2007, although this was still less than adequate for this basic resource which should be present in every school. Provinces in which there were decreases in percentages of learners who were in schools that had staffrooms were Free State and Mpumalanga, decreases of 6,7 percent and 9,4%, respectively . In Limpopo the percentage of Grade 6 learners who were in schools that had staffrooms remained almost unchanged at worryingly low levels around 22%.

The percentage of learners who were in schools that had meeting halls decreased from 33,3% to 31,6% (a slight decrease of 1,7 percent) between 2000 and 2007 although still very low. In all the provinces, and particularly in the Eastern Cape, Mpumalanga and Limpopo, the level of this facility was extremely low – far below 50% in most instances. Meeting halls provide an important functional interface between schools and the communities that they serve. Their absence, therefore, could seriously limit the extent to which the two interact. In keeping with the South African philosophy of treating education as a societal enterprise rather than the exclusive responsibility of the Ministry of Education, Government, particularly local government, needs to prioritize building school meeting halls that can also be used by the surrounding communities and thus promote community interest in these institutions.

3.5.2 Available "Equipment and Facilities"

The level of available class cupboards was 75,9% in 2007, an **increase** of 6,7 percent since 2000. The availability of class bookshelves remained almost unchanged around 38% in the same period. Similarly, sports/play grounds remained virtually unchanged at around 66%. Impressively, the percentage of learners in schools that were fenced off increased from 82,3% in 2000 to 87,4% in 2007. For a facility that is so critical to school safety, this is a commendable improvement. Ideally every school (100%) must be fenced off.

Availability of electricity increased by a little over 11% from 77,1% in 2000 to 88% in 2007. This energy resource has direct influence on many pieces of important equipment that create a conducive environment to teaching and learning as can be can be seen from significant corresponding increases in availability of television sets, photocopiers and computers which **increased** by 29,2%, 30,4% and 37,4%, respectively.

Overall, there have been impressive improvements in available buildings which are in good condition and "Equipment and Facilities" that were available to Grade 6 learners in South Africa. Partly, the improvements could be ascribed to the re-distribution interventions such as the Quality Improvement, Development, Support and Upliftment Programme (QIDSUP) which targeted provision of resources to historically disadvantaged schools during the period of this report and beyond. Notwithstanding, the levels and conditions of physical resources were still worryingly low and unacceptable in the Eastern Cape, Mpumalanga and Limpopo. For instance, although in Limpopo there have been modest improvements in the availability of the resources overall, the respective baselines of 2000 were so low that the improvements still left the levels generally unacceptably low.

3.5.3 Desirable Human Resources

Human resources that were considered essential for effective teaching and learning in schools included a) School Heads and their distribution according to gender, level of academic qualifications, and training in management since appointment to principal position; b) teachers and their distribution according to gender, frequency of in-service training or continuous professional development and duration of initial training; and c) the general environment in which teaching and learning took place, for example, the size of the class per teacher and the teacher attendance of classes.

In 2007, unlike in 2000, School Heads and Teachers in the sample were asked to indicate whether they had attended a relevant course related to HIV and Aids. In **Table 3.5** the percentages of Grade 6 learners who were in schools that had various levels and characteristics of human resources have been summarized, for each of the provinces and for South Africa overall. The provinces have been entered in the rows of the table while the percentages and standard errors for each of the resources appear in the columns. For example, Eastern Cape has been entered in the first row for each of 2000 and 2007. In the first column under the heading "**Female School Head**" appear two entries: the percentage (%) of Grade 6 learners who were in Eastern Cape schools that had female School Heads and the corresponding standard error (SE) and the specific values are 16,2 and 7,85, respectively. Corresponding values for South Africa overall are 20,8% and 3,43, respectively.

Table 3.5: Percentages for Desirable Human Resources for South Africa (SACMEQ II and SACMEQ III)

	SCHOOL HEADS								TEACHERS												ENVIRONMENT			
2000	**Female School Heads**		**Sch. Head Educ.** Senior Sec. or more		**Sch. Head. Management Course**		**Sch. Head HIV/ AIDS Course**		**Female Reading Teachers**		**In-service Trg.** (Last 3yrs – Rd.Tch)		**Pre-service Training** (>2yrs – Rd Tch)		**Spec. Training** HIV/AIDS Course		**Teacher Subject Knowledge** (Read.)		**Teacher Subject Knowledge** (Math)		**Acceptable Class Size** (≤ 40)		**Teacher Class Attendance**	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
EC	16.2	7.85	79.9	7.76	63.5	9.55	××	××	67.2	9.18	74.4	8.35	96.4	3.66	××	××	××	××	××	××	58.0	10.06	94.0	5.89
FS	16.2	11.18	86.0	9.77	45.9	15.02	××	××	59.8	14.33	60.8	15.50	90.7	6.73	××	××	××	××	××	××	54.5	13.54	62.5	15.34
Gau	14.2	7.66	90.0	7.19	86.9	7.85	××	××	74.9	11.56	78.0	9.37	97.2	2.72	××	××	××	××	××	××	60.9	15.34	96.3	3.85
KZN	19.9	7.96	94.8	3.11	80.6	8.81	××	××	65.3	9.77	81.7	8.69	97.9	2.17	××	××	××	××	××	××	43.0	9.61	90.2	5.90
Mpu	27.3	12.00	75.1	11.65	60.0	14.09	××	××	43.3	13.72	79.3	10.18	100.0	0.00	××	××	××	××	××	××	23.0	10.81	90.2	9.47
NC	0.0	0.00	91.1	8.77	63.2	13.71	××	××	50.5	13.31	83.1	10.51	91.2	8.68	××	××	××	××	××	××	87.5	8.62	93.6	6.48
Lim	20.0	9.13	90.6	6.06	54.6	11.47	××	××	31.6	10.50	41.2	11.22	94.9	5.05	××	××	××	××	××	××	34.1	8.63	90.0	5.94
NW	45.0	13.74	77.2	12.06	100.0	0.00	××	××	42.4	13.76	58.9	13.68	96.2	3.96	××	××	××	××	××	××	38.5	12.98	86.6	7.82
WC	24.7	12.94	100.0	0.00	75.3	13.52	××	××	60.7	14.56	58.9	15.15	100.0	0.00	××	××	××	××	××	××	59.8	14.42	92.5	7.54
SA	**20.8**	**3.43**	**87.9**	**2.51**	**71.9**	**3.78**	**××**	**××**	**57.8**	**4.22**	**68.8**	**3.90**	**96.7**	**1.27**	**××**	**××**	**××**	**××**	**××**	**××**	**48.0**	**4.09**	**90.1**	**2.45**

	SCHOOL HEADS								TEACHERS												ENVIRONMENT			
2007	**Female School Heads**		**Sch. Head Educ.** Senior Sec. or more		**Sch. Head. Management Course**		**Sch. Head HIV/ AIDS Course**		**Female Reading Teachers**		**In-service Trg.** (Last 3yrs – Rd.Tch)		**Pre-service Training** (>2yrs – Rd Tch)		**Spec. Training** HIV/AIDS Course		**Teacher Subject Knowledge** (Read.)		**Teacher Subject Knowledge** (Math)		**Acceptable Class Size** (≤ 40)		**Teacher Class Attendance**	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
EC	33.0	6.90	95.9	2.35	67.8	6.86	85.9	4.73	81.0	6.21	73.8	6.63	97.4	2.64	79.1	5.71	31.5	8.32	16.6	5.75	35.9	7.32	85.4	5.18
FS	33.9	7.94	95.2	3.35	76.2	7.24	82.5	6.70	67.7	7.69	90.8	4.14	93.1	3.92	88.6	4.99	58.2	8.18	38.6	8.19	53.3	7.46	76.8	6.81
Gau	34.1	7.61	97.9	2.15	73.1	7.09	73.2	6.97	72.2	7.77	78.9	6.81	98.0	2.01	78.9	7.41	66.3	7.74	41.3	9.00	59.8	7.42	95.8	3.02
KZN	42.1	6.43	76.6	5.76	76.1	5.61	85.8	4.73	73.4	5.39	77.1	4.93	95.3	1.82	82.6	4.87	51.4	6.59	36.9	6.47	35.5	6.08	81.6	4.96
Mpu	23.1	7.31	90.6	4.71	66.4	8.00	87.8	5.29	64.8	8.12	81.9	6.20	97.9	2.07	87.3	5.55	41.6	8.69	4.5	3.26	35.4	8.09	95.2	3.36
NC	30.3	7.68	88.9	5.36	78.1	6.67	71.5	7.25	56.7	7.65	87.1	4.93	97.1	2.86	60.0	8.05	46.5	8.44	42.1	8.31	72.7	7.04	87.4	5.49
Lim	39.2	8.11	81.9	6.34	71.2	7.93	56.4	8.20	48.6	8.30	85.5	6.88	89.1	6.21	85.5	5.63	50.2	8.63	20.1	6.98	37.3	7.31	82.8	6.45
NW	42.4	8.27	88.6	5.54	79.4	6.80	76.0	7.20	65.2	7.78	75.6	7.01	100.0	0.00	95.2	3.39	53.0	8.46	37.3	8.81	57.2	7.70	84.9	5.80
WC	17.5	6.17	97.9	2.08	71.8	7.15	91.0	4.44	63.2	7.35	76.9	6.12	93.8	3.57	78.7	6.50	81.0	5.99	64.0	7.56	60.2	7.36	90.2	4.77
SA	**34.7**	**2.74**	**88.9**	**1.82**	**72.7**	**2.59**	**79.2**	**2.26**	**68.2**	**2.65**	**79.3**	**2.33**	**95.6**	**1.18**	**82.5**	**2.24**	**52.4**	**2.93**	**31.7**	**2.77**	**44.9**	**2.69**	**86.8**	**1.90**

The following observations can be made from **Table 3.5**:

a) Distribution of School Heads and their characteristics

For South Africa overall, the percentage of Grade 6 learners who were in schools where the School Head or principal was a female was relatively low at 34,7%. Although this was a significant increase of 13,9% from 20,8% in 2000, it was relatively low when one considers that in South Africa female teachers at the primary school level constitute the majority of the teacher population[5]. There were significant improvements in six of the provinces and particularly in the Northern Cape where in 2000 Grade 6 learners were in schools where there was no female School Head but this percentage had increased impressively to 30,3% in 2007. The three provinces which saw declines in this variable were Mpumalanga, North West and Western Cape.

In terms of academic qualifications of School Heads in South Africa overall, 88,9% of Grade 6 learners were in schools where the School Head had passed Grade 12 or a higher qualification and this percentage had virtually **not changed** since 2000. A curious and unexpected observation from **Table 3.5** were striking decreases in the percentages of Grade 6 learners who were in schools where School Heads had attained a minimum academic qualification of Grade 12 in KwaZulu-Natal and Limpopo. The decreases were 18,2% and 8,7 percent, respectively. This decline needs to be verified to establish where these qualified teachers go and why, because it could pose a threat to the quality of teaching and learning in these provinces. Otherwise in the rest of the provinces the percentage of teachers in this qualification category either remained the same or increased between 2000 and 2007.

At national level the percentage of Grade 6 learners who were in schools where the School Head had attended a management course since appointment to his/her current position was 72,7%, which was essentially the same as in 2000 (71,9%). Individual provinces where the percentages of School Heads that had attended a management course decreased in 2007 were Gauteng, KwaZulu-Natal, North West and Western Cape. For South Africa overall 79,2% of Grade 6 learners were in schools where the School Heads had undergone relevant training related to HIV and Aids. Across individual provinces this percentage ranged from 56,4% in Limpopo to 91,0% in the Western Cape.

b) Distribution of Teachers and their characteristics

For South Africa overall, the majority of Grade 6 learners (68,2%) were in schools where Reading or Language was taught by a female teacher. This was a marked 10,4% increase from 2000. In all the provinces, except Gauteng, this percentage had increased between 2000 and 2007 although it remained the lowest in Limpopo at 48,6%, which means that in Limpopo the highest majority of Grade 6 learners were taught by male teachers in Reading or Language. Nationally 79,3% of Grade 6 learners were in schools where the Reading or Language teacher had attended at least

5 Department of Basic Education, School Realities, 2010.

one course in continuing professional teacher development (in-service training) within the three years prior to 2007. This was a marked improvement of 10,5% from 2000.

Across the provinces teacher participation in continuing professional teacher development was reasonably high, ranging between 73,8% in the Eastern Cape and 90,8% in the Free State. In all the provinces, except Eastern Cape and KwaZulu-Natal, this percentage had either remained the same or increased between 2000 and 2007. It is important to note that the reported percentages are limited to rates of participation and do not reflect the quality and content of the programmes attended.

At national level, 95,6% of Grade 6 learners were in schools where the Reading or Language teacher had received at least two years of initial teacher training and this percentage had remained virtually unchanged since 2000. It was fairly high across individual provinces, ranging from 89,1% in Limpopo to 100% in North West.

Within a 95% confidence interval, the percentage of South African Grade 6 learners who were in schools where the Grade 6 teacher had attended a relevant course in specialized training related to HIV and AIDS was estimated to range between 78% and 87% (82,5% ±2(2.24%)). Although quite impressive, this percentage could still be improved given the threat posed by this epidemic in South Africa, in particular[6]

c) Characteristics of the teaching and learning environment

In South Africa the class size norm is 40 learners in a primary school. In 2007 and for South Africa overall, only 44,9% of Grade 6 learners were in schools where class-size was at or below the norm. From the estimate and the standard error given in **Table 3.5**, one could be **certain 19 times out of 20** that a Grade 6 learner in South Africa was in a class where between 40% and 50% of learners (44,9% ±2(2,69%)) were in classes that met the norm. This means that **at least** half of Grade 6 learners in South Africa learn in relatively overcrowded classes, i.e. classes in which the class size exceeds the norm of 40 learners. Provinces in which classes were particularly overcrowded were Limpopo, Eastern Cape, KwaZulu-Natal and Mpumalanga.

School Heads in the sample were asked to indicate how often they had to deal with teacher absence from class. From **Table 3.5**, for South Africa overall, 86,8% of Grade 6 learners were in schools where, in 2007, School Heads reported that teachers attended classes regularly. This means that 13,2% of the 2007 Grade 6 cohort were in schools where teachers did not attend classes regularly. The five provinces with the highest percentage of schools where teacher attendance of classes was irregular, in decreasing order, were Free State, KwaZulu-Natal, Limpopo, North West and Eastern Cape. Irregular class attendance reduces the time-on-task and, therefore, impacts negatively on the levels and quality of teaching and learning.

In summary, for South Africa overall, the majority of Grade 6 learners were in schools where teachers had appropriate qualifications and attended continuing professional development courses with satisfactory regularity. However, at

6 UNAIDS (2010). Global Report. New York: Joint UN Programme on HIV-AIDS.

least one half of the learners were in schools that were overcrowded and in five provinces (Free State, KwaZulu-Natal, Limpopo, North West and Eastern Cape) learners were in schools where teacher attendance of classes was unacceptably irregular.

3.5.4 Other information on desirable resources through the gender lens

Whilst South Africa seems to be doing reasonably well in terms of gender balance in learner enrolments, learner achievement of educational outcomes tended to be low, more so for boys than for girls. This general trend in 2000 was observed again in 2007. It appeared that the learning dimension of gender equality had not yet been addressed satisfactorily in South Africa (Saito, 2010).

In order to help understand the context of these results, some selected gender-related information has been provided in **Table 3.6**. For the purposes of this policy brief, all the indicators expressed in **Table 3.6** should be interpreted in relation to the Grade 6 learners.

Table 3.6: Selected Information through the 'Gender Lens' in South Africa (2000 and 2007)

Selected Indicators	2000	2007
Female Reading Teacher	58%	68%
Female Mathematics Teacher	53%	58%
Female School Head	21%	35%
Have School Fence	82%	87%
# Boys per Boys' Toilet	54	58
# Girls per Girls' Toilet	30	51

Source: SACMEQ Data Archive

a) Female Staff

In South Africa female teachers are in the majority at primary school level. Invariably teachers of Grade 6 classes would normally teach both Reading and Mathematics, although the tendency to have subject specialists seems to be in the increase. As seen in Table 1, the majority of Grade 6 learners were taught by female teachers for both Reading than Mathematics, and the percentage has even increased to 68 percent in 2007 for Reading. Despite the fact that female teachers are in the majority in primary schools, relatively few of them are school heads or principals. In 2000 only 21 percent of Grade 6 learners were in schools where the principal was a female. This percentage increased to 35 percent by 2007, but was still relatively low. With relatively fewer female principals as role models, fewer girls are likely to aspire to lead schools, again widening gender inequality in the process.

b) School Safety

School Safety School safety is critical for all learners and teachers, but particularly so for female learners and staff. Some of the critical resources that provide safety and feelings of safety in schools include safe fencing off of school premises. In Table 1 it has been shown that in 2000 only 82 percent of South Africa's Grade 6 boys and girls were in schools that were fenced off and that this percentage had increased to 87 percent by 2007. Because fencing is such a basic safety requirement, it remains unacceptable that 13 percent of learners were in schools that were not fenced off.

c) Sanitation

Provision of adequate separate sanitation facilities such as separate toilets for boys and girls is another basic requirement. Otherwise female learners may feel unsafe in the absence of these facilities and be forced not to stay long in school. In Table 1, the average numbers of learners per toilet in 2000 and 2007 are shown separately for boys' toilets and girls' toilets. For boys and girls it is worrisome that the ratio of learners to toilets increased between 2000 and 2007. Although no norms for numbers of learners per toilet were available for South Africa, the recommendation of the World Health Organisation is a ration of 1:30, i.e. 30 learners should be sharing a toilet. Using this norm (in the absence of a national norm) it is evident that Grade 6 learners in South Africa were in schools where toilets were overcrowded as can be evidenced from the relatively high learner-toilet ratios and the fact that these increased considerably during the period in question.

3.6 Conclusion

The following were the key findings, which constitute useful baseline information about the learners and their home environments:

On the whole, there seemed to be general compliance with the policy on age of admission to school and the Grade 6 learners were at the expected age for this grade. However, this survey showed that grade repetitions in the schools were unacceptably high. With the exception of a few provinces, girls tended to outnumber boys.

The majority of the learners stayed with parents whose average education was mainly primary and barely secondary. But there was a sizable number of learners who indicated that, during a school week they either stayed on their own or with friends.

On average, learners had access to some books, print and electronic media where they stayed during a school week. The number of Reading textbooks owned by or put at the disposal of learners was higher than that of Mathematics textbooks. The resources varied widely among the provinces but the variations tended to be in favour of urban settings. This is an equity issue that needs an accelerated but comprehensive intervention strategy.

Chapter 4

Reading and Mathematics achievement and trends of learners and teachers

Introduction

In this chapter the overall achievement and trends in Reading and Mathematics for South Africa in 2000 and 2007 have been reported for both learners and teachers, where applicable.

General policy concern 1: What were the levels (according to Rasch scores and descriptive levels of competence) and variations (among regions and) in the achievement levels of Grade 6 learners and their teachers in Reading and Mathematics?

4.1 Overall Reading and Mathematics achievement of learners and teachers

The overall mean Rasch scores of Grade 6 learners and teachers in the Reading and Mathematics tests for South Africa in 2000 and 2007 have been summarised in **Table 4.1**. Mean scores and corresponding standard errors have been shown for the nine provinces and South Africa. For example, the mean Reading scores and corresponding standard errors for the Eastern Cape were 444 and 13.9 in 2000 and 448 and 10.1 in 2007. This means in 2007 we can say that with a 95% level of confidence that the average Grade 6 learner in the Eastern Cape achieved a reading score within the range 448 ± 2 (10.1), i.e. a score ranging between 427.8 and 468.2.

Table 4.1: Overall mean scores of Grade 6 learners and teachers in Reading and Mathematics in 2000 and 2007.

	LEARNERS				TEACHERS			
2000	**Reading**		**Mathematics**		**Reading**		**Mathematics**	
	Mean	**SE**	**Mean**	**SE**	**Mean**	**SE**	**Mean**	**SE**
Eastern Cape	444.1	13.90	449.3	10.66	××	××	××	××
Free State	446.2	12.22	447.5	5.94	××	××	××	××
Gauteng	576.4	31.07	552.4	24.16	××	××	××	××
KwaZulu-Natal	517.5	21.39	510.3	17.28	××	××	××	××
Mpumalanga	428.1	17.20	433.4	10.68	××	××	××	××
Northern Cape	470.3	13.37	460.9	8.19	××	××	××	××
Limpopo	436.7	19.58	446.0	18.76	××	××	××	××
North West	427.7	9.53	419.6	10.41	××	××	××	××
Western Cape	629.3	17.75	591.1	23.56	××	××	××	××
SOUTH AFRICA	**492.3**	**8.90**	**486.1**	**7.13**	**××**	**××**	**××**	**××**

	LEARNERS				TEACHERS			
2007	**Reading**		**Mathematics**		**Reading**		**Mathematics**	
	Mean	**SE**	**Mean**	**SE**	**Mean**	**SE**	**Mean**	**SE**
Eastern Cape	447.8	10.13	468.8	10.31	724.2	10.19	730.0	11.50
Free State	491.1	12.48	491.6	10.08	757.2	10.80	782.2	17.82
Gauteng	573.1	14.39	545.0	11.99	776.4	15.48	787.8	20.30
KwaZulu-Natal	485.6	10.56	485.2	8.22	758.1	10.36	764.9	15.42
Mpumalanga	473.6	11.13	476.1	8.19	753.9	16.73	700.1	13.02
Northern Cape	505.6	12.56	498.7	10.83	755.6	11.24	796.3	18.50
Limpopo	425.3	7.68	446.7	5.25	744.7	10.01	748.4	14.48
North West	506.3	14.19	503.1	13.14	757.7	12.53	766.9	20.46
Western Cape	583.4	11.08	565.7	12.01	813.4	13.55	852.0	20.11
SOUTH AFRICA	**494.9**	**4.55**	**494.8**	**3.81**	**757.7**	**4.64**	**763.6**	**6.32**

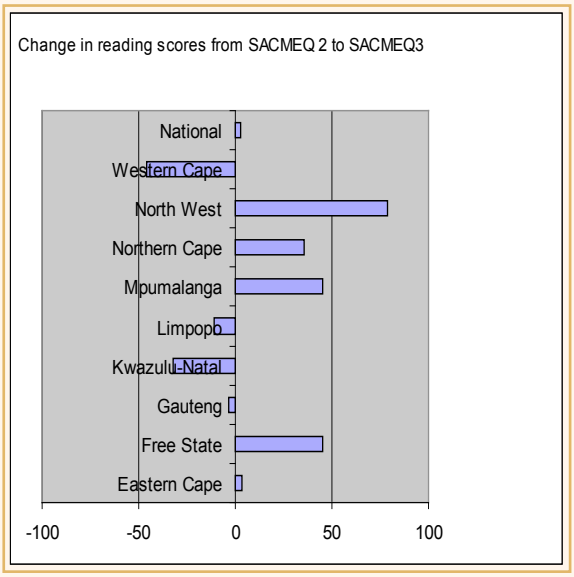
From **Table 4.1** the overall mean score for learners in Reading in South Africa was 492 in 2000 and 495 in 2007 while the corresponding Mathematics scores were 486 and 495, respectively. In 2000 and 2007, both the Reading and Mathematics achievement scores were below the SACMEQ average of 500. In both years, Western Cape had the highest mean scores in Reading and Mathematics. The Western Cape reading scores were 629 and 583 in 2000 and 2007 respectively, while the corresponding Mathematics scores were 591 and 566 in 2000 and 2007, respectively. In 2000 the lowest Reading score (428) and the lowest Mathematics score (420) were both in North West whilst in 2007 Limpopo had the lowest Reading (425) and Mathematics (447) scores.

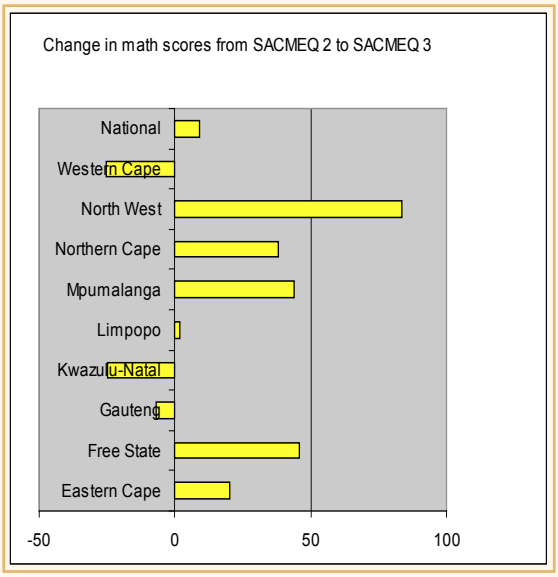
South African teachers did not take part in the reading tests of SACMEQ II (2000) . Thus, teacher results are only presented for 2007. The mean reading-teacher Reading score was 758, and the mean mathematics-teacher Mathematics score was 764. Teacher achievement in reading and Mathematics was highest in the Western Cape, which is similar to the provincial distribution of learner performance. The achievement scores of teachers were considerably above the average SACMEQ teacher scores.

4.1.2 Reading and Mathematics trends between 2000 and 2007

The trends in Reading and Mathematics learner achievement for South Africa and the provinces between 2000 and 2007 have been shown in **Figure 1**. For each of Reading and Mathematics the changes in scores between 2000 and 2007 have been shown on the horizontal axis and represented with bars for each province. The length of the bar indicates the amount of change while the direction indicates whether there was an increase (positive) or decrease (negative). For example in North West there was an increase of 78 Rasch points (positive movement) in the reading score whilst the reading scores for the Western Cape decreased by 46 points (negative movement). The achievement scores in mathematics resembled a similar trend.

Figure 1: Change in Reading and Mathematics scores between 2000 and 2007





From **Figure 1** the overall achievement of South Africa increased slightly in Reading and Mathematics, 3 and 9 Rasch points (positive movement), respectively. The province with the highest increase in both the Reading and Mathematics scores was North West. The increases were 78 and 83 Rasch points, respectively. The other provinces in which there were improvements (in reading Rasch scores) were Free State (45), Northern Cape (36) and Eastern Cape (4). In Mathematics there were improvements for Eastern Cape (4), Free State (44), Mpumalanga (43), Northern Cape (38) and Limpopo (1). For the rest of the provinces, achievement decreased in this period. In the Western Cape there was a notable decline in achievement (25 Rasch points).

4.2 Learners reaching various reading competence levels by region between 2000 and 2007

The percentage of Grade 6 learners in the reading tests for South Africa in 2000 and 2007 have been summarised in **Table 4.2**. The percentage of learners and the corresponding standard errors reaching each of the eight levels have been shown for the nine provinces and South Africa. For example, the percentage of learners and the corresponding standard error of learners in the Free State reaching level one were 12.9 and 3.30 in 2000 and 6.9 and 1.06 in 2007. This means in 2007 we can say, with a 95% level of confidence, that the percentage Grade 6 learners in the Free State that reached level one was 6.9 ± 2(1.06), alternatively a percentage ranging between 4.78 and 9.02.

Table 4.2: Percentage of learners reaching various reading competence levels by region (SACMEQ II and SACMEQ III)

2000	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
EC	19.1	3.56	24.2	2.98	21.6	2.90	17.5	2.38	8.3	1.96	4.5	2.13	3.7	2.16	1.1	0.75
FS	12.9	3.30	22.3	3.49	25.9	2.32	24.3	2.93	7.8	2.88	3.6	1.42	3.2	1.87	0.0	0.00
Gau	1.0	0.59	6.0	2.02	10.8	3.57	17.9	5.95	10.8	3.02	12.6	3.34	29.9	11.15	11.0	3.75
KZN	6.0	1.37	16.0	3.37	20.0	3.38	15.7	2.58	12.3	2.75	9.7	1.88	11.1	3.68	9.2	3.16
Mpu	21.7	4.12	30.1	4.71	22.3	2.24	13.3	3.72	7.4	2.43	1.9	1.61	2.8	2.81	0.4	0.40
NC	11.9	2.56	14.9	3.07	24.7	4.56	21.4	2.65	14.2	2.87	4.3	1.73	8.0	2.88	0.7	0.71
Lim	23.6	4.97	27.0	3.22	23.2	3.19	11.3	2.44	7.0	2.49	2.4	1.31	2.4	1.19	3.1	3.06
NW	16.8	4.19	28.3	3.61	25.0	3.22	20.6	4.17	7.3	2.14	1.6	0.90	0.4	0.41	0.0	0.00
WC	0.0	0.00	3.2	1.45	5.1	2.24	8.9	2.67	10.6	4.03	16.9	4.09	28.6	3.59	26.8	4.89
SA	**12.2**	**1.20**	**18.8**	**1.25**	**19.1**	**1.25**	**16.0**	**1.28**	**9.4**	**0.99**	**7.0**	**0.81**	**10.9**	**2.28**	**6.6**	**1.09**

2007	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
EC	14.1	1.87	24.5	2.42	25.8	2.11	16.7	2.12	9.7	1.88	3.9	0.99	3.7	1.82	1.7	1.06
FS	6.9	1.06	15.4	2.23	24.7	2.28	18.5	1.71	11.2	1.43	10.2	1.80	9.0	2.34	4.0	1.47
Gau	4.0	0.97	7.6	1.82	10.5	1.95	10.2	1.50	12.6	1.58	16.2	1.61	23.8	3.28	15.1	2.63
KZN	9.0	1.12	19.4	1.83	26.1	1.94	14.7	1.27	8.9	0.98	7.9	1.21	7.5	1.48	6.7	1.58
Mpu	9.4	1.68	19.0	2.43	24.1	2.11	19.0	1.79	12.0	1.43	8.8	1.83	5.0	1.50	2.7	1.40
NC	7.7	1.26	13.7	2.18	19.4	1.79	16.0	1.79	14.6	1.80	12.1	1.62	11.1	2.28	5.4	2.04
Lim	22.5	2.62	26.5	2.20	25.4	2.78	13.1	1.33	6.8	1.33	3.3	0.98	1.7	0.93	0.7	0.57
NW	6.9	1.47	15.0	2.20	19.4	2.13	17.4	2.22	12.3	1.35	11.4	1.71	10.8	2.53	6.7	1.98
WC	1.2	0.43	3.9	1.22	8.1	1.64	13.7	1.88	16.0	1.77	20.7	1.76	22.3	2.41	14.1	2.70
SA	**9.9**	**0.60**	**17.3**	**0.80**	**21.1**	**0.84**	**14.7**	**0.62**	**10.6**	**0.55**	**9.6**	**0.54**	**10.2**	**0.85**	**6.6**	**0.68**

4.2.1 Variation in learners reaching various reading competence levels by region

From **Table 4.2** the overall percentage learners reaching reading levels 3 and below in South Africa was 50.1 in 2000 and 48.3 in 2007 while those reaching acceptable reading levels (level 4 and above) was 49.9% in 2000 and 51.7% in 2007. In 2000 and 2007 the Western Cape had the highest percentage of learners reaching level 4 and above. In 2000, the Mpumalanga region had the lowest percentage of learners reaching level 4 and above while the Limpopo region had the lowest percentage of learners in 2007.

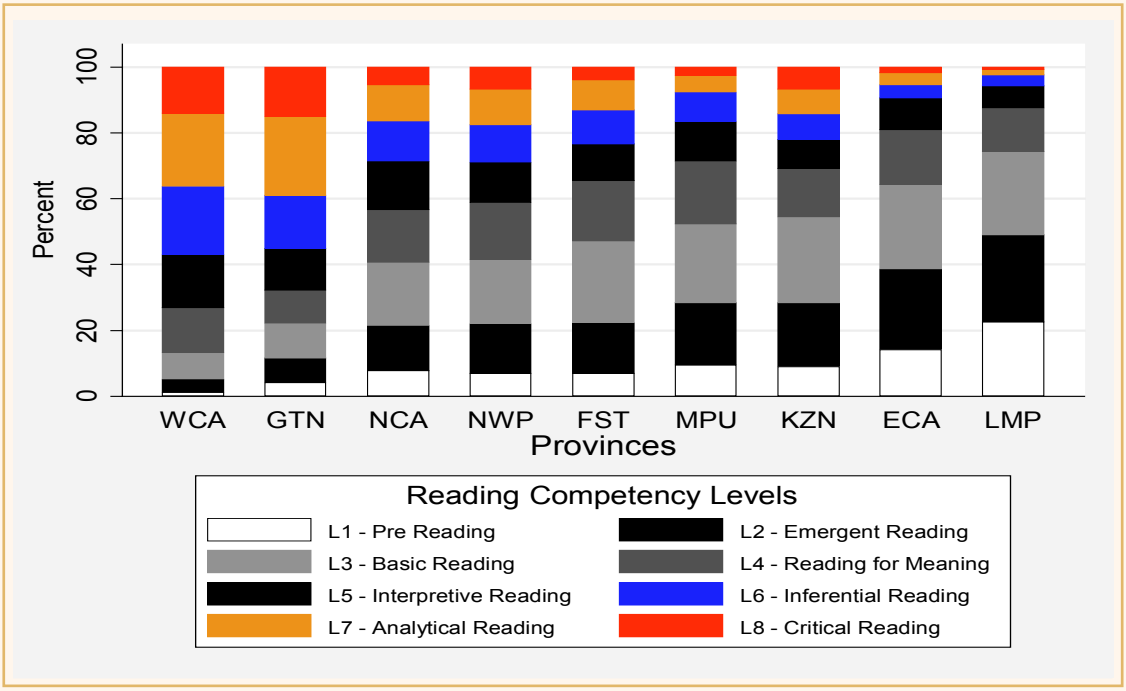
4.2.2 Trends in learners reaching various reading competency levels by region

From **Table 4.2** the overall percentage of learners reaching reading levels 3 and below in South Africa decreased slightly (1.8%) between 2000 and 2007 while those reaching acceptable reading levels (level 4 and above) increased by the same margin (1.8%) between 2000 and 2007.

The was a significant drop in the Western Cape for learners reaching the level 8 category from 26.8% in 2000 to 14.1% in 2007. Only Gauteng and Western Cape had above 10% in this category in 2007. In 2000, four provinces (Free State, Mpumalanga, Northern Cape and North West) had less than one percent of learners reaching level 8 while in 2007, the Limpopo region dropped from 3.1% to 0.7% in this category.

Figure 2 below provides an illustration of the distribution of learner reading achievement in 2007 across the various provinces. It is disconcerting to note that the vast majority of students in the Eastern Cape, KwaZulu-Natal and Limpopo provinces did not reach acceptable levels of reading competence (level 4 and above).

Figure 2: Reading Competency Levels by Province



4.3 Learners reaching various mathematics competence levels by region between 2000 and 2007

The percentage of Grade 6 learners in the mathematics tests for South Africa in 2000 and 2007 have been summarised in **Table 4.3**. The percentage of learners and the corresponding standard errors reaching each of the eight levels have been shown for each of the nine provinces and their average for South Africa. For example, the percentage of learners and the corresponding standard error of learners in Gauteng reaching level one were 2.4 and 0.88 in 2000 and 3.1 and 1.10 in 2007. This means in 2007 we can say, with a 95% level of confidence, that the percentage Grade 6 learners in Gauteng that reached level one ranged between 0,9 and 5,3 percentage points.

Table 4.3: Percentage of learners reaching various mathematics competence levels by region (SACMEQ II and SACMEQ III)

2000	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
EC	11.6	2.25	52.1	4.40	25.5	2.92	7.2	2.24	1.7	1.54	1.6	1.08	0.0	0.00	0.3	0.26
FS	6.8	1.38	56.0	3.77	33.1	3.51	2.4	1.15	1.8	1.00	0.0	0.00	0.0	0.00	0.0	0.00
Gau	2.4	0.88	24.0	7.90	23.7	5.38	13.1	3.17	17.1	6.85	15.1	4.21	3.5	1.66	1.2	0.65
KZN	3.4	0.88	39.1	6.08	23.6	2.75	13.0	2.70	8.5	2.85	8.4	3.31	2.8	1.31	1.3	0.70
Mpu	10.6	2.36	64.6	5.46	20.4	4.01	2.7	2.03	1.2	1.22	0.4	0.41	0.0	0.00	0.0	0.00
NC	6.4	1.50	50.4	5.07	31.7	3.36	9.1	2.16	2.1	1.14	0.4	0.36	0.0	0.00	0.0	0.00
Lim	13.5	2.66	57.3	4.08	21.1	2.97	3.3	1.33	0.6	0.41	0.2	0.24	1.4	1.44	2.6	2.64
NW	18.3	4.68	61.8	2.49	17.4	3.82	2.3	1.01	0.2	0.21	0.0	0.00	0.0	0.00	0.0	0.00
WC	0.5	0.53	13.1	4.31	25.7	4.70	19.4	2.20	12.2	2.08	16.1	3.41	8.6	2.61	4.4	2.29
SA	**7.8**	**0.77**	**44.4**	**2.30**	**23.8**	**1.36**	**8.8**	**0.95**	**6.1**	**1.45**	**5.8**	**1.08**	**2.1**	**0.46**	**1.3**	**0.48**

2007	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
EC	7.9	1.66	42.4	3.49	30.3	2.36	11.7	2.18	3.5	0.87	1.8	1.17	2.3	2.09	0.0	0.00
FS	3.8	0.89	34.3	3.12	34.7	2.42	14.4	1.92	7.2	1.99	4.3	2.20	1.1	0.84	0.1	0.08
Gau	3.1	1.10	17.4	2.50	24.6	3.09	21.4	1.53	16.1	2.56	13.5	2.29	3.1	0.87	0.7	0.32
KZN	5.7	0.98	38.3	2.86	29.6	1.78	14.5	1.55	5.1	1.13	5.1	1.18	1.3	0.50	0.4	0.17
Mpu	5.4	0.86	38.4	3.06	34.9	2.11	13.9	1.75	4.2	1.21	2.3	1.22	0.5	0.43	0.3	0.23
NC	4.6	0.68	32.5	3.15	31.7	2.18	16.5	1.91	6.2	1.35	5.7	2.21	2.0	0.82	0.7	0.46
Lim	9.6	1.22	51.0	2.08	28.2	1.52	8.6	1.54	1.7	0.68	0.9	0.69	0.0	0.00	0.0	0.00
NW	3.6	0.85	34.5	3.36	30.2	2.28	15.3	1.82	6.0	1.44	6.7	2.30	2.3	1.12	1.3	0.65
WC	0.9	0.36	14.1	2.35	23.4	2.36	26.2	2.27	14.1	1.73	13.3	2.11	4.6	1.51	3.2	1.45
SA	**5.5**	**0.46**	**34.7**	**1.13**	**29.0**	**0.87**	**15.4**	**0.67**	**7.1**	**0.61**	**5.9**	**0.60**	**1.9**	**0.42**	**0.6**	**0.14**

4.3.1 Variation in learners reaching various mathematics competence levels by region

From **Table 4.3** the overall percentage of learners reaching mathematics levels 3 and below in South Africa was 76% in 2000 and 69.2% in 2007 while those reaching acceptable mathematics levels (level 4 and above) was 24.1% in 2000 and 30.9% in 2007. Similar to results in the reading test, in 2000 and 2007 the Western Cape had the highest percentage of learners reaching level 4 and above. In 2000, the North West region had the lowest percentage of

learners (2.5) reaching level 4 and above while in 2007, the Limpopo region had the lowest percentage of learners (19.8) in this category.

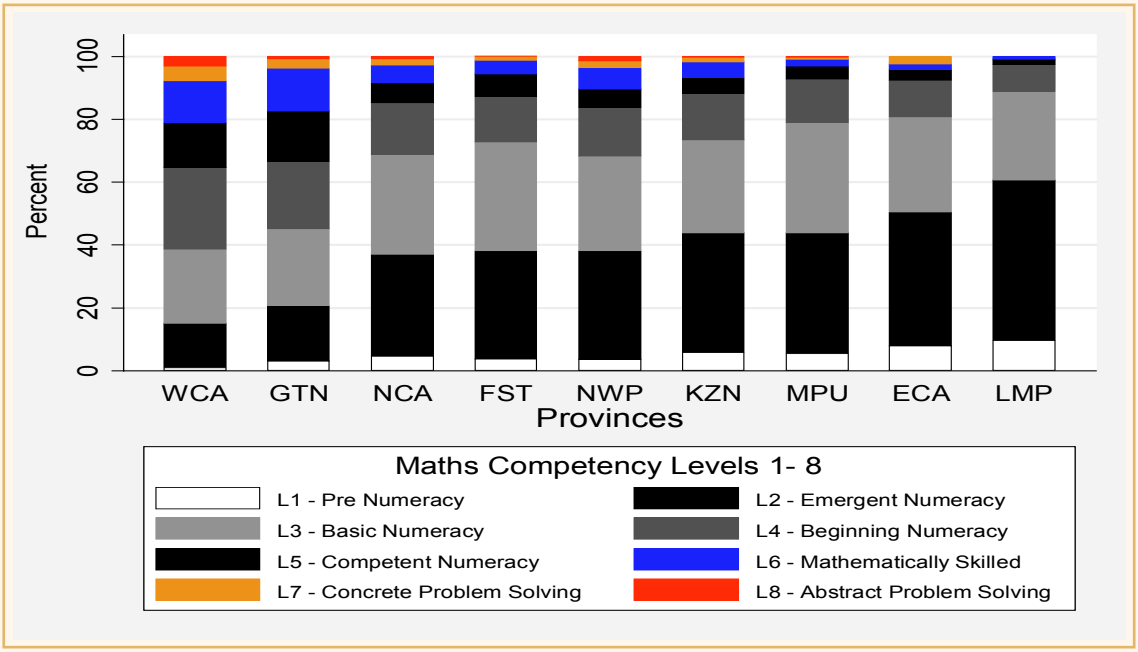
4.3.2 Trends in learners reaching various mathematics competency levels by region

From **Table 4.3** the overall percentage of learners reaching mathematics levels 3 and below in South Africa decreased by 6.8% between 2000 and 2007 while those reaching acceptable reading levels (level 4 and above) increased by the same margin (6.8%) between 2000 and 2007.

Both in 2000 and 2007, no province in South Africa had more than 5% of learners reaching level 8. Only the Western Cape region had more than three percent of learners reaching level 8 in 2000 and 2007.

At a national level, the proportion of students who are classified at the 'acceptable' level of reading is strikingly low at 30.8%. The vast majority (69.2%) of South African Grade 6 students have not acquired 'acceptable' reading skills. **Figure 3** below shows the distribution of learner mathematics achievement in 2007 across the various provinces.

Figure 3: Mathematics Competency Levels by Province



4.4 Teachers reaching various reading competency levels by region in 2007

The percentage and the standard errors of teachers of Grade 6 learners reaching various competency levels in reading tests for South Africa in 2007 have been summarised in **Table 4.4**. The percentage and the corresponding standard errors in each of the eight levels have been shown for the nine provinces and South Africa. For example, the percentage and the corresponding standard error of teachers in the KwaZulu-Natal reaching level six were 3.6 and 2.54 in 2007. This means in 2007 we can say that with a 95% level of confidence that the percentage of teachers of

Grade 6 learners in the KwaZulu-Natal that reached level six was 3.6 ± 2 (2.54), alternatively a percentage ranging between 1.48 and 8.68.

Table 4.4 Percentage of teachers reaching various reading competence levels by region (SACMEQ III)

2007	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Eastern Cape	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	1.1	1.11	0.0	0.00	36.4	7.96	62.5	8.00
Free State	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	20.5	6.40	79.5	6.40
Gauteng	0.7	0.65	0.0	0.00	1.7	1.70	0.0	0.00	0.0	0.00	0.0	0.00	10.0	4.59	87.6	5.44
KwaZulu-Natal	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	3.6	2.54	22.4	5.50	73.9	5.81
Mpumalanga	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	37.8	8.42	62.2	8.42
Northern Cape	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	2.3	2.36	0.0	0.00	10.5	5.62	87.1	5.98
Limpopo	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	2.0	2.00	11.0	5.29	87.1	5.58
North West	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	19.4	6.68	80.6	6.68
Western Cape	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	6.1	3.92	93.9	3.92
SOUTH AFRICA	**0.1**	**0.11**	**0.0**	**0.00**	**0.3**	**0.29**	**0.0**	**0.00**	**0.2**	**0.17**	**1.2**	**0.68**	**20.5**	**2.30**	**77.8**	**2.40**

From **Table 4.4** the overall percentage of teachers reaching reading levels 3 and below in South Africa was less than one percent, while those reaching acceptable reading levels (level 4 and above) was a significant 99.6%, of which 77.8% reached level 8. The Western Cape had the highest percentage (93.9) of teachers reaching level 8 in the reading test. All regions had above 60% of teachers reaching level 8 in the reading test.

4.5 Teachers reaching various mathematics competency levels by region in 2007

The percentage and the standard errors of teachers of Grade 6 learners reaching various competency levels in the mathematics tests for South Africa in 2007 have been summarised in **Table 4.5**.

Table 4.5 Percentage of teachers reaching various mathematics competence levels by region (SACMEQ III)

2007	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Eastern Cape	0.0	0.00	0.0	0.00	0.0	0.00	3.0	3.00	8.4	4.31	37.6	8.30	39.5	8.84	11.5	4.87
Free State	0.0	0.00	0.0	0.00	0.0	0.00	2.5	2.47	1.6	1.60	33.9	7.53	31.2	7.56	30.9	7.86
Gauteng	0.0	0.00	0.0	0.00	0.0	0.00	4.8	4.74	6.7	3.90	6.6	3.78	42.9	8.57	39.0	8.99
KwaZulu-Natal	0.0	0.00	0.0	0.00	0.7	0.72	4.5	2.62	11.6	4.13	21.1	5.29	29.5	6.07	32.5	6.25
Mpumalanga	0.0	0.00	0.0	0.00	0.0	0.00	2.9	2.88	26.4	8.30	31.5	8.07	34.8	8.70	4.5	3.26
Northern Cape	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	6.7	4.70	15.6	5.80	40.1	8.53	37.6	8.20
Limpopo	0.0	0.00	0.0	0.00	0.0	0.00	3.0	2.98	8.1	5.92	22.2	6.95	50.6	8.69	16.2	6.21
North West	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	11.2	5.59	23.9	7.27	30.2	8.05	34.7	8.74
Western Cape	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	2.1	2.08	5.4	3.80	33.5	7.60	59.0	7.98
SOUTH AFRICA	**0.0**	**0.00**	**0.0**	**0.00**	**0.2**	**0.18**	**3.2**	**1.22**	**9.8**	**1.82**	**21.8**	**2.35**	**37.2**	**2.95**	**27.8**	**2.67**

From **Table 4.5** and similar to the results observed in the reading tests, the overall percentage of teachers reaching mathematics competency levels 4 and above was almost 100% of which 27.8% reached level 8. The percentage of teachers reaching level 8 was not as high in mathematics as it was in the reading test. As in the reading test, the Western Cape had the highest percentage (59.0) of teachers reaching level 8 in the mathematics test. In Mpumalanga, only 4.5% of teachers reached the level 8 competency level in the mathematics test.

General Policy concern 2:

What were the Reading and Mathematics achievement levels of important subgroups (gender, school location and socioeconomic status (SES)) of Grade 6 learners?

4.6 Reading and Mathematics achievement and trends of Grade 6 learners by subgroups

In **Table 4.6** the achievement scores and standard errors of Grade 6 learners in the Reading and Mathematics tests in 2000 and 2007 have been presented according to their gender, school location and SES. The columns in Table 2 represent the mean scores and standard errors for each of Reading and Mathematics in the two years. For example the overall mean score of boys in reading in 2000 was 478 with a standard error of 7.9 while in mathematics the score was 482 and a standard error 6.7.

Table 4.6: Means for the Reading and Mathematics test scores of learners by subgroups in 2000 and 2007

	Reading		Mathematics	
2000	**Mean**	**SE**	**Mean**	**SE**
Pupil gender				
Boys	478.3	7.91	482.1	6.71
Girls	504.8	10.13	489.8	7.95
School location				
Rural	426.4	4.91	437.3	3.95
Urban	545.3	12.44	524.7	10.53
Socioeconomic level				
Low SES (Bottom 25%)	424.4	4.68	439.3	4.02
High SES (Top 25%)	617.0	13.12	584.2	12.76
SOUTH AFRICA	**492.3**	**8.90**	**486.1**	**7.13**

	Reading		Mathematics	
2007	**Mean**	**SE**	**Mean**	**SE**
Pupil gender				
Boys	483.5	4.68	491.2	4.12
Girls	506.0	4.77	498.4	3.85
School location				
Rural	440.8	3.96	456.7	3.78
Urban	549.2	6.77	533.1	5.71
Socioeconomic level				
Low SES (Bottom 25%)	423.2	3.80	446.2	4.80
High SES (Top 25%)	605.6	5.91	578.6	5.74
SOUTH AFRICA	**494.9**	**4.55**	**494.8**	**3.81**

4.6.1 Reading and Mathematics achievement of grade 6 learners by school location

In terms of school location, the mean score for urban Grade 6 learners in both Reading and Mathematics in 2000 and 2007 was higher than the corresponding mean score of rural learners. The analysis of achievement in both 2000 and 2007 was conducted in the top and the bottom 25% of the SES category. From **Table 4.6** the achievement score of the top 25% SES category of Grade 6 learner in both Reading and Mathematics in 2000 and 2007 was substantially higher than the corresponding score of the bottom category.

4.6.2 Reading and Mathematics trends of grade 6 learners by socio-economic status

From **Table 4.6** the achievement scores of both urban and rural learners increased between 2000 and 2007 in both

Reading and Mathematics. However, the achievement scores of both the top and bottom SES categories in reading decreased between 2000 and 2007. For mathematics the low SES category of Grade 6 learners improved by 7 Rasch points while the high SES dropped by 5 Rasch points.

4.7 Gender Differences in Learning Achievement

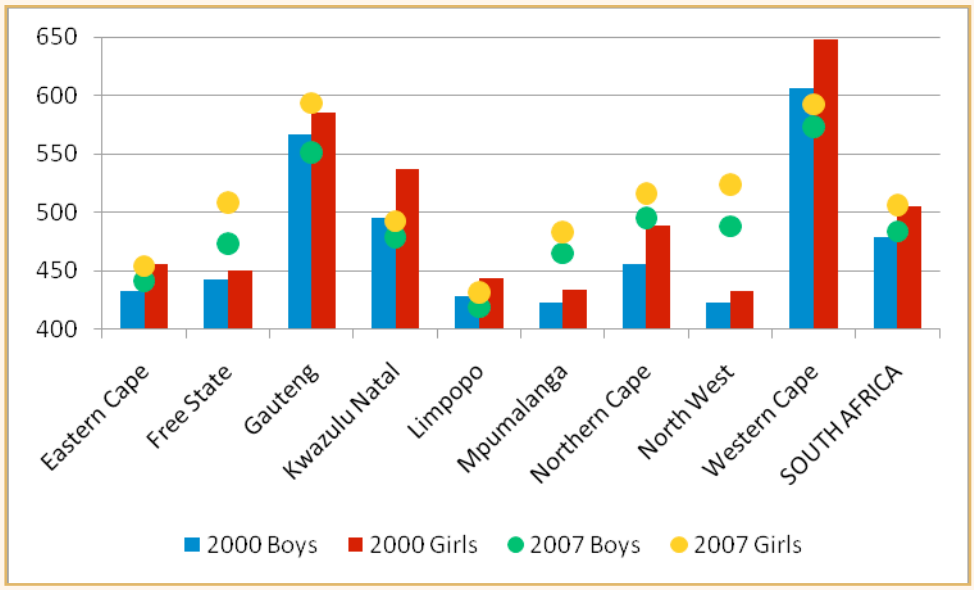
While gender balance remained reasonably maintained in South African school enrolments between 2000 and 2007, the concern of policy makers was whether there was comparable gender equality in terms of learning achievement.

Gender and time differences in learning achievement in Reading and Mathematics have been presented by province in Figures 2 and 3, respectively. The standardized Rasch-scaled scores with a learner mean score of 500 and a standard deviation of 100 score points were established, based on the calibrated test items during SACMEQ II. Use of a sub-set of these test items during SACMEQ III permitted valid comparison of scores over time.

4.7.1 Reading

At the national level in South Africa as a whole, Reading performance for both boys and girls did not change in any meaningful measure between 2000 and 2007 with girls performing reasonably and consistently better than boys. At the provincial level North West, Northern Cape, Mpumalanga and Free State provinces saw notable improvements (positive change with both boys and girls) between 2000 and 2007, again with girls tending to perform observably better than boys. **Figure 4** below shows the comparative mean Reading scores for boys and girls in South Africa in 2000 and 2007. The figures for 2000 are represented by bars while 2007 figures are indicated with dots.

Figure 4: Mean Reading Scores for Boys and Girls in South Africa (2000 and 2007)



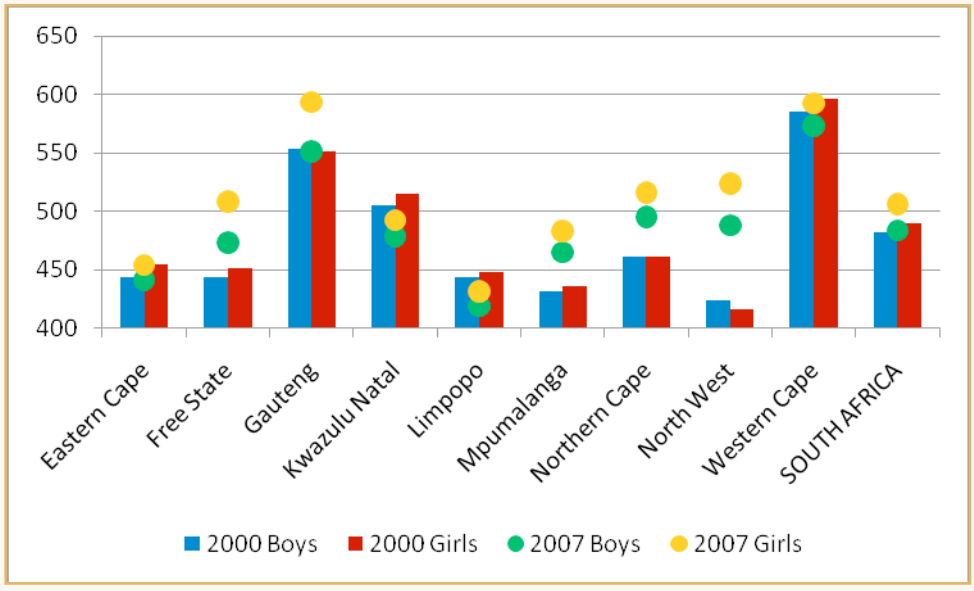
Source: SACMEQ Data Archive

It was interesting to note that while the scores of boys in Gauteng dropped, the scores of girls actually improved between 2000 and 2007, resulting in a large gender difference. In the rest of the provinces learner scores either remained unchanged or dropped in this period. This included Western Cape which, although registering the highest overall scores for both boys and girls, experienced significant drops in the performance of both sexes in this period. In KwaZulu-Natal and Western Cape, a very big drop by girls has led to a marginal gender difference.

4.7.2 Mathematics

At the national level the overall learner performance in Mathematics had increased in 2007, especially for girls. At the provincial level, in 2007 performance had either remained unchanged or improved in all the provinces except in the Eastern Cape, Limpopo, KwaZulu-Natal and Western Cape where there were definite declines in performance although the latter province still remained the highest performer. **Figure 5** below shows the comparative mean Mathematics scores for Boys and Girls in South Africa in 2000 and 2007. The figures for 2000 are represented by bars while 2007 figures are indicated with dots.

Figure 5: Mean Mathematics Scores for Boys and Girls in South Africa (2000 and 2007)



Source: SACMEQ Data Archive

Like for Reading, provinces that realised appreciable improvements in Mathematics performance in this period were Free State, Northern Cape, North West and Gauteng girls, with girls in all three instances either reaching or exceeding the SACMEQ III mean score of 500 while boys still remained below this critical benchmark. There was some improvement in performance in Mpumalanga although for both boys and girls it was still below the SACMEQ benchmark. Eastern Cape, KwaZulu-Natal and Limpopo saw worrying declines in the performance of both boys and girls in this period. Overall it would appear that these three provinces, which are largely rural but also among them host the majority of learner populations in South Africa, need more focused interventions to improve the educational outcomes of both sexes.

4.8 Learners reaching various Reading and Mathematics competence levels by subgroups between 2000 and 2007

In **Tables 4.7 and 4.8** the percentage and standard errors of Grade 6 learners reaching various Reading and Mathematics competence levels in 2000 and 2007 have been presented according to their gender, school location and SES. The columns in **Tables 4.7 and 4.8** represent the eight competency levels for Reading and Mathematics respectively in the two years. For example, the percentage of boys reaching competency level 1 in reading in 2000 was 13.6 with a standard error of 1.48 while in 2007, the percentage of boys reaching competency level 1 was 11.2 with a standard error of 0.75.

Table 4.7: Percentage of learners reaching various reading competence levels by subgroups (SACMEQ II and SACMEQ III)

2000	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Learner gender																
Boys	13.6	1.48	20.2	1.41	20.3	1.59	17.3	1.70	9.1	1.16	6.0	1.02	8.5	1.67	5.1	1.22
Girls	10.9	1.35	17.6	1.55	18.0	1.55	14.8	1.31	9.7	1.15	8.0	0.92	13.0	3.05	7.9	1.32
School location																
Rural	19.1	2.10	28.6	1.73	26.5	1.61	16.0	1.44	6.7	1.17	2.2	0.77	0.7	0.29	0.2	0.13
Urban	6.6	1.21	11.0	1.30	13.1	1.45	16.0	2.02	11.6	1.53	10.9	1.31	19.1	3.70	11.7	1.71
Socioeconomic level																
Low SES (Bottom 25%)	21.6	2.65	28.4	1.91	25.3	1.76	14.2	1.56	6.2	1.08	3.2	0.94	1.0	0.41	0.0	0.00
High SES (Top 25%)	2.2	0.63	3.8	0.96	6.4	1.33	10.4	1.91	10.5	1.73	13.0	2.13	31.0	4.52	22.7	2.58
SOUTH AFRICA	**12.2**	**1.20**	**18.8**	**1.25**	**19.1**	**1.25**	**16.0**	**1.28**	**9.4**	**0.99**	**7.0**	**0.81**	**10.9**	**2.28**	**6.6**	**1.09**

2007	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Learner gender																
Boys	11.2	0.75	19.9	0.96	22.1	0.97	14.3	0.75	9.6	0.60	8.5	0.65	8.9	0.91	5.4	0.64
Girls	8.7	0.63	14.8	0.85	20.0	0.99	15.1	0.71	11.7	0.69	10.6	0.64	11.4	0.94	7.7	0.81
School location																
Rural	15.3	0.99	25.8	1.09	27.5	1.13	16.2	0.90	7.7	0.76	3.5	0.41	2.5	0.54	1.5	0.51
Urban	4.6	0.57	8.8	0.88	14.6	1.06	13.2	0.84	13.6	0.76	15.6	0.85	17.9	1.44	11.7	1.17
Socioeconomic level																
Low SES (Bottom 25%)	17.4	1.61	28.3	1.70	32.4	1.90	14.4	1.49	4.9	0.93	1.9	0.50	0.6	0.26	0.2	0.13
High SES (Top 25%)	2.5	0.46	4.2	0.60	7.4	0.83	8.7	0.90	10.2	0.91	17.5	1.05	27.9	1.56	21.7	1.59
SOUTH AFRICA	**9.9**	**0.60**	**17.3**	**0.80**	**21.1**	**0.84**	**14.7**	**0.62**	**10.6**	**0.55**	**9.6**	**0.54**	**10.2**	**0.85**	**6.6**	**0.68**

Table 4.8 Percentage of learners reaching various mathematics competence levels by subgroups (SACMEQ II and SACMEQ III)

2000	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Learner gender																
Boys	8.2	0.96	44.7	2.21	25.0	1.68	8.5	0.97	4.9	1.23	5.6	1.20	2.0	0.48	1.1	0.43
Girls	7.6	0.96	44.2	2.84	22.7	1.63	9.0	1.29	7.1	1.74	5.9	1.19	2.1	0.55	1.4	0.60
School location																
Rural	11.6	1.41	59.3	2.02	23.3	1.67	4.5	1.05	1.0	0.48	0.3	0.14	0.1	0.10	0.0	0.00
Urban	4.9	0.73	32.7	3.13	24.1	2.05	12.1	1.37	10.1	2.37	10.1	1.74	3.6	0.81	2.3	0.84
Socioeconomic level																
Low SES (Bottom 25%)	11.9	1.61	59.5	2.76	22.8	2.09	4.3	1.01	1.2	0.53	0.3	0.23	0.0	0.00	0.0	0.00
High SES (Top 25%)	2.6	0.71	16.4	2.95	19.5	2.95	16.1	1.77	16.4	3.63	16.7	2.02	7.5	1.58	4.8	1.73
SOUTH AFRICA	**7.8**	**0.77**	**44.4**	**2.30**	**23.8**	**1.36**	**8.8**	**0.95**	**6.1**	**1.45**	**5.8**	**1.08**	**2.1**	**0.46**	**1.3**	**0.48**

2007	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Learner gender																
Boys	6.4	0.62	36.0	1.30	27.6	1.00	14.7	0.81	6.7	0.64	6.0	0.68	2.0	0.45	0.5	0.15
Girls	4.6	0.44	33.3	1.24	30.3	1.08	16.1	0.77	7.5	0.73	5.8	0.65	1.7	0.44	0.7	0.16
School location																
Rural	8.1	0.75	47.1	1.42	30.7	1.08	10.1	0.86	2.3	0.36	0.9	0.34	0.9	0.69	0.0	0.00
Urban	2.9	0.44	22.2	1.41	27.3	1.38	20.7	0.92	11.9	1.09	11.0	1.09	2.9	0.47	1.2	0.27
Socioeconomic level																
Low SES (Bottom 25%)	10.1	1.22	50.0	2.23	29.3	1.74	8.4	1.48	1.3	0.42	0.5	0.34	0.4	0.29	0.0	0.00
High SES (Top 25%)	1.1	0.29	13.1	1.26	18.4	1.41	22.6	1.25	18.1	1.39	18.9	1.35	5.6	0.85	2.2	0.50
SOUTH AFRICA	**5.5**	**0.46**	**34.7**	**1.13**	**29.0**	**0.87**	**15.4**	**0.67**	**7.1**	**0.61**	**5.9**	**0.60**	**1.9**	**0.42**	**0.6**	**0.14**

4.8.1 Reading and Mathematics competency levels of grade 6 learners by gender

From **Tables 4.7 and 4.8**, the overall the percentage of girls in both Reading and Mathematics reaching levels 4 and above in 2000 and 2007 was higher than the percentage of boys reaching these levels. . The percentage of girls achieving levels 4 and above in mathematics in was higher in 2007 (31.8) than in 2000 (25.5). A similar trend was observed with boys between 2000 and 2007.

4.8.2 Reading and Mathematics competency levels of grade 6 learners by school location

The percentage of both urban and rural learners reaching levels 4 and above increased between 2000 and 2007 in both Reading and Mathematics. Similarly, the percentage of learners from both the top and bottom SES categories reaching levels 4 and above increased in both Reading and Mathematics between 2000 and 2007.

4.8.3 Reading and Mathematics competency levels of grade 6 learners by socio-economic status

In terms of school location, the percentage of urban Grade 6 learners reaching levels 4 and above was considerably higher in both Reading and Mathematics in 2000 and 2007 than their counterparts from rural areas. Similarly, from **Tables 4.7 and 4.8** the percentage of learners in the top 25% SES category of Grade 6 learners reaching levels 4 and above in both Reading and Mathematics in 2000 and 2007 was higher than the percentage of learners in the bottom 25% SES category reaching these levels.

4.9 Levels and distribution of students classified as 'non-numerate' and 'non-readers' in 2007

What is particularly striking about student performance levels is the large number of students failing to acquire even the most basic numeracy and literacy skills. If one takes this as a lower-bound threshold, there are still many South African students in the lowest two competency levels for reading (*pre literacy* and *emergent literacy*) and mathematics (*pre numeracy* and *emergent numeracy)*. Shabalala (2005) places these two levels in perspective by explaining their practical implications:

> *"The two lower levels of reading competence are concerned with "pre-reading" and "emergent reading". Learners at these two levels should be able to undertake simple decoding tasks and match words to pictures and very simple phrases. However, neither of these levels requires learners to read even simple sentences in order to extract meaning. Therefore, learners at these lowest two levels could be categorised as "non-readers" in the sense that they cannot "interpret meaning in a short and simple text"* (Shabalala, 2005, p. 222).

A similar situation applies for numeracy:

> *"Learners at the lowest levels of numeracy competence ("pre- numeracy" and "emergent numeracy") … are only able to count, recognize shapes and numbers, carry out simple operations, and link simple verbal and graphic forms with simple arithmetic operations. Neither of these two levels requires learners to work with three-dimensional shapes, use multi-step arithmetic operations, or undertake conversions using division. Therefore learners at these lower two levels could be categorized as "non-numerate" in the sense that they have not moved beyond the mechanical skills related to basic calculation and simple shape recognition* (Shabalala, 2005, p. 225).

Table 4.9 gives the percentage of students who are Non-numerate and Non-readers per province, school location, and school quintile. Nationally, 40.2% of South African Grade 6 students are non-numerate and 27.2% are non-readers. These averages shroud significant inequalities between sub-groups of students. For example, only 5.1% of students in the Western Cape and only 1.4% of quintile five students are non-readers, in stark contrast to the Eastern Cape and Limpopo, where 38.6% and 49.0% of learners respectively are non-readers. More than two out of five (44.7%) of all quintile one students are classified as non-readers.

Numeracy appears to be an even greater challenge than literacy. For every sub-group, there are more students classified as non-numerate than those classified as non-readers. There is an alarmingly large percentage of non-numerate students across all regions, all school locations, and the poorest four socio-economic quintiles. .

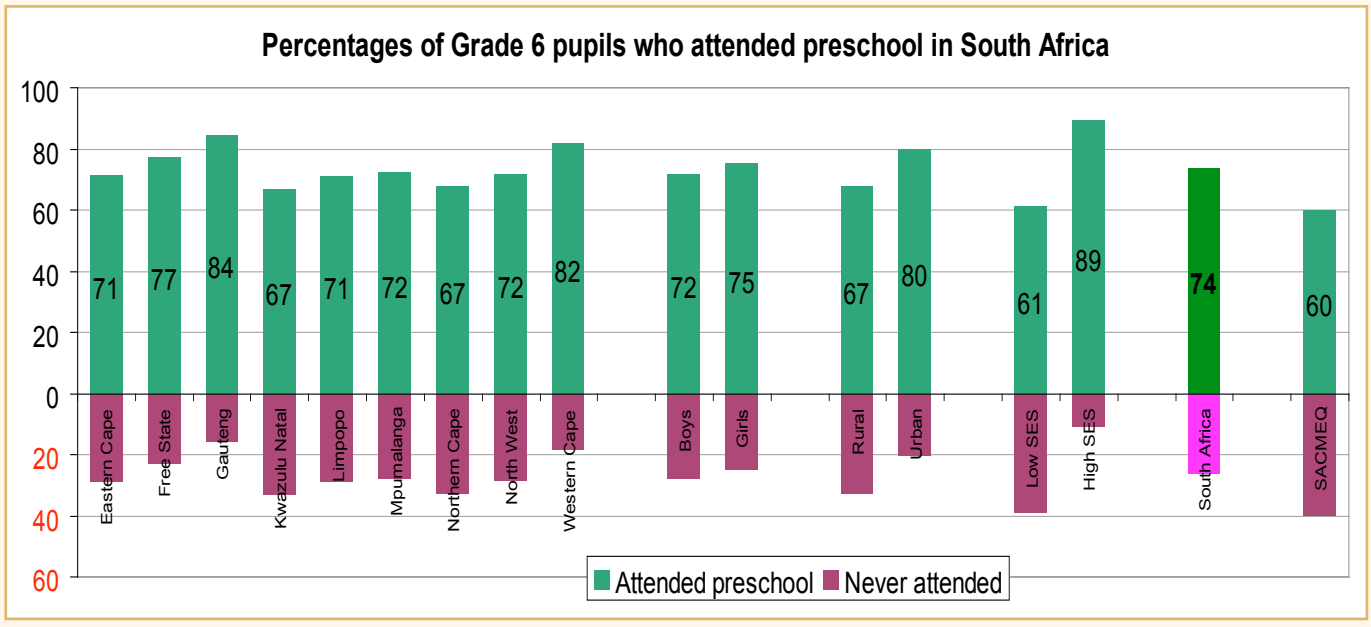
Table 4.9: Percentage of Students who are Non-numerate and Non-readers per Province, School Location, and School Quintile

Provinces	% Non-readers	% Non-numerate
Eastern Cape	38.6	50.3
Free State	22.3	38.1
Gauteng	11.6	20.5
KwaZulu-Natal	28.4	44
Limpopo	49	60.6
Mpumalanga	28.4	43.8
Northern Cape	21.4	37.1
North West	21.9	38.1
Western Cape	5.1	15
South Africa	***27.2***	***40.2***

Quintiles of School SES	% Non-readers	% Non-numerate
Quintile 1	44.7	58.7
Quintile 2	34.4	48.9
Quintile 3	30.4	47.4
Quintile 4	20.1	35.4
Quintile 5	1.4	4.6
South Africa	***27.2***	***40.2***
School Location	**% Non-readers**	**% Non-numerate**
Isolated	38.8	56.2
Rural	41.3	55.2
Small town	16.7	32.9
Large city	11.4	20.7
South Africa	***27.2***	***40.2***

4.10 Pre-school exposure

In **Figure 6** the overall percentage of preschool exposure for South Africa (74%) was higher than and SACMEQ average (60%). For South Africa the results in **Figure 6** reflects the exposure by region, gender, location and socio-economic status. The regional spread suggests that more than 30% of learners in KwaZulu-Natal and the Northern Cape have not had some preschool exposure. In Gauteng and Western Cape regions that have a more urban makeup, more than 80% of learners have preschool exposure. Generally learners from urban areas had higher levels of preschool exposure than learners from rural areas. There were marginal differences in preschool exposure between boys (72%) and girls (75%).



4.11 Achievement levels

The mean scores of learners in reading were 449 points for learners who indicated they had never attended preschool while those who had three or more years experience had a mean score 555. This pattern was similar for mathematics where the mean score of learners who never attended preschool was 463 and those who had three or more years experience achieved a mean score of 541 (see **Table 4.10** below).

Table 4.10: Learner performance by preschool exposure

Duration of Preschool experience	Reading	Mathematics
Never	449	463
A few months	474	479
One year	483	485
Two years	527	516
Three or more years	555	541
Total	495	495

There was an exponential relationship **(Figure 7)** between reading and mathematics scores and the corresponding duration of preschool experience. Learners with longer durations of preschool experience had higher scores in reading and mathematics.

Figure 7: Learner performance by preschool exposure

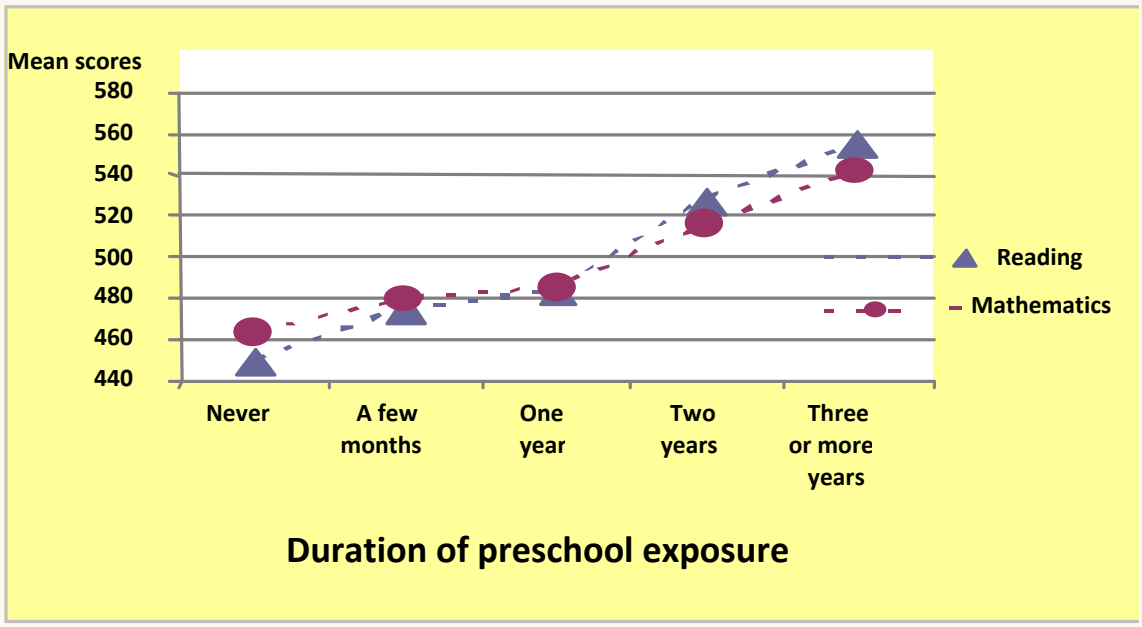


Figure 7, shows an increase in performance (44 points) among learners indicating two years of preschool exposure compared to those having one year experience. The results further point towards a leveling off in performance among learners with more than two years preschool experience.

4.12 Summary of findings

In **Table 4.11**, the percentage and standard errors of learners and their teachers with acceptable reading skills (level 4 and above) are indicated. The table summarises the data in response to the general policy concern 1.

Table 4.11: Percentage of learners and teachers with acceptable reading skills by region (SACMEQ II and SACMEQ III)

	LEARNERS				TEACHERS			
	2000		2007		2000		2007	
	%	SE	%	SE	%	SE	%	SE
Eastern Cape	35.1	6.23	35.6	4.85	××	××	100.0	0.00
Free State	38.9	6.51	52.9	4.51	××	××	100.0	0.00
Gauteng	82.3	5.62	77.9	3.96	××	××	97.6	2.35
KwaZulu-Natal	58.0	7.31	45.6	3.97	××	××	100.0	0.00
Mpumalanga	25.8	7.74	47.6	4.44	××	××	100.0	0.00
Northern Cape	48.6	5.91	59.2	4.39	××	××	100.0	0.00
Limpopo	26.2	6.37	25.6	3.35	××	××	100.0	0.00
North West	29.9	6.22	58.7	4.71	××	××	100.0	0.00
Western Cape	91.8	2.26	86.8	2.65	××	××	100.0	0.00
SOUTH AFRICA	**49.9**	**2.76**	**51.7**	**1.66**	**××**	**××**	**99.6**	**0.40**

In South Africa, the number of learners with acceptable reading skills increased from 49.9% in 2000 to 51.7% in 2007. Five regions (Eastern Cape, Free State, Mpumalanga, Northern Cape, and the North West) had positive increases while the remaining four (Gauteng, KwaZulu-Natal, Limpopo and the Western Cape showed a decline in 2007. A similar trend was observed with the mathematics scores of learners. It is, important, however, to note that while there has been an increase in the number of learners with acceptable reading and mathematics skills, the proportion who reached this critical level is still alarmingly low (51.7%).

Across all regions, teachers reached high competency levels in both the Reading and Mathematics tests.

In **Table 4.12** the percentage and standard errors of learners with acceptable reading skills by subgroups are indicated. The table summarises the data in response to the general policy concern 2.

Table 4.12 Percentage of learners with acceptable reading skills by subgroups (SACMEQ II and SACMEQ III)

	2000		2007	
	%	SE	%	SE
Learner gender				
Boys	46.0	2.75	46.7	1.79
Girls	53.4	3.14	56.5	1.72
School location				
Rural	25.8	2.81	31.3	1.93
Urban	69.3	3.21	72.1	2.04
Socioeconomic level				
Low SES (Bottom 25%)	24.6	2.47	22.0	2.56
High SES (Top 25%)	87.6	2.31	85.9	1.40
SOUTH AFRICA	**49.9**	**2.76**	**51.7**	**1.66**

In South Africa, the number of boy and girl learners with acceptable reading skills had marginal increases from 2000 to 2007. The percentage of learners with acceptable reading skills from both urban and rural locations was higher in 2007 than in 2000. It is therefore important to note that the percentage of learners with acceptable reading skills from both the Low and High SES categories dropped (albeit marginally) between 2000 and 2007.

4.13 Conclusion

Clearly there is a need to expose learners to examples of applying skills associated with the higher SACMEQ levels in both reading literacy and mathematics. In the national curriculum statement emphasis is placed on teachers designing tasks in such a way as to ensure that a variety of skills are assessed. Assessment should be used to maximise learners' access to the knowledge, skills, values and attitudes defined in the national curriculum policy (Department of Education, 2005). The eight SACMEQ levels for reading literacy and mathematics provides an appropriate benchmark to model assessments and to structure learning so that learners can be exposed to the expected range of competencies for their age group.

Chapter 5
HIV and AIDS knowledge levels

5.1 Introduction

In the chapter key findings on the knowledge levels, attitudes and risk perceptions associated with HIV-AIDS[7] among South African Grade 6 learners and their teachers who participated in the study. An essential finding of the study was that, whilst teachers displayed high levels of knowledge on HIV-AIDS: what it means, how it gets transmitted and misconceptions around the epidemic, this knowledge does not seem to be transmitted to learners who, in this study, displayed unacceptably low levels of knowledge about the epidemic.

The report outlines the background to the inclusion of the HIV-AIDS component in the SACMEQ III study, a brief description of the instrument that was used to collect data on the knowledge of concepts and factors related to HIV-AIDS, a brief description of the participants in the study and the key findings. Concluding remarks include possible curriculum and pedagogical implications.

5.2 Background to HIV-AIDS knowledge test in SACMEQ III

South Africa carries the world's largest number of people infected with HIV – 5.4 million and 18.8 percent of South Africans in their prime (15–49 years of age) are living with HIV and AIDS[8] (UNICEF, 2007).

There has been an increasing and worrying recognition of the growing impact of the HIV-AIDS pandemic on the demand, supply and quality of education, worldwide but particularly in sub-Saharan Africa (Kelly, 2002). According the Joint United Nations Programme on HIV-AIDS (UNAIDS: 2005) an estimated 20 million people in the sub-Saharan region live with HIV and 10 percent of them are children below the age 15 years. In South Africa the latter age category are children who by law should be participating in free and compulsory basic education. The South African National HIV Prevalence, Incidence, Behaviour and Communication Surveys, conducted by the HSRC in 2005 and 2008, indicated that HIV prevalence amongst children aged 18 and younger was almost 3%. The latter survey indicated that the age specific HIV prevalence levels found were as follows: 3.3% amongst children 0-to-4 years; 2.5% amongst children 5-to-11 years; 1.1% among adolescents 12-to-14 years, and 4.5% amongst teenagers 15-to-18 years (EFA, 2011; Shisana et al., 2009).

The challenges posed by the HIV-AIDS in educational planning prompted the 15 Ministers of Education[9] who steered the programmes of the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) to direct that the SACMEQ III Project in 2007 design and develop indicators that can be used to focus debates about the effectiveness of HIV and AIDS education programmes. The decision resulted in the development of an HIV-AIDS Knowledge Test (hereafter referred to as HAKT) that was suitable for administration on Grade 6 learners (aged around 12.9 years on average in South Africa) and their teachers. HAKT was designed and developed to collect data that would enable policy makers to address the following three "General Policy Concerns":

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7 'Acquired Immune Deficiency Syndrome (AIDS) is a communicable disease that is caused by the Human Immunodeficiency Virus (HIV)' (DoE, 1999)

8 Statistics are available from the National HIV and Syphilis Antenatal Sero-prevalance Survey in South Africa, 2006, Department of Health

9 The 15 Ministries of Education that participated in SACMEQ III were: Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania (Mainland), Tanzania, (Zanzibar), Uganda, Zambia, and Zimbabwe.

General Policy Concern 1

What were the levels of knowledge about HIV-AIDS among Grade 6 learners and their teachers?

General Policy Concern 2

What were the attitudes of Grade 6 learners, their teachers and principals towards stigma and discrimination towards persons infected with HIV-AIDS?

General Policy Concern 3

What were the risk perceptions about HIV-AIDS among Grade 6 learners, their teachers and principals?

5.3 Development of HAKT

To construct test items for inclusion in HAKT, SACMEQ research teams obtained official curriculum frameworks for HIV-AIDS from all the participating SACMEQ countries and developed a SACMEQ HIV-AIDS framework that was adopted by all the SACMEQ Ministries of Education. Test items based on the adopted framework were then constructed and piloted. After a pilot study, 86 dichotomous test items were included in HAKT. The items addressed 43 curriculum topics concerned with "basic knowledge required for protecting and promoting health". The topics covered five main dimensions of knowledge on HIV-AIDS: definitions and terminology, transmission mechanisms, avoidance behaviours, diagnosis and treatment and myths and misconceptions [10].

In South Africa HAKT was administered in October 2007 to a national representative sample of 9 082 Grade 6 learners and their teachers from a random sample of 392 public mainstream schools distributed the nine provinces. From an expected sample of 9071 learners, the achieved sample reflected 94% participation. The distribution of the achieved samples across the provinces has been shown in **Table 5.1.**

Table 5.1: Distribution of achieved sample of 6 learners across provinces

Province	Achieved sample	% of total sample
Eastern Cape	1 477	16.3
Free State	449	5.0
Gauteng	1 562	17.2
KwaZulu-Natal	2 148	23.7
Limpopo	1 218	13.4
Mpumalanga	775	8.5
Northern Cape	186	2.0
Northwest	546	6.0
Western Cape	710	7.8
Total	**9 071**	**100**

10 Further details on the methodology and instruments used in the study are provided in the SACMEQ South Africa main report.

5.4 HIV and AIDS Policy Concerns

The large sample size of South African schools in the study provided the Ministry of Basic Education with appropriate baseline data to extensively benchmark indicators on the health knowledge levels of learners and teachers on HIV and AIDS. In this regard, the Department set out to answer the general policy concerns in the following way:-

***General policy concern 1*:** What were the levels (according to Rasch scores relating to the levels of health knowledge) and variations (among provinces and subgroups) in the HIV and AIDS knowledge test of Grade 6 learners and their teachers?

***General policy concern 2*:** What were the attitudes (according to Rasch scores relating to stigma and discrimination) and variations (among provinces) in the HIV and AIDS knowledge test of Grade 6 learners and their teachers and school heads towards learners infected with HIV and AIDS?

***General policy concern 3*:** What were the risk perceptions (according to Rasch scores relating to risk levels of teachers and school heads) and variations (among provinces) in the HIV and AIDS knowledge test of teachers and school heads of Grade 6 learners?

In this report the overall HIV and AIDS knowledge levels for learners and teachers about HIV and AIDS in South Africa in 2007 have been reported. Additionally the attitudes and risk perceptions of learners, teachers and school heads on HIV and AIDS have been commented on. The knowledge levels have been measured on a SACMEQ scale which has a predetermined mean score of 500 and a standard deviation (SD) of 100.

Also reported are the percentages and the corresponding standard errors of learners and teachers who reached "minimum and desirable" levels on the knowledge of HIV and AIDS. A "minimum level" was defined as a mean score of X. The argument in the report is that performance below this score in this type of test indicates that the respondent lacked knowledge of basic but essential facts about HIV and AIDS. A "desirable level", on the other hand, was defined as a mean score of Y. Performance at this level above would include sufficient knowledge to inform sound decisions on critical facts about HIV and AIDS.

5.6 *General policy concern 1*: *What were the levels (according to Rasch scores relating to the levels of health knowledge) and variations (among regions and subgroups) in the HIV and AIDS knowledge test of Grade 6 learners and their teachers?*

5.6.1 The HIV and AIDS knowledge levels of learners and their teachers by province

The Rasch[11] scores (hereafter referred to as scores) and standard errors on the knowledge levels of learners and teachers on HIV and AIDS knowledge test (HAKT) have been summarised in **Table 5.2**. Also shown in **Table 5.2** are the percentages and the corresponding standard errors of learners and teachers who reached minimum and desirable levels on the knowledge of HIV and AIDS. Mean scores and corresponding standard errors have been shown for the

11 The use of Rasch scores in the third SACMEQ study is explained in greater detail in the SACMEQ South Africa main report.

nine provinces and South Africa. For example, the HAKT mean score of learners and the corresponding standard error for the Eastern Cape were 467.6 and 9.82 while for the teachers the corresponding values were 764.9 and 20.30. The percentage of learners who reached the minimum level of knowledge was 23% with a standard error of 4.13 while three percent of the learners, with a standard error of 1.07, reached the desirable level.

Table 5.2 Mean performance on the HAKT and percentages of pupils and teachers reaching the minimum and desirable levels of knowledge about HIV and AIDS

	LEARNERS						TEACHERS					
	Transformed score		Reaching minimum level		Reaching desirable level		Transformed score		Reaching minimum level		Reaching desirable level	
	Mean	SE	%	SE	%	SE	Mean	SE	%	SE	%	SE
Eastern Cape	467.6	9.82	23.2	4.13	3.3	1.07	764.9	20.30	100.0	0.00	83.0	7.68
Free State	486.5	8.94	26.9	4.01	4.2	1.24	777.7	17.75	100.0	0.00	85.0	6.01
Gauteng	552.2	10.93	53.2	4.80	18.0	2.79	778.6	15.00	100.0	0.00	95.6	2.99
KwaZulu-Natal	510.6	8.70	38.0	4.04	8.2	1.41	808.9	13.87	100.0	0.00	97.9	1.85
Mpumalanga	492.9	8.56	29.5	4.31	3.8	1.41	785.0	15.10	100.0	0.00	97.5	2.55
Northern Cape	488.3	10.62	28.2	4.08	6.3	2.12	758.4	15.69	98.5	1.52	93.2	3.97
Limpopo	451.8	9.05	15.0	3.74	2.0	1.00	747.5	18.54	100.0	0.00	85.0	6.84
North West	514.9	11.27	38.5	4.67	9.7	2.75	798.2	16.85	100.0	0.00	96.8	3.19
Western Cape	544.2	7.43	53.0	3.60	11.9	1.76	771.5	14.74	100.0	0.00	92.9	3.67
SOUTH AFRICA	**502.6**	**3.72**	**34.8**	**1.64**	**8.0**	**0.68**	**780.9**	**6.14**	**100.0**	**0.03**	**92.7**	**1.58**

a) HIV and AIDS knowledge of learners

From **Table 5.2** the overall mean score for South African Grade 6 learners on HAKT was 503, three points above the SACMEQ mean. The distribution of learner knowledge scores on HIV and AIDS ranged from 552 in Gauteng to 452 in Limpopo. In four of the nine provinces, Gauteng (552), Western Cape (544), North West (515) and KwaZulu-Natal (511); the average Grade 6 learner obtained a score above the SACMEQ mean on HAKT. In the rest of the provinces the average learner scored below the SACMEQ mean. Across the provinces, the percentage of learners reaching minimum levels ranged from 53% in Gauteng and Western Cape to 15% in Limpopo. The percentage of learners reaching desirable levels on HAKT followed a similar pattern with the highest (18%) in Gauteng and the lowest (2%) in Limpopo.

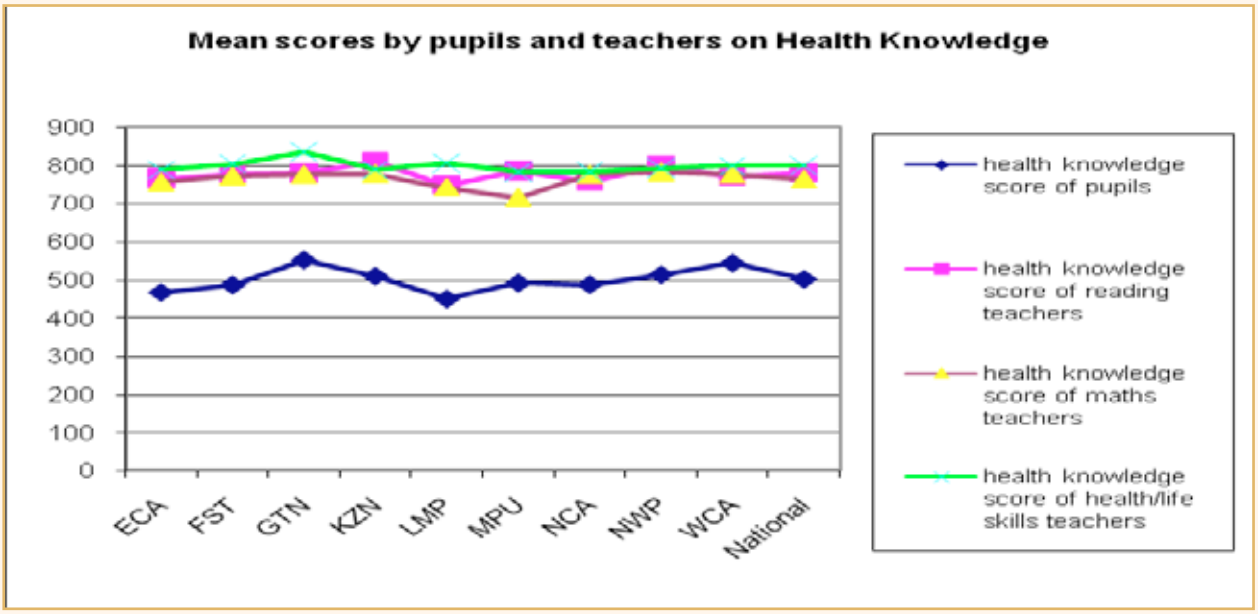
A concerning observation was that overall only 35% of the learners reached the minimum level of knowledge. The knowledge levels of Grade 6 learners in five provinces (Northern Cape, Limpopo, Free State, Eastern Cape and

Mpumalanga) on HIV and AIDS in South Africa were found to be inadequate and corrective actions are needed. Overall, only eight percent of the South African learners reached the desirable level of knowledge.

b) HIV and AIDS knowledge of teachers of Grade 6 learners

From **Table 5.2**, overall the average Grade 6 learner in South Africa was taught by a teacher whose mean score on HAKT was 781, significantly above the SACMEQ mean. The distribution of teacher knowledge scores on HAKT ranged from 809 in KwaZulu-Natal to 748 in Limpopo. In all nine provinces the average Grade 6 learner was taught by a teacher who obtained a score above the SACMEQ mean and reached the desirable level on HAKT. There was very little variation across the provinces in terms of teacher knowledge on HAKT. There was also little variation in mean scores of reading, mathematics and health/life-skills teachers on the HAKT (see **Figure 1**).

Figure 1: Mean scores of pupils and teachers on HAKT



Of slight concern was that in three of the nine provinces (KwaZulu-Natal, Mpumalanga and North West) the mean scores of reading (Grade 6 language) teachers on the HAKT were higher than the corresponding scores of health/ life skills teachers. The mean scores of mathematics teachers on were lower than the mean scores of reading and health/life skills teachers in all nine provinces.

5. 6.2 The HIV and AIDS knowledge levels of learners by gender

The scores and standard errors on the knowledge levels of learners by gender on the HIV and AIDS knowledge test (HAKT) have been summarised in **Table 5.3**. Also shown in **Table 5.3** are the percentages and the corresponding standard errors of boys and girls who reached minimum and desirable levels on the knowledge of HIV and AIDS. Mean scores and corresponding standard errors have been shown for the nine provinces and South Africa. For example, the HAKT mean scores of learners in the Free State and the corresponding standard errors were 473.2 and 7.81 for boys while for girls the values were 499.4 and 10.45. The percentage of boys who reached the minimum

level of knowledge was 21% with a standard error of 3.37 while three percent, with a standard error of 0.99, reached the desirable level. The percentage of girls who reached the minimum level of knowledge was 32% with a standard error of 5.07 while six percent, with a standard error of 1.72, reached the desirable level.

Table 5.3 Mean Performance on the HAKT of learners by gender

	LEARNERS											
	Transformed score				Reaching minimum level				Reaching desirable level			
	Boys		Girls		Boys		Girls		Boys		Girls	
	Mean	SE	Mean	SE	%	SE	%	SE	%	SE	%	SE
Eastern Cape	458.0	9.87	476.8	10.39	19.5	4.07	26.9	4.48	2.2	0.87	4.2	1.56
Free State	473.2	7.81	499.4	10.45	21.1	3.37	32.4	5.07	2.7	0.99	5.7	1.72
Gauteng	535.8	11.26	567.6	11.43	46.7	5.07	59.3	4.99	13.3	2.60	22.4	3.48
KwaZulu-Natal	503.5	9.62	517.3	8.75	35.7	4.16	40.1	4.35	7.5	1.52	8.8	1.69
Mpumalanga	486.3	7.85	500.1	10.05	26.0	4.00	33.3	5.15	2.5	1.17	5.1	1.98
Northern Cape	478.3	11.88	498.7	10.33	25.0	4.06	31.6	4.79	5.4	2.46	7.2	2.05
Limpopo	448.4	9.44	455.2	9.24	13.6	3.64	16.4	4.18	1.9	1.00	2.0	1.07
North West	505.0	11.93	524.5	11.63	34.3	4.99	42.5	4.91	8.7	3.00	10.7	2.79
Western Cape	537.2	8.75	550.6	7.38	51.1	4.06	54.7	3.80	10.7	2.10	12.9	2.04
SOUTH AFRICA	**493.2**	**3.88**	**511.7**	**3.96**	**31.2**	**1.66**	**38.4**	**1.80**	**6.4**	**0.65**	**9.5**	**0.89**

a) HIV and AIDS knowledge of boys

From **Table 5.3** the overall mean score for South African Grade 6 boys on HAKT was 493, seven points below the SACMEQ mean. The distribution of boys' knowledge scores on HIV and AIDS ranged from 537 in Western Cape to 448 in Limpopo. In four of the nine provinces, Western Cape (537), Gauteng (536), North West (505) and KwaZulu-Natal (504); the average Grade 6 boy learner obtained a score above the SACMEQ mean on HAKT. In the rest of the provinces the average boy learner scored below the SACMEQ mean.

A concerning observation was that overall only 31% of boys reached the minimum level of knowledge. Six percent of the learners reached the desirable level of knowledge. Across the provinces, the percentage of boys reaching minimum levels ranged from 51% in Western Cape to 14% in Limpopo. The percentage of boys reaching desirable levels on HAKT was the highest (13%) in Gauteng and the lowest (2%) in Limpopo.

b) HIV and AIDS knowledge of girls

From **Table 5.3** the overall mean score for South African Grade 6 girls on HAKT was 512, 12 points above the SACMEQ mean. The distribution of girls' knowledge scores on HIV and AIDS ranged from 568 in Gauteng to 455 in Limpopo. In five of the nine provinces, Gauteng (568), Western Cape (551), North West (525) and KwaZulu-Natal (517); the average Grade 6 girl learner obtained a score above the SACMEQ mean on HAKT. In the Northern Cape the average learner obtained a score equal to the SACMEQ mean (500). In the rest of the provinces the average girl learner scored below the SACMEQ mean.

A general observation was the average Grade 6 girl learner performed better than their boy counterparts. Overall only 38% of girls reached the minimum level of knowledge. Ten percent of the learners reached the desirable level of knowledge. Across the provinces, the percentage of girls reaching minimum levels ranged from 59% in Gauteng to 16% in Limpopo. Similar to the results for boys, the percentage of girls reaching desirable levels on HAKT was the highest (22%) in Gauteng and the lowest (2%) in Limpopo.

5.6.3 HIV and AIDS knowledge levels of learners by socioeconomic status (SES)

The scores and standard errors on the knowledge levels of learners by SES on the HIV and AIDS knowledge test (HAKT) have been summarised in **Table 5.4**. Also shown in **Table 5.4** are the percentages and the corresponding standard errors of Grade 6 learners of low and high SES who reached minimum and desirable levels on the knowledge of HIV and AIDS. Mean scores and corresponding standard errors have been shown for the nine provinces and South Africa. For example, the HAKT mean scores of learners in Gauteng and the corresponding standard errors were 461.9 and 12.21 for learners of low SES while for learners from high SES the values were 598.4 and 8.59. The percentage of learners of low SES who reached the minimum level of knowledge was 9.7 with a standard error of 5.05 while 2.3 percent, with a standard error of 2.38, reached the desirable level. The percentage of learners of high SES who reached the minimum level of knowledge was 73.6% with a standard error of 3.07 while 28.4 percent, with a standard error of 3.46, reached the desirable level.

Table 5.4 Mean performance on the HAKT of pupils by socioeconomic status

	LEARNERS											
	Transformed scores				Reaching minimum level				Reaching desirable level			
	Low SES		High SES		Low SES		High SES		Low SES		High SES	
	Mean	SE	Mean	SE	%	SE	%	SE	%	SE	%	SE
Eastern Cape	451.8	12.44	537.6	22.18	18.2	5.31	55.7	13.19	2.5	0.98	7.8	4.63
Free State	454.1	13.05	534.6	14.64	16.0	5.89	47.4	6.74	1.2	1.23	11.4	3.16
Gauteng	461.9	12.21	598.4	8.59	9.7	5.05	73.6	3.70	2.3	2.38	28.4	3.46
KwaZulu-Natal	463.2	11.14	583.7	8.13	17.2	4.36	72.8	3.82	3.0	1.30	20.8	3.20

	LEARNERS											
	Transformed scores				Reaching minimum level				Reaching desirable level			
	Low SES		High SES		Low SES		High SES		Low SES		High SES	
	Mean	SE	Mean	SE	%	SE	%	SE	%	SE	%	SE
Mpumalanga	456.4	9.14	537.8	13.86	19.2	4.73	49.3	8.29	1.2	1.18	10.4	3.85
Northern Cape	415.7	11.31	572.7	12.93	6.0	2.90	61.7	5.28	0.0	0.00	24.3	5.58
Limpopo	437.7	32.08	486.3	22.28	13.8	9.33	28.0	10.10	0.0	0.00	7.7	5.32
North West	448.5	11.64	584.4	15.34	11.3	5.54	66.0	6.37	0.0	0.00	24.7	6.05
Western Cape	440.4	25.06	576.5	8.23	10.4	7.25	66.9	3.94	0.0	0.00	17.8	2.46
SOUTH AFRICA	**454.0**	**6.46**	**572.6**	**4.62**	**16.6**	**2.59**	**64.7**	**2.09**	**2.1**	**0.57**	**20.5**	**1.55**

a) HIV and AIDS knowledge of learners of low SES

From **Table 5.4** the overall mean score for South African Grade 6 learners of a low SES on HAKT was 454, forty six points below the SACMEQ mean. The distribution of learners' knowledge scores on HIV and AIDS ranged from 463 in KwaZulu-Natal to 416 in Northern Cape. In all nine provinces, the average Grade 6 learner of low SES obtained a score below the SACMEQ mean on HAKT.

The low mean scores of learners of low SES depicted a desperate situation around South African learner knowledge on HIV/AIDS in this category. Only 17% of learners of low SES reached the minimum level of knowledge and an alarmingly low two percent of the learners reached the desirable level of knowledge. Across the provinces, the percentage of learners of low SES reaching minimum levels ranged from 19% in Mpumalanga to 6% in Northern Cape. The percentage of learners of low SES reaching desirable levels on HAKT was the highest (3%) in KwaZulu-Natal and the lowest (0%) in four provinces Northern Cape, Limpopo, North West and Western Cape.

b) HIV and AIDS knowledge of learners of high SES

From **Table 5.4** the overall mean score for South African Grade 6 learners of high SES on HAKT was 572, seventy two points above the SACMEQ mean. The distribution of learners' knowledge scores in this category ranged from 598 in Gauteng to 486 in Limpopo. In eight of the nine provinces, Gauteng (598), North West (584), KwaZulu-Natal (584), Western Cape (577), Northern Cape (573), Mpumalanga (538), Eastern Cape (538) and Free State (534); the average Grade 6 girl learner obtained a score above the SACMEQ mean on HAKT. In Limpopo the learners obtained a score below the SACMEQ mean.

A general observation was that the average Grade 6 learner of high SES performed better than their counterparts of low SES. Overall 65% of learners reached the minimum level of knowledge. Twenty one percent of the learners reached the desirable level of knowledge. Across the provinces, the percentage of learners in this category reaching

minimum levels ranged from 74% in Gauteng to 28% in Limpopo. The percentage of learners reaching desirable levels on HAKT was the highest (28%) in Gauteng and the lowest (7%) in Limpopo.

5.6.4 HIV AND AIDS KNOWLEDGE LEVELS OF LEARNERS BY SCHOOL LOCATION

The scores and standard errors on the knowledge levels of learners by school location on the HAKT have been summarized in **Table 5.4**. Also shown in **Table 5.4** are the percentages and the corresponding standard errors of Grade 6 learners from rural and urban areas who reached minimum and desirable levels on the knowledge of HIV and AIDS. Mean scores and corresponding standard errors have been shown for each of the nine provinces and South Africa. For example, the HAKT mean scores of learners in KwaZulu-Natal and the corresponding standard errors were 484.2 and 9.58 for learners from a rural location while for learners from an urban location the values were 566.6 and 10.99. The percentage of learners from a rural location who reached the minimum level of knowledge was 25.1 with a standard error of 4.25 while 3.7 percent, with a standard error of 1.15, reached the desirable level. The percentage of learners from an urban location who reached the minimum level of knowledge was 65.3% with a standard error of 5.10 while 17.6 percent, with a standard error of 2.95, reached the desirable level.

Table 5.5 Mean performance on the HAKT of pupils by school location

	LEARNERS											
	Transformed scores				Reaching minimum level				Reaching desirable level			
	Rural		Urban		Rural		Urban		Rural		Urban	
	Mean	SE	Mean	SE	%	SE	%	SE	%	SE	%	SE
Eastern Cape	464.7	12.48	474.7	15.73	21.6	5.06	27.2	7.49	3.3	1.43	3.1	1.37
Free State	465.1	11.48	490.8	10.39	15.9	4.50	29.1	4.65	1.1	0.76	4.8	1.47
Gauteng	574.1	56.55	550.3	11.38	58.3	26.25	52.7	4.99	20.6	17.26	17.8	2.86
KwaZulu-Natal	484.2	9.58	566.6	10.99	25.1	4.25	65.3	5.10	3.7	1.15	17.6	2.95
Mpumalanga	470.9	10.00	513.5	11.71	19.6	4.65	38.8	6.33	1.8	0.82	5.7	2.60
Northern Cape	448.5	15.84	508.1	12.26	15.3	5.13	34.6	5.26	1.5	0.80	8.7	3.08
Limpopo	444.1	8.77	514.9	40.39	11.9	3.48	40.5	20.60	0.9	0.50	10.4	9.18
North West	482.9	9.48	545.3	17.39	25.1	3.82	51.2	7.17	1.8	0.98	17.2	4.68
Western Cape	525.0	47.74	545.7	7.63	42.7	17.12	53.7	3.77	7.3	5.61	12.2	1.87
SOUTH AFRICA	**470.9**	**5.16**	**534.3**	**5.06**	**21.5**	**2.14**	**48.2**	**2.28**	**3.1**	**0.66**	**12.9**	**1.17**

a) HIV and AIDS knowledge of learners of from a rural location

From **Table 5.5** the overall mean score for South African Grade 6 learners from a rural location on HAKT was 471, twenty nine points below the SACMEQ mean. The distribution of learners' knowledge scores ranged from 574 in

Gauteng to 444 in Limpopo. In two provinces, Gauteng and Western Cape (525), the average Grade 6 learner from a rural location obtained a score above the SACMEQ mean on HAKT. In six provinces, learners obtained a score below the SACMEQ mean.

A concerning observation was that overall only 22% of learners from a rural location reached the minimum level of knowledge. Three percent of the learners reached the desirable level of knowledge. Across the provinces, the percentage of learners from a rural location reaching minimum levels ranged from 58% in Gauteng to 12% in Limpopo. The percentage of learners from a rural location reaching desirable levels on HAKT was the highest (21%) in Gauteng and the lowest (1%) in Limpopo.

b) HIV and AIDS knowledge of learners from an urban location

From **Table 5.5** the overall mean score for South African Grade 6 learners from an urban location on HAKT was 534, thirty four points above the SACMEQ mean. The distribution of learners' knowledge scores in this category ranged from 567 in KwaZulu-Natal to 475 in the Eastern Cape. In seven of the nine provinces, KwaZulu-Natal, Gauteng (550), Western Cape (546), North West (545), Mpumalanga (515), Northern Cape (514) and Limpopo (508); the average Grade 6 girl learner from an urban location obtained a score above the SACMEQ mean on HAKT. In the Free State (491) and the Eastern Cape, the learners obtained a score below the SACMEQ mean.

A general observation was that the average Grade 6 learner from an urban location performed better than their counterparts from a rural location. Overall 48% of learners reached the minimum level of knowledge. Thirteen percent of the learners reached the desirable level of knowledge. Across the provinces, the percentage of learners in this category reaching minimum levels ranged from 65% in KwaZulu-Natal to 27% in the Eastern Cape. The percentage of learners reaching desirable levels on HAKT was the highest (18%) in Gauteng and the lowest (3%) in the Eastern Cape.

5.6.5 The HIV and AIDS knowledge levels of teachers by gender

The Rasch scores and standard errors on the knowledge levels of teachers by gender on the HIV and AIDS knowledge test (HAKT) have been summarised in **Table 5.6**. Also shown in **Table 5.6** are the percentages and the corresponding standard errors of male and female teachers who reached minimum and desirable levels on the knowledge of HIV and AIDS. Mean scores and corresponding standard errors have been shown for the nine provinces and South Africa. For example, the HAKT mean scores of teachers in the Mpumalanga and the corresponding standard errors were 737.9 and 29.53 for males while for females the values were 757.8 and 23.19. The percentage of males who reached the minimum level of knowledge was 100% while 75.4 percent, with a standard error of 12.23, reached the desirable level. The percentage of females who reached the minimum level of knowledge was 100% while 95.2 percent, with a standard error of 4.90, reached the desirable level.

Table 5.6 Mean Performance on the HAKT of teachers by gender

	TEACHERS											
	Transformed scores				Reaching minimum level				Reaching desirable level			
	Male		Female		Male		Female		Male		Female	
	Mean	SE	Mean	SE	%	SE	%	SE	%	SE	%	SE
Eastern Cape	721.5	40.44	774.4	23.27	100.0	0.00	100.0	0.00	75.4	26.90	84.6	8.06
Free State	781.1	38.90	776.2	20.01	100.0	0.00	100.0	0.00	91.1	9.29	82.2	7.78
Gauteng	734.0	26.87	795.9	15.85	100.0	0.00	100.0	0.00	100.0	0.00	93.9	4.16
KwaZulu-Natal	788.3	25.17	814.9	16.43	100.0	0.00	100.0	0.00	100.0	0.00	97.3	2.40
Mpumalanga	789.7	27.57	782.4	18.78	100.0	0.00	100.0	0.00	100.0	0.00	96.1	3.98
Northern Cape	763.7	23.67	754.7	21.38	100.0	0.00	97.4	2.62	93.7	6.38	92.8	5.28
Limpopo	737.9	29.53	757.8	23.19	100.0	0.00	100.0	0.00	75.4	12.23	95.2	4.90
North West	780.6	29.72	808.6	21.47	100.0	0.00	100.0	0.00	91.4	8.79	100.0	0.00
Western Cape	765.9	29.52	774.9	16.74	100.0	0.00	100.0	0.00	93.9	4.42	92.2	5.44
SOUTH AFRICA	**759.7**	**11.00**	**790.6**	**7.23**	**100.0**	**0.00**	**100.0**	**0.05**	**90.7**	**3.53**	**93.6**	**1.68**

5.6.6 HIV AND AIDS KNOWLEDGE OF MALE TEACHERS

From **Table 5.6** the overall mean score of South African male teachers of Grade 6 learners on HAKT was 760, two hundred and sixty points above the SACMEQ mean. The distribution of males' knowledge scores on HIV and AIDS ranged from 790 in the Northern Cape to 721 in the Eastern Cape. In all nine provinces, male teachers obtained a score above the SACMEQ mean on HAKT.

A positive observation was that overall (across all nine provinces) 100% of male teachers reached the minimum level of knowledge. Ninety one percent of the male teachers reached the desirable level of knowledge. The percentage of male teachers reaching desirable levels on HAKT was the highest (100%) in three provinces: Gauteng, KwaZulu-Natal and Northern Cape and the lowest (75%) in two provinces: Mpumalanga and Eastern Cape.

5.6.7 HIV AND AIDS KNOWLEDGE OF FEMALE TEACHERS

From **Table 5.6** the overall mean score of South African female teachers of Grade 6 learners on HAKT was 791, two hundred and ninety points above the SACMEQ mean. The distribution of females' knowledge scores on HIV and AIDS ranged from 815 in KwaZulu-Natal to 755 in Limpopo. In all nine provinces, female teachers obtained a score

above the SACMEQ mean on HAKT.

A positive observation was that overall (across eight provinces) 100% of female teachers reached the minimum level of knowledge. In Limpopo, 97% of female teachers reached the minimum level of knowledge. Ninety four percent of the female teachers reached the desirable level of knowledge. The percentage of female teachers reaching desirable levels on HAKT was the highest (100%) in the North West province and the lowest (82%) in the Free State.

5.7 ***General policy concern:*** *What were the attitudes (according to Rasch scores relating to stigma and discrimination) and variations (among regions) in the HIV and AIDS knowledge test of Grade 6 learners and their teachers and school heads towards learners infected with HIV and AIDS?*

5.7.1 Attitudes about HIV and AIDS relating to stigma

The Rasch scores and standard errors on the attitudes (stigma) of learners, teachers and school heads expressing fear of casual contact with a learner infected with HIV and AIDS on the HAKT have been summarised in **Table 5.7**. Also shown in **Table 5.7** are the percentages and the corresponding standard errors of learners, teachers and school heads who indicated responses on the possibility of a learner infected with HIV to continue to attend school. Mean scores and corresponding standard errors have been shown for the nine provinces and South Africa. For example, the HAKT mean scores of learners, teachers and school heads in the Eastern Cape who indicated a negative response (no) and the corresponding standard errors were 22.5% and 2.66 for learners, 2.2% and 2.17 for teachers while 0% of school heads indicated a negative response. The percentage of learners who indicated a positive response (yes) was 53.5% with a standard error of 4.18, while 95.6 percent of teachers, with a standard error of 3.12, indicated a positive response. All school heads (100%) indicated a positive response.

a) Attitudes of learners on expressing fear towards learners infected with HIV and AIDS.

In **Table 5.7** the overall percentage of South African Grade 6 learners on HAKT who indicated a negative response to learners infected with HIV continuing to attend school was 21.7%. Twenty one percent indicated they were not sure while 56.9% had a positive response. In eight of the nine provinces 50% of learners indicated a positive response. In Limpopo, 46% of learners indicated a positive response.

A positive observation was that overall (across all nine provinces) the percentage of learners that indicated a 'yes' response was greater than those who indicated 'no'. The percentage of learners who indicated 'not sure' was almost the same as those that indicated 'no'. The percentage of learners that indicated 'no' ranged from the lowest (11%) in Gauteng to the highest (31%) in Limpopo. The percentage of learners that indicated 'yes' ranged from 46% in Limpopo to 71% in Gauteng.

b) Attitudes of teachers on expressing fear towards learners infected with HIV and AIDS.

From **Table 5.7,** one percent of South African Grade 6 learners had teachers who on the HAKT indicated a negative response to learners infected with HIV continuing to attend school. Three percent indicated they were not sure while 96% had a positive response. In all nine provinces at least 95% of teachers indicated a positive response.

A positive observation was that overall (across all nine provinces) the percentage of teachers that indicated a 'no' was less than three percent. In eight of response was greater than those who indicated 'no'. The percentage of learners who indicated 'not sure' was almost the same as those that indicated 'no'. The percentage of learners that indicated 'no' ranged from the lowest (11%) in Gauteng to the highest (31%) in Limpopo. The percentage of learners that indicated 'yes' ranged from 46% in Limpopo to 71% in Gauteng.

c) Attitudes of school heads on expressing fear towards learners infected with HIV and AIDS.

In **Table 5.7** the overall percentage of South African Grade 6 school heads on HAKT who indicated a negative response to learners infected with HIV continuing to attend school was less than one percent. Also less than one percent indicated they were not sure while 98.8% had a positive response. In five of the nine provinces (Eastern Cape, KwaZulu-Natal, Limpopo, North West and Western Cape), 100% of school heads indicated a positive response. In the remaining four provinces Limpopo, at least 95% of school heads indicated a positive response.

As was the case with teachers, a positive observation was that overall (across all nine provinces) the percentage of school heads that indicated a 'yes' response was overwhelming.

5.7.2 Attitudes about HIV and AIDS relating to discrimination

The Rasch scores and standard errors on the attitudes (discrimination) of learners refusing contact with a person (friend or relative) infected with HIV and AIDS on the HAKT have been summarised in **Table 5.7**. The summary of results shown in **Table 5.7** indicated the percentages and the corresponding standard errors of learners' behaviour with a friend infected with HIV and their willingness to care for a relative ill with AIDS. Mean scores and corresponding standard errors have been shown for the nine provinces and South Africa. For example, the HAKT mean scores of learners in the Free State who indicated a negative response ('avoid/shun him or her') and the corresponding standard errors on their behaviour towards a friend infected with HIV and AIDS were 10.3% and 1.30 respectively. Thirty six percent of learners with a standard error of 3.04 indicated a 'not sure' response while 53.5% of learners with a standard error of 3.30, indicated a positive attitude.

Table 5.7 Percentages of learners, teachers and school heads expressing fear of casual contact with a learner infected with HIV *(stigma)*

	RESPONSES ON THE POSSIBILITY OF A LEARNER INFECTED WITH HIV TO COTNINUE TO ATTEND SCHOOL																	
	LEARNERS						TEACHERS						SCHOOL HEADS					
	No		Not Sure		Yes		No		Not Sure		Yes		No		Not Sure		Yes	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Eastern Cape	22.5	2.66	24.0	2.93	53.5	4.18	2.2	2.17	2.3	2.29	95.6	3.12	0.0	0.00	0.0	0.00	100.0	0.00
Free State	22.3	2.55	24.0	2.65	53.7	4.08	2.4	2.37	0.0	0.00	97.6	2.37	3.5	3.53	0.0	0.00	96.5	3.53
Gauteng	10.8	1.66	18.3	2.18	70.9	3.02	0.0	0.00	4.1	2.92	95.9	2.92	0.0	0.00	1.4	1.39	98.6	1.39
KwaZulu-Natal	24.7	2.29	23.1	2.13	52.2	3.21	1.9	1.58	1.1	0.79	97.0	1.85	0.0	0.00	0.0	0.00	100.0	0.00
Mpumalanga	28.2	4.23	18.5	2.30	53.4	4.99	0.0	0.00	2.4	2.44	97.6	2.44	2.8	2.75	0.0	0.00	97.2	2.75
Northern Cape	22.9	3.38	18.5	2.65	58.6	3.99	0.0	0.00	0.0	0.00	100.0	0.00	2.5	2.52	2.4	2.41	95.1	3.45
Limpopo	30.9	3.78	22.9	2.24	46.1	4.01	0.6	0.61	3.9	2.79	95.5	2.83	0.0	0.00	0.0	0.00	100.0	0.00
North West	23.2	3.06	19.4	2.68	57.4	4.57	0.0	0.00	3.0	3.04	97.0	3.04	0.0	0.00	0.0	0.00	100.0	0.00
Western Cape	18.8	2.04	25.0	2.67	56.2	2.76	1.7	1.36	11.3	4.47	87.0	4.58	0.0	0.00	0.0	0.00	100.0	0.00
SOUTH AFRICA	**21.7**	**1.02**	**21.4**	**0.93**	**56.9**	**1.44**	**1.1**	**0.53**	**2.8**	**0.83**	**96.1**	**0.99**	**0.8**	**0.46**	**0.4**	**0.32**	**98.8**	**0.56**

a) Learners' behaviour with a friend infected with HIV and AIDS.

In **Table 5.8** the overall percentage of South African Grade 6 learners on the HAKT who indicated a negative response regarding their attitude toward a friend infected with HIV and AIDS was 8.9%. Thirty one percent indicated they were not sure while 59.9% had a positive attitude. In all nine provinces more than 50% of learners indicated a positive attitude.

A high percentage of learners indicated a positive attitude across all nine provinces but a significant number indicated they were 'not sure'. The percentage of learners that indicated a negative response ranged from the lowest (3%) in the Western Cape to the highest (14.4%) in Limpopo. The percentage of learners that indicated a positive attitude ranged from 54% in the Free State to 66% in Gauteng.

b) Learners willing to care for a relative ill with AIDS.

In **Table 5.8** the overall percentage of South African Grade 6 learners on the HAKT who indicated a negative response ('no') regarding their willingness to care for a relative ill with AIDS was 15.8%. Thirty seven percent indicated they were not sure while 56.9% had a positive attitude ('yes'). In six of the nine provinces (Eastern Cape, Gauteng, KwaZulu-Natal, Mpumalanga, North West and Western Cape) more than 50% of learners indicated a positive attitude. In the remaining three provinces (Free State, Northern Cape and Limpopo) more than 40% of learners had a positive response.

A high percentage of learners indicated a positive attitude across all nine provinces with the highest scores observed in the three provinces: North West (62%), Mpumalanga (61%) and Western Cape (61%). A significant number indicated they were 'not sure' while the percentage of learners that indicated a negative response ranged from the lowest (10.2%) in the Gauteng to the highest (25.2%) in the Free State. These results were consistent with the results of learners' attitudes towards a friend infected with HIV and AIDS.

Table 5.8 Percentages of learners refusing contact with a person living with HIV or AIDS (Discrimination)

	LEARNER BEHAVIOUR WITH A FRIEND INFECTED WITH HIV						LEARNER WILLING TO CARE FOR A RELATIVE ILL WITH AIDS					
	Avoid/ shun him or her		Not sure		Positive attitude		No		Not sure		Yes	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Eastern Cape	10.5	1.30	33.7	3.70	55.8	3.63	18.7	2.66	21.9	2.80	59.5	4.23
Free State	10.3	1.45	36.2	3.04	53.5	3.30	25.2	2.76	27.3	2.04	47.6	3.39
Gauteng	3.5	0.81	30.7	2.43	65.8	2.73	10.2	1.57	33.1	2.74	56.8	3.40
KwaZulu-Natal	10.5	1.41	28.3	2.15	61.2	2.90	15.6	2.00	28.0	2.18	56.4	2.94

	LEARNER BEHAVIOUR WITH A FRIEND INFECTED WITH HIV						LEARNER WILLING TO CARE FOR A RELATIVE ILL WITH AIDS					
	Avoid/ shun him or her		Not sure		Positive attitude		No		Not sure		Yes	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Mpumalanga	14.4	2.24	25.1	3.35	60.5	4.17	17.5	2.92	21.0	3.36	61.5	4.56
Northern Cape	9.5	1.75	34.3	3.10	56.1	3.41	18.3	2.74	34.7	3.71	47.0	3.43
Limpopo	7.2	1.01	35.4	3.10	57.3	3.10	20.3	2.36	33.4	2.66	46.2	3.30
North West	6.6	1.11	31.1	3.38	62.4	3.71	15.0	2.06	22.7	2.38	62.3	3.76
Western Cape	3.3	0.73	39.6	2.61	57.1	2.69	10.4	1.62	28.6	2.39	61.0	3.13
SOUTH AFRICA	**8.9**	**0.55**	**31.3**	**1.08**	**59.9**	**1.25**	**15.8**	**0.86**	**27.3**	**1.03**	**56.9**	**1.38**

5.8. ***General policy concern*****:** *What were the risk perceptions (according to Rasch scores relating to risk levels of teachers and school heads) and variations (among provinces) in the HIV and AIDS knowledge test of teachers and school heads of Grade 6 learners?*

5.8.1 Risk perception about HIV and AIDS

The Rasch scores and standard errors on the risk perceptions of teachers and school heads on being infected with HIV, on the HAKT have been summarised in **Table 5.9**. The summary of results shown in **Table 5.9** indicated the percentages and the corresponding standard errors of teachers and school heads self risk assessment ranging from 'no/low risk' to 'high/very high' risk perception of being infected with HIV. Mean scores and corresponding standard errors have been shown for the nine provinces and South Africa. For example, the HAKT mean scores of teachers in Gauteng who indicated a 'no/low risk' response and the corresponding standard errors were 73.7% and 6.42 respectively. Twenty one percent of teachers with a standard error of 5.75 indicated a 'medium risk' response while 5.9% of teachers with a standard error of 3.44, indicated a high/very high risk of being infected with HIV.

Table 5.9 Self risk assessment of being infected with HIV by teachers and school heads

	SELF HIV RISK ASSESSMENT											
	TEACHERS						SCHOOL HEADS					
	No/ Low Risk		Medium Risk		High/Very High Risk		No/ Low Risk		Medium Risk		High/Very High Risk	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Eastern Cape	68.0	7.25	8.0	4.14	24.0	6.62	42.0	7.46	20.5	6.49	37.5	7.24
Free State	55.0	7.69	20.6	6.30	24.4	6.71	64.4	7.97	18.5	6.61	17.2	6.11

	SELF HIV RISK ASSESSMENT											
	TEACHERS						SCHOOL HEADS					
	No/ Low Risk		Medium Risk		High/Very High Risk		No/ Low Risk		Medium Risk		High/Very High Risk	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Gauteng	73.7	6.42	20.5	5.75	5.9	3.44	73.9	6.87	12.6	4.99	13.5	5.35
KwaZulu-Natal	71.4	5.68	18.0	4.87	10.6	3.93	64.7	6.24	12.3	4.22	23.1	5.53
Mpumalanga	68.2	7.76	10.6	5.09	21.2	6.81	62.4	8.02	19.5	6.42	18.1	6.40
Northern Cape	64.9	8.20	20.6	7.23	14.4	5.65	54.6	8.61	14.1	5.96	31.2	8.25
Limpopo	63.3	7.67	26.9	7.10	9.8	4.86	62.0	8.14	28.5	7.74	9.5	4.61
North West	63.9	8.24	10.8	5.33	25.3	7.59	69.1	7.65	8.0	4.52	22.9	6.91
Western Cape	73.2	6.20	13.7	4.63	13.1	4.68	70.6	7.52	23.6	7.00	5.7	3.99
SOUTH AFRICA	**69.0**	**2.58**	**15.7**	**2.00**	**15.3**	**1.96**	**62.1**	**2.76**	**16.1**	**2.09**	**21.9**	**2.35**

a) Teachers self risk assessment of being infected with HIV

In **Table 5.9** the overall percentage of South African teachers of Grade 6 learners on the HAKT who indicated a 'no/ low risk' of being infected with HIV was 69%. Sixteen percent indicated a 'medium risk' while 15.3% indicated a 'high/ very high risk' of being infected with HIV. Teachers who indicated a 'high/very high risk' was the highest in the North West province (25.3%) and the lowest in Gauteng (5.9%).

A concerning observation was that in addition to the North West province, in three other provinces (Eastern Cape (24%), Free State (24.4%) and Mpumalanga (21.2%)), teachers also indicated a 'high/very high risk' of being infected with HIV. In the Free State (20.6%), Gauteng (20.5%), Northern Cape (20.6%) and Limpopo (26.9%) a significant number of teachers indicated a 'medium risk' of being infected with HIV. A positive observation was that across all nine provinces more than 50% of teachers indicated a 'no/low risk' of being infected. The percentage of teachers that indicated a 'no/low risk' ranged from 55% in the Free State to 73.7% in Gauteng.

b) School heads self risk assessment of being infected with HIV

In **Table 5.9** the overall percentage of South African school heads of Grade 6 learners on the HAKT who indicated a 'no/low risk' of being infected with HIV was 62%. Sixteen percent indicated a 'medium risk' while 21.9% indicated a 'high/very high risk' of being infected with HIV. School heads who indicated a 'high/very high risk' was the highest in the Eastern Cape (37.5%) and the lowest in Western Cape (5.7%).

A concerning observation was that overall a higher number of school heads than teachers indicated 'high/very high risk' of being infected with HIV. An alarmingly high percentage of school heads in the Eastern Cape (37.5%) and

the Northern Cape (31.25) indicated 'high/very high risk'. In the Eastern Cape (20.5%), Limpopo (28.5%) and the Western Cape (23.6%) a significant number of school heads indicated a 'medium risk' of being infected with HIV. In the Eastern Cape, only 42% of school heads indicated a 'no/low risk' of being infected which more than 30% lower than their counterparts had indicated in Gauteng (73.9%).

5.9 Main findings

5.9.1 Since only 35% of the learners reached the minimum level of knowledge on the HAKT, greater emphasis through clearly defined content must be placed within the current and forthcoming revisions of the national curriculum policy on improving learner knowledge levels on HIV and AIDS, particularly in the Limpopo province where learners had the lowest scores. While the mean scores of Grade 6 teachers on the HAKT is significantly high, their pedagogical content knowledge on HIV and AIDS needs to be further investigated to address learners low knowledge levels on these issues. This area of concern was consistent with the findings of the 2008 HRSC study.

The HSRC survey noted that the prevalence of HIV infection varied by province, with the lowest prevalence observed in the Western Cape at less than 1%; and low to intermediate HIV prevalence observed in the Northern Cape and Eastern Cape, North West and Limpopo (< 3%). Provinces with a higher HIV prevalence included Gauteng (3.1%); the Free State (3.1%); KwaZulu-Natal (3.4%); and Mpumalanga (4.5%) (Shisana et al., 2010).

5.9.2 A concerning observation was that overall only 31% of boys and 38% of girls reached the minimum level of knowledge. Both boys and girls should be exposed to more HIV and AIDS awareness programmes in their schools and communities. The Department should as part of its integrated social-upliftment and gender advancement programmes engage boy and girl learners to participate in co-curricular and extra-curricular activities that deal specifically with HIV and AIDS issues.

5.9.3 As stated earlier, the mean scores of learners of low SES depicted a desperate situation around South African learner knowledge on HIV/AIDS in this category. Only 17% of learners of low SES reached the minimum level of knowledge and an alarmingly low two percent of the learners reached the desirable level of knowledge. There is a clear and desperate need for learners of low SES to be more exposed to programmes within their schools and communities that deal with improving knowledge on HIV and AIDS.

5.9.4 A similar desperate situation existed for learners from a rural location. In all but two provinces, Gauteng and Western Cape, the average Grade 6 learner from a rural location obtained a score below the SACMEQ mean on HAKT. Learners from a rural location need to be more intensively engaged to participate in school and community (e.g. church, civic and youth) programmes that deal with HIV and AIDS. The Department must ensure through effective monitoring and intervention programmes that learners from rural locations are exposed to similar campaigns that learners from urban areas are exposed to.

5.10 Conclusion

The findings on learner knowledge on the HAKT have significant implications for curriculum planning in the all provinces but in particular for the Northern Cape, Limpopo, Free State, Eastern Cape and Mpumalanga that have significantly low scores. Given the high levels of HIV and AIDS prevalence in South Africa (UNICEF, 2007) and that Grade 6 learners are at a very vulnerable age of 12-13 years – 'their knowledge about HIV and AIDS is clearly inadequate for the task of guiding their decisions about behaviours that will protect and promote health' (Dolata and Ross, 2010).

The World Bank (2002) identified children in this age category as the "window of hope" because they belong to the least HIV-infected age group.

The results of this study point to an increased significance of educational programmes and policies in the schooling sector as South Africa strives to reduce the prevalence of HIV and AIDS among children of school going age. Although South Africa has a national policy on HIV and AIDS for learners and educators in public schools (DoE, 1999), issues around the pandemic are taught in the National Curriculum Statement (NCS) through the Life Orientation learning area and national integrated plans by the ministries of health, social services and education address are in place to combat the HIV and AIDS, clearly more needs to be done within schools and their communities to improve the knowledge levels of learners, particularly at a primary school level. This will have immediate and broader implications for learners and society.

The report enables the country to measure its progress on the six EFA goals with particular reference to goal 6: improving all aspects of quality of education, and ensuring excellence for all, so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills (DBE, 2010).

Finally, the results of this study allow the Department to take cognizance of the low health knowledge scores of Grade 6 learners and provide a credible platform to reposition its existing and planned intervention strategies on improving learner knowledge on the HIV and AIDS pandemic – particularly at a primary school level.

Chapter 6
Agenda for Action

6.1 Introduction

In this chapter the next steps emanating from the findings of the policy concerns are presented as an agenda for action. Each of the policy concerns listed in chapters 3, 4 and 5 have a bearing on the Department's commitment towards improving schooling conditions and the quality of education provided to learners.

In this chapter all the research-based findings are summarised in the form of policy suggestions and grouped according to the following categories: quality of the learning environment, Reading and Mathematics achievement levels of learners, gender equality and promotion, pre-school exposure and achievement and learner and teacher knowledge on HIV and AIDS.

A brief description of the underlying problem prompting an agenda for action in each of the five categories is provided below.

6.2 The five categories

6.2.1 Quality of the learning environment

In this report the critical findings on the quality of the learning environment included:

1. Approximately one in every five Grade 6 learners did not have all the three basic learning materials (that is, possession of at least one exercise book, something to write with, and a ruler) needed for effective participation in classroom activities. The situation in the Eastern Cape was of particular concern because only 67 percent of the learners in this province had all the three basic learning materials.

2. Only 36 percent of the learners had sole use of mathematics textbooks. This means that at least three in every five learners (64%) did not have sole use of these textbooks.

3. The mean learner-teacher ratio (37) was within South Africa's benchmark of 40 learners per teacher. In addition, the average number of Grade 6 learners per class (44) exceeded the national benchmark of 40 learners per class.

6.2.2 The Reading and Mathematics Achievement levels

An improvement was noted in overall performance of South African learners in the third SACMEQ study. Against a SACMEQ mean score of 500, learners in SACMEQ 3, achieved a mean score of 495 in both reading and mathematics. These scores become qualified when levels of achievement are considered. The results indicated that:

1. South African learners in 2007 performed similar to their counterparts who participated in 2000. The results trend showed that in 2007, almost 67% of learners were not competent in reading levels 1 to 4, compared to almost 66% in 2000. There was however more learners showing skills in interpretive and inferential reading (levels 5 and 6) in 2007 than in 2000 with more girls displaying these higher order skills than boys.

2. The results of learners in mathematics were more differentiated across the eight levels. In 2007, 39% of learners were situated at level 2 – the emergent numeracy level compared to 44% in 2000, in the same category. A higher number of learners showed competencies at levels 3, 4 and 5 in 2007 than in 2000. The number of learners displaying competencies at level 8 – abstract problem solving, dropped from 1.3% in 2000 to 0.4% in 2007.

3. The study also confirmed that learners with a low socio-economic status (SES) and from rural areas were not prominent in high levels of achievement in both reading and mathematics with learners.

It is significant to note that SACMEQ II (and SACMEQ III) Project tests were constructed carefully so as to ensure that the structure of the learner tests was congruent with the content and skills derived from detailed analyses of the curricula, syllabi, examinations and textbooks used in the SACMEQ countries.

6.2.3 Learner pre-school exposure and achievement levels

The Department has made good progress in providing to children five years and older (Grade R) access to quality educational programmes. The results in this brief indicate that learners with two or three year's preschool exposure perform well on reading and mathematics tests conducted in later schooling phases.

In this report the critical findings on learner pre-school exposure and achievement levels included:

1. Pre-school attendance has a positive impact on achievement in reading and mathematics.

2. The duration of the pre-school attendance has an impact on learner achievement but tends to level off after two years.

3. In South Africa more than 20% of learners indicated they had no pre-school experience.

4. These findings must be read with caution as they represent a bivariate analysis and other possible contextual influences such as socio-economic status have not been controlled for[12].

12 Studies by Spaull (2011) used a multivariate analysis to control for such variables.

6.2.4 Progress in gender equality in South Africa

In this report, the findings relating to gender equality issues on the participation and learning achievements (Reading and Mathematics) for Grade 6 learners as well as additional information concerning female staff, security, and sanitary issues, indicated that:

1. Overall, there is a reasonable gender balance in schools as measured through proportions of boys and girls in school enrolments.

2. Achievement of educational outcomes is generally low, particularly for boys. Learner scores in both Reading and Mathematics remained virtually unchanged between 2000 and 2007. Provinces of Eastern Cape, KwaZulu-Natal and Limpopo particularly saw worrying declines in the performance of their learners in this period.

3. In terms of staffing in the teaching profession there were unacceptably large gender inequalities in terms of leadership of schools. This could serve as negative role models for learners, especially girls.

4. Provision of safety and sanitation in schools was inadequate. Unacceptably too many were in schools where there was no fencing and the ratios of learners to toilettes were too high. This could have a “push out” effect on girl learners in particular.

6.2.5 Learner and teacher knowledge about HIV and AIDS

The implications of the findings on learner and teacher knowledge are both dire and awakening: How can educational programmes and instruction be designed to help learners, at their early and vulnerable ages, acquire adequate basic knowledge to help them make informed decisions about health protection and promotion behaviours related to HIV-AIDS?

There are four research findings on knowledge levels about HIV and AIDS include:

1. Low Knowledge Levels

   Knowledge levels about HIV and AIDS among around two thirds (65%) of South Africa’s Grade 6 learners in 2007 were below SACMEQ’s “minimal” knowledge benchmark (which was defined as mastery of at least half of the official school curriculum). The Department of Basic Education should acknowledge that HIV and AIDS prevention education programmes need to be monitored and evaluated in order to ensure that they are working effectively.

2. Large Provincial Differences in Knowledge

   There were substantial differences in average Grade 6 learner HIV and AIDS knowledge levels among education provinces in South Africa. The Department of Basic Education should investigate: (a) the reasons for these differences, and (b) why knowledge levels were so low in Limpopo Province.

3. A Learner-Teacher "Knowledge Gap"

   There was a large HIV and AIDS "knowledge gap" between South Africa's Grade 6 learners and their teachers. The Department of Basic Education should investigate why well-informed teachers were not able to transmit this knowledge to their learners.

4. Demographic Differences in Knowledge

   There were significant differences in knowledge about HIV and AIDS between groups of South Africa Grade 6 learners defined by Socioeconomic Status, Location, Gender, and Age. The Department of Basic Education should expand and intensify the delivery of HIV and AIDS prevention education programmes in poor and rural communities. The Ministry should also mount a research study to find out why females and younger learners appear to have significantly higher levels of knowledge.

While just over a third of learners (35%) reached the minimum level of knowledge on the HAKT, all educators (100%) achieved the minimum level of knowledge. The findings of the SACMEQ III are timely to inform the development of the Department of Basic Education Integrated Strategy on HIV and AIDS, 2012-2016 especially with respect to Outcome 2 that focuses on strengthening the sexuality education curriculum, associated pedagogy and teaching and learning material as well as on Outcome 6 that focuses on improving both physical and psychological safety in schools.

6.3 The policy suggestions

The policy suggestions are summarised in **Table 6.1** below. In the table each policy suggestion is grouped to one of the five categories listed above and are linked to a responsible unit for action, the time frame and the cost level.

With regard to time frames, 'short' implies that the policy recommendation can be implemented within 6 months to a year; 'medium' means it can be implemented within one to two years; and 'long' means it can be implemented in three to five years. Regarding the cost level, 'low' costs are those that can be accommodated within the existing budget; 'moderate' costs are those that require low-scale additional funding requests from the Treasury; and 'high' costs require long term additional funding requests for major capital expenditure on physical infrastructure or human resources.

It was also important to indicate the responsible unit that would take the lead to action the recommendations with the necessary planning documentation and operational costs. Most of the recommendations are targeted at the 'national' level by the DBE but in collaboration with provincial education departments and districts.

Table 6.1: A summary of the policy suggestions for each category

	Policy Suggestion	Responsible Unit (within DBE)	Time	Cost Level
1.	**Quality of the learning environment**			
1.1	The newly established Planning and Delivery Oversight Unit of the DBE should review how basic learning materials are distributed to schools (especially in the lower quintiles) and how the allocation and distribution of these materials are implemented at the district and school levels.	Planning and Delivery Oversight Unit	short	Moderate
1.2	The provincial education authorities could carry out a follow-up audit, through their respective Curriculum and Whole-school evaluation units, to determine whether the shortage of mathematics textbooks in Grade 6 that was recorded in 2007 has changed. This follow up audit is important because in 2010 the country started providing mathematics textbooks to all Grades 1 to 6 learners.	NEEDU and provincial Whole-school Evaluation Units	Short	Low
1.3	The National Ministry, through its Curriculum unit, may need to be more aggressive in promoting the current policy on the use of textbooks during classroom lessons. The useful role and benefits of textbooks needs to be communicated at all the levels. The DBE must ensure to undertake that all learners in the primary school, especially the learners in Grades 4 to 7, have sole use of textbooks for all core subjects.	Curriculum: GET schools and Workbooks Unit	Short	Low
1.4	The DBE, through its Education Management Information Systems (EMIS) unit must regularly monitor the percentage of schools, and list their specific details, in each province that have class sizes above the norm of 40 to reduce overcrowding.	EMIS	Short	Low
2.	**The Reading and Mathematics Achievement levels**			
2.1	In terms of Reading, the lesson is for teachers to expose learners to extracts and passages that demand skills from interpretive to critical reading and further exemplify this work with boy learners and learners from low socio-economic groupings. Learners must be given high quality class work exercises that stretch the imagination and creative reading skills of learners.	Curriculum: GET schools	Short	Low
2.2	Similarly in Mathematics, to improve on the high percentage of learners having only basic numeracy (level 3), teachers need to expose learners to extensive applications and high order questions involving concrete and abstract problem solving skills. The number of learners showing a competency in these levels is significantly low.	Curriculum: GET schools	Short	Low

	Policy Suggestion	Responsible Unit (within DBE)	Time	Cost Level
2.3	On a broader systemic level, Higher Education Institutions, providing teacher education, must ensure that teachers are trained in developing tasks and assessments inclusive of all levels of learning. All student teachers must display a practical competence on exposing learners to answer high order questions. For in-service teachers, the Departments of Education should (DoBE and DoHE) should structure in-service training programmes (INSET) that deal specifically with teachers' needs on content associated with the higher levels of achievement.	Teacher Development Units	Long	Moderate
2.4	The provision of materials to schools should be appropriately balanced with different levels of achievement explicit for teachers and learners to apply in class work exercises and assessments. Additionally lesson plans, milestone documents and workbooks supplied to or generated at school level must be structured to facilitate learning across all required levels of competency.	Curriculum: GET schools	Short	Low
3.	**Learner pre-school exposure and Achievement levels**			
3.1	The DBE should strengthen norms and standards to monitor the quality of educational programmes offered to learners in Grade R. A performance measuring and development support programme should be formally regularized for Grade R "practitioners" as it is currently implemented for teachers in the public schooling sector.	Early Childhood Development	Medium	Moderate
3.2	The DBE should strengthen Early Childhood Development (ECD) programmes in terms of appropriately qualified and competent teachers and appropriate learning support matterials. This could be done by amending the scope of White Paper 5 to increase not only access to educational programmes but also development of suitable educational programmes for children in the ECD phase.	Early Childhood Development	Medium	High
4.	**Gender equality and promotion**			
4.1	The Teacher Development Unit of the Department of Basic Education should intensify monitoring the provision of continuing professional development of teachers of literacy and mathematics to increase their efficiency in teaching literacy and mathematics to all learners but with a special focus on improving the performance of boys. Priority should be given to the provinces of Eastern Cape, KwaZulu-Natal and Limpopo.	Teacher Development Units	Short	Low
4.2	District Managers, in collaboration with School Management Teams (SMTs) should agree on promotion strategies that seek to redress the current gender inequalities and deliberately work to increase the number of female principals in the primary schools.	Gender Unit, Districts and School Governors	Medium	Low

	Policy Suggestion	Responsible Unit (within DBE)	Time	Cost Level
4.3	The Physical Planning Unit of the Department of Basic Education should immediately seek to: (i) establish and publish norms and standards for provision of separate toilets for boys and girls; and (ii) monitor that all schools adhere to the norms and standards.	Physical Planning and Infrastructure	Medium	High
5.	**Learner and teacher knowledge levels on HIV and AIDS**			
5.1	Greater emphasis using clearly defined content must be placed within the current and forthcoming revisions of the national Curriculum and Policy Assessment Statement (CAPS) to improve learner knowledge levels on HIV and AIDS, particularly in Limpopo province where learners had one of the lowest scores of all the participating countries on SACMEQ.	Health Promotion	Short	Low
5.2	To address the difference in knowledge levels between educators and learners, the strengthening of pedagogical approaches amongst educators is required together with an investigation of the factors that impede knowledge transmission e.g. levels of implementation of the life skills programme and conflicts between programmes and personal values.	Health Promotion and Curriculum: GET schools	Medium	Low
5.3	The study reported a positive trend with respect to stigma and discrimination of people living with HIV and AIDS across all nine provinces. However, a third of learners expressed uncertainty about interacting with people living with HIV and AIDS. Further strengthening of safety and sexuality education programmes is required to eliminate stigma and discrimination.	Health Promotion	Short	Low

Conclusion

The agenda for action summarises the key findings of the third SACMEQ Study in South Africa. The policy suggestions and recommendations are made within the context of funds being made available or shifted within units of the Department of Basic Education. The recommendations should be seen within the context of the broader plans of the DBE in particular the *Action Plan to 2014, Towards the Realities of Schooling 2025* (DBE, 2010).

The Report examined critical aspects relating to the conditions of schooling and the quality of education at a primary school level. The Study showed that South Africa significantly improved in the provision of basic learning materials between 2000 and 2007. The achievement results in reading and mathematics remained unsatisfactory during this period with South African learners underperforming their counterparts in the region in particular, regarding higher SACMEQ levels of achievement. In addition the study revealed disappointingly low achievement results of learners from rural and low socio-economic sectors.

Clearly there is a need to expose learners to examples of applying skills associated with the higher SACMEQ levels in both reading literacy and mathematics. In the national curriculum statement emphasis is placed on teachers designing tasks in such a way as to ensure that a variety of skills are assessed. Assessment should be used to maximise learners' access to the knowledge, skills, values and attitudes defined in the national curriculum policy (Department of Education, 2005). The eight SACMEQ levels for reading literacy and mathematics provide an appropriate benchmark to model assessments and to structure learning so that learners can be exposed to the expected range of competencies for their age group. Also, the achievement results further indicated that the extent of participation in pre-school programmes by learners who were in Grade 6 in 2007 had a significant impact on learner achievement in reading and mathematics.

On the positive note, South Africa has maintained a reasonably equitable gender balance In terms of participation of both boys and girls in the schooling system. However, there are worryingly low levels and wide gender inequalities in the areas of learner achievement of acceptable educational outcomes, participation of females in school leadership positions as well as the provision of adequate safety and sanitation facilities which are particularly critical for retaining girls in schools.

It is clear from the SACMEQ III Project research results that the time has come to take stock of the impact of current HIV and AIDS prevention education programmes for young people in South Africa. The SACMEQ results showed that during 2007 two-thirds of Grade 6 learners did not have the minimal level of knowledge about HIV and AIDS that was required to preserve and promote their health.

Finally, the third SACMEQ Study provides South Africa with high quality data that is internationally recognised and benchmarked, to better position its examination of existing and planned programmes. The trends in performance generated through our participation in two rounds of SACMEQ studies allows for the Department not only to evaluate the quality of our education system over time but also to plan for the improvement of future programmes. To this end, the Report finds a useful place for educational planners and policy makers in the continuous endeavour to bring about excellence in the education system. Properly implemented, the suggestions that have been made in this report could accelarate South Africa's pace towards improving the conditions of schooling and the quality of education for all learners.

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(Footnotes)

1 The numbers of learners who actually completed each of the Reading, Mathematics and HAKT tests were, 9 062, 9 083 and 9 016, respectively.