THE SACMEQ IV PROJECT IN KENYA

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

SACMEQ

Southern and Eastern Africa Consortium for Monitoring Educational Quality

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MERCY G. KAROGO
Ag. CHIEF EXECUTIVE OFFICER/NATIONAL RESEARCH COORDINATOR

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ABBREVIATIONS AND ACRONYMS

ASALs	Arid and Semi-Arid Lands
CEMASTEA	Centre for Mathematics, Science and Technology in Africa
CHE	Commission for Higher Education
DfID	Department for International Development
DQAS	Directorate of Quality Assurance and Standards
ECD	Early Childhood Development
ECDE	Early Childhood Development Education
EFA	Education for All
EMIS	Education Management Information System
ERS	Economic Recovery Strategy
ERSWC	Economic Recovery Strategy for Wealth and Employment Creation
FPE	Free Primary Education
GER	Gross Enrolment Ratio
GoK	Government of Kenya
GPA	Grade Point Average
GPI	Gender Parity Index
HAKT	HIV and AIDS Knowledge Test
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
ICT	Information and Communication Technology
INSET	In-service Teacher Training
INSTEP	In-Service Training and Education Programmes
IIEP	International Institute for Educational Planning
KAIS	Kenya AIDS Indicator Survey
KEAC	Kenya Education Assessment Council
KNEC	Kenya National Examinations Council
TTC	Primary Teacher Training College
KEMI	Kenya Education Management Institute
KESI	Kenya Education Staff Institute
KESSP	Kenya Education Sector Support Programme
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
KDHS	Kenya AIDS Demographic Health Survey
KICD	Kenya Institute of Curriculum Development
KIE	Kenya Institute of Education
KISE	Kenya Institute of Special Education
KISNE	Kenya Institute of Special Needs Education
KNBS	Kenya National Bureau of Statistics
KNEC	Kenya National Examinations Council
KTTC	Kenya Technical Teachers College
LCB	Low Cost Boarding
MDG's	Millennium Development Goals
MoE	Ministry of Education
MoH	Ministry of Health
MPET	Master Plan for Education and Training

MVC	Most Vulnerable Children
NAC	National Assessment Centre
NACADA	National Agency for Campaign Against Drug Abuse
NACONEK	National Commission for Nomadic Education in Kenya
NASMLA	National Assessment System for Monitoring Learner Achievement
NER	Net Enrolment Ratio
NFE	Non-Formal Education
NGOs	Non Governmental Organisations
P1	Primary Teacher One
PE	Physical Education
QASO's	Quality Assurance and Standards Officers
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SAGAs	Semi Autonomous Government Agencies
SDGs	Sustainable Development Goals
SE	Sampling Error
SES	Social Economic Status
SMCs	School Management Committees
SMASSE	Strengthening of Mathematics and Science in Secondary Education
SIMBA	School Instructional Materials Bank Account
STI	Science Technology and Innovation
SWAP	Sector Wide Approach
TIVET	Technical Industrial Vocational and Entrepreneurial Training
TPR	Teacher Pupil Ratio
TSC	Teachers Service Commission
TTCs	Teacher Training Colleges
UPE	Universal Primary Education
UNESCO	United Nations Educational, Scientific and Cultural Organization

STATEMENT FROM THE CABINET SECRETARY

Kenya, like other countries in the region is keen to achieve middle income country status, and one of the fundamentals for the success of this vision is education and training. The government has therefore put in place policies and actions to improve access, equity and quality of education. Subsequently, a lot of gains have been made in this respect especially in the basic education sector. A clear example is the 30 percent increase in enrolment in public primary schools that took place between the years 2002 and 2008 and subsequent years, after the introduction of Free Primary Education. This increased enrolment, however, challenged the available provisions for infrastructure, teaching and learning facilities and teaching personnel. Thus the government has been keen to ensure that the budgetary allocation for education is efficiently utilised in targeted areas of need and growth. Such decisions have therefore to be policy derived from empirical evidence.

I am very pleased that through the participation of Kenya in the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) since 1995, such information has been made available for this purpose. Results of the SACMEQ I Project which was the first such policy research study were instrumental in informing the development of the Sessional Paper No. 1 of 2005. Through this policy, the Ministry revolutionized its approach to the management of education and the optimization of resources intended for the education sector.

The SACMEQ IV Report has provided a very comprehensive evaluation of these inputs in education and given suggestions on ways to improve the quality of education, particularly at the primary school level. There is urgent need for effective dissemination of this report to ensure that all stakeholders in education have the opportunity to interact with its findings, discuss and put measures in place to ensure that the recommendations of the study are implemented.

DR. FRED O. MATIANG'I, EGH
CABINET SECRETARY, MINISTRY OF EDUCATION

MESSAGE FROM THE PRINCIPAL SECRETARY, STATE DEPARTMENT OF BASIC EDUCATION

The constitution of Kenya (2010) guarantees every Kenyan child free and compulsory basic education. The government has the responsibility to ensure that this is achieved by monitoring the access, enrollment, retention and sustainability of learning programmes.

The Social pillar within Kenya's Vision 2030 highlights the need to provide globally competitive quality education, training and research that will position Kenya as a regional centre for research and development. In this regard, assessment is meant to inform teaching and learning processes that are in tandem with Vision 2030, and make recommendations to enhance learner acquisition of requisite skills and competencies.

The National Education Sector Plan (NESP) emphasizes a holistic and balanced development of the entire education sector, which is embodied in recent legislation, including the Basic Education Act 2013. The NESP Implementation Plan focuses on the urgent need to enroll all students in basic education, raise literacy and numeracy levels, reduce existing disparities, and improve the quality of education with a focus on teacher quality, school level leadership, more effective teaching in the classroom and increasing resources to the education sector.

It is also worth noting that Sustainable Development Goal Number 4 reiterates the need to ensure that all learners acquire the knowledge and skills needed to promote sustainable development. It also underscores the need to improve the quality of education through teacher training, provision of educational materials, ensuring sustainable school feeding programs and improving sanitation in schools.

With large government investments on Free and Compulsory basic education, there is increasing demand not only for accountability in management of resources but also for improved teaching and learning processes. In this regard, this study sought to assess the factors that impact on learning outcomes among Class 6 pupils and give recommendations on areas of intervention.

I therefore take this opportunity to call upon all stakeholders in the education sector to ensure that the recommendations made in this report are implemented.

DR. BELIO R. KIPSANG', CBS
PRINCIPAL SECRETARY
STATE DEPARTMENT OF BASIC EDUCATION

MESSAGE FROM THE DIRECTOR GENERAL, STATE DEPARTMENT OF BASIC EDUCATION

Kenya has been involved in the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) activities as a member country since 1995. The milestones of this involvement are successive policy research studies namely SACMEQ I (1998-2000), SACMEQ II (2000-2005), and SACMEQ III (2005 – 2011). In these studies, data on a variety of issues such as achievement, personal, home and school characteristics were collected from Standard 6 pupils, teachers and Head teachers. The current study (SACMEQ IV) aimed at establishing pupils' competency levels in Numeracy and Literacy and the factors that influence the learning outcomes of Standard 6 pupils.

Findings of the SACMEQ IV study revealed a general improvement in both Reading and Mathematics from SACMEQ III. The results further indicated that the achievement of pupils from the poorest backgrounds improved significantly compared to those posted in SACMEQ III. This shows that interventions towards pupils from poor backgrounds have had a positive impact. The study further established that there was a reduction in repetition rates and incidences of extra-tuition. Both practices have hitherto been erroneously assumed to improve academic achievement. In addition, there was an increase in the proportion of female Head teachers which is an indicator of the success of affirmative action in gender representation in educational management. However, this proportion is still below a third. The report also revealed low parental involvement in school activities and pupil behavior problems.

The timely dissemination of this report is instrumental in ensuring that all stakeholders in the education sector benefit from the study findings and recommendations. The Ministry of Education through its SAGAs and Directorates, is expected to play a central role in the dissemination and implementation of the project's findings. The Kenya Institute of Curriculum Development will find that the report presents a number of issues relating to curriculum design and implementation especially in the current quest for reforms. The Kenya Education Management Institute will benefit from information on the impacts of management training provided to school heads and Boards of Management. A large portion of the report concerns teachers who are the curriculum implementers and hence the Teachers Service Commission will find it useful in improving teacher management for enhanced services. Furthermore, the parents will find this report a useful reference on ways of improving child parenting.

I call upon all stakeholders and development partners in the education sector to use this report in the formulation of intervention strategies aimed at improving the quality of education in Kenya.

I wish to thank Ms. Mercy G. Karogo, the Ag. Chief Executive Officer of the Kenya National Examinations Council, for providing strategic leadership that ensured that the study was finalized; Ms. Joyce Sabari (former Head of Research and Quality Assurance Division), Mr. Mukhtar A. Ogle (former Coordinator - National Assessment Centre), and the Ag. Coordinator-National Assessment Centre, Dr. Asumpta Matei, for steering activities at different stages of the SACMEQ IV project.

MRS. LEAH ROTICH, MBS
DIRECTOR GENERAL, STATE DEPARTMENT OF BASIC EDUCATION

EXECUTIVE SUMMARY

The fourth Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) study aimed at assessing the conditions of schooling and achievement levels of learners and teachers in the areas of Literacy and Numeracy. The broad areas of assessment were: pupils' characteristics and their learning environments, teacher characteristics, Head teacher characteristics, and school infrastructure and management. SACMEQ IV study also assesses HIV and AIDS knowledge and attitudes of pupils and their teachers, an aspect introduced in SACMEQ III.

Class 6 pupils and their teachers were used as the study population for the assessment. A list of all schools was obtained from the Ministry of Education's Educational Management Information System (EMIS) database. A multi-stage process of sample selection was done using the Sample Design Manager (SAMDEM) computer programme.

SACMEQ IV data were collected in 2013 from 5,325 Standard 6 pupils (49.7% girls and 50.3% boys) in 224 primary schools in eight regions in Kenya1. The study presents findings on the characteristics of pupils, their teachers, Head teachers, physical infrastructure, learning environment of pupils and levels of knowledge, attitudes, and perceptions concerning HIV and AIDS.

This study utilised 8 instruments namely; 4 questionnaires, 3 achievement tests for both pupils and teachers and a school observation schedule to assess class and school facilitates and infrastructure. The 4 questionnaires developed targeted the pupils, Class 6 teachers and Head teachers of sampled schools. In addition to providing bio-data, the pupil questionnaire was designed to inform the conditions of learning at home and school. The teacher questionnaire dwelt on personal and professional characteristics, teaching and learning conditions as well resources. The Head teacher questionnaire also had items on personal and professional issues, but in addition it addressed school and human resource issues.

The study revealed a near gender parity in Standard 6 pupils at the national level, with higher percentages of girls in Nyanza, Rift Valley and Western regions. However, girls only constituted 29.6 percent of pupils in North Eastern region. Although the average age of Standard 6 pupils (12.6) was still above official age for that class, there was a marked decrease in overage pupils compared to SACMEQ III. Coast and North Eastern regions have consistently recorded high percentages of overage pupils. Another important finding is that almost 40 percent of pupils in rural areas had to travel over 2 kilometers to school, with 17 percent travelling over 4 kilometers, every day. The highest percentages of pupils travelling over 4 kilometers were in North Eastern, Nyanza and Coast. The national average number of days that pupils in Standard 6 were absent from school was 1.5 days.

With regard to school characteristics, majority of Standard 6 pupils shared Reading and Mathematics books. The study revealed that 55.2 percent shared a Reading book and 59.3 percent shared a Mathematics book with 2 or more pupils. Further, 4.8 and 4.6 percent did not have a Reading and Mathematics book respectively. In SACMEQ IV, 63.0 percent of pupils received extra tuition, which was a decline from SACMEQ III (70.2%).

The mean age of Standard 6 teachers was 37.2 years, which is a slight decrease from SACMEQ III (37.7 years). The mean age of school heads was 46.6 years, an increase of 1.2

[1]Although in the current dispensation Kenya is divided into 47 counties, the eight regions are used in SACMEQ IV.

years from SACMEQ III. In terms of gender, there were more male teachers (54.1%) compared to females (45.9%) at this level. This is in sharp contrast to the findings of SACMEQ III, a large percentage of school heads were male (71.9%).

With regard to academic qualifications, there was a remarkable increase in teachers and school heads with post-secondary and undergraduate qualifications. The average number of years of training for teachers and school heads were 2.5 and 2.6 respectively, meaning that more teachers had attained higher than P1 training. Majority of the teachers were reported to have appropriate teaching aids. However, more than 40 percent of the teachers did not have a chair and table. With regard to teacher support, 59.1 percent of teachers did not have access to Educational Resource Centers. It was also reported that, only 33.0 percent of the schools had been inspected in the past year.

The study further established that, parents and caregivers were not involved in school activities such as supervision of homework, provision of necessary space and facilities for doing homework, and engaging teachers on pupil progress. Parent and community support was more focused on contribution to construction and maintenance of school facilities, payment of salaries for additional teachers, extra curricula activities and examination fees. With regard to examinations fees, it is important to note that SACMEQ IV was carried out before the abolition of examination fees charged to parents.

One of the aims of this study was to establish the relationship between school resources and pupil performance. It is worth noting that pupils in schools with adequate resources performed better in Reading and Mathematics. The study found out that the percentage of schools with electricity increased from 22.7 to 43.4 in SACMEQ III and IV respectively. More pupils (52.0%) were in schools with libraries compared to 38.9 percent in SACMEQ III. However, there was a decline in the availability of critical school facilities such as staffroom, school head's office and school fence. Despite there being an improvement in pupil-toilet ratio (45.8:1), the desired ratio of 25:1 (girls) and 30:1 (boys) has not been achieved.

In SACMEQ IV, there was general improvement in both Reading and Mathematics from SACMEQ III, from a mean of 543.1 to 577.6 in Reading, and 557.0 to 608.1 in Mathematics, well above the regional mean of 500 for the 14 countries. Teachers had higher means than the pupils, at 744.9 for Reading and 927.2 for Mathematics. Most pupils in SACMEQ IV attained Level 4 (14.5%), Level 5 (24.3%), Level 6 (21.0%), Level 7 (23.4%) and Level 8 (9.0%) competencies in Reading. In Mathematics, the highest percentage of pupils was operating at Level 5 with 23.4, followed by 22.2 at Level 4. This is an improvement as in SACMEQ III, majority of pupils were operating at Level 4 (32.1%) and Level 3 (27.1%). The biggest gap in achievement in Reading was between the rural and urban, and the Socio-Economic Status, with pupils in higher SES attaining a higher mean. The gap in Mathematics was more notable between gender, with boys achieving a higher level, and pupils in urban areas performing better than those in rural areas.

There were differences in the level of HIV and AIDS knowledge among pupils with regard to gender and socio-economic status, with boys obtaining a higher mean than girls, and those from higher SES achieving higher than those in lower SES. While the majority of pupils had access to information on HIV/AIDS, mainly through classroom teaching, there was still evidence of stigma, especially among pupils. Although over 50 percent of teachers and 70 percent of school heads reported to have tested for HIV, about 40 percent indicated to have very high risk of contracting AIDS.

Some of the recommendations of the study are improved modes of communication on HIV/AIDS, setting up of ICT facilities in schools and adequate provision of school facilities such as toilets.

CHAPTER 1

1.0 SETTING THE SCENE

1.1 Introduction

The Southern and Eastern Africa Consortium for Monitoring Education Quality (SACMEQ) research project is a regional initiative involving 16 Ministries of Education in the following countries: Angola, Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania (Mainland), Tanzania (Zanzibar), Uganda, Zambia, Zimbabwe and Kenya. The main objective of SACMEQ is to evaluate the quality of education systems through assessment of learning achievements at primary school level. Ministries then use the information to make informed policy decisions. To achieve this objective, SACMEQ has carried out three cross-national studies on quality of education. SACMEQ I (1995 – 2000) focused on Reading and was carried out by seven ministries; SACMEQ II (2000 – 2005) focused on Reading and Mathematics and was carried out by fourteen 14 ministries; and SACMEQ III (2005 – 2011) expanded the focus to include learners' basic knowledge of HIV and AIDS and was carried out by 15 ministries. These SACMEQ studies have played a critical role in the educational reform process by informing policies in the respective countries.

SACMEQ IV (2012 - 2016) was carried out by 14 Ministries of Education in the following countries: Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania (Zanzibar), Uganda, Zambia, Zimbabwe and Kenya.

Kenya participated in SACMEQ I, II and III where 3,233, 3,299 and 4,436 Standard 6 pupils respectively participated in the study. These three educational policy research projects were designed to provide information that guided planning decisions aimed at improving the quality of education. The SACMEQ IV study sought to establish Standard 6 pupils' achievement levels in Reading and Mathematics. It also sought to determine the effect of HIV/ADIS on the functioning of primary schools as well as the degree of equity with regard to the allocation of human and material resources across and within regions. In addition, it was anticipated that the study would evaluate the role of Free Primary Education (FPE) policy, ten years after its inception.

1.2 Country Profile of Kenya

Kenya is situated in East Africa and is bordered by Uganda to the west, Tanzania to the south, the Indian Ocean to the south-east, Somalia to the east, Ethiopia to the north-east and South Sudan to the north-west. It covers an area of 591,971 square kilometers (KNBS 2015). In 2015, Kenya had an estimated population of 47.2 million (World Population Review, 2016). The population comprises 42 African communities (each with its own distinct mother tongue), making up approximately 97 percent of the population. The remaining 3 percent consists of immigrants from Asia and Europe among other continents.

English and Kiswahili are both official languages. English is the medium of instruction in Kenya's education system, except in the first three years of primary school where the language of the school catchment area is used for instruction. Kiswahili, which is widely spoken in Eastern Africa, is the national language and is taught and examined as a compulsory subject at primary and secondary school levels.

At the time of the SACMEQ IV Project, Kenya comprised forty seven counties located in the former eight administrative regions or regions: Coast, Central, Eastern, Nairobi, Rift Valley, Western, Nyanza, and North Eastern. Profiles of these regions are shown in the following **Table 1.1.**

Table 1.1: Educational and Socio-economic Profiles of Kenya's Regions, 2014

Region	Number of primary schools	Primary Schools GPI	Primary School GER		Poverty Level (%)	Unique characteristics
			Boys	Girls		
Coast	2140	0.96	103.7	98.6	59.0	Tourism is the region's economic forte and has some negative impacts on education.
Central	2930	0.97	114.2	114.0	30.9	Densely populated. High rainfall throughout the year and well endowed with cash crops except for a few areas.
Eastern	5673	0.98	111.0	108.5	50.5	Arid northern sector, densely populated and fertile middle and semi-arid southern sector.
Nairobi	1017	1.04	84.3	83.7	22.0	Capital city with high wealth gap.

Region	Number of primary schools	Primary Schools GPI	Primary School GER		Poverty Level (%)	Unique characteristics
			Boys	Girls		
Rift Valley	8051	0.95	106.8	101.4	48.7	High potential farmlands, bustling urban centres and nomadic pastoralists in districts in the arid areas.
Western	2953	1.02	119.1	118.9	53.1	Densely populated and fertile plateau with strong trade links with Eastern Uganda.
Nyanza	4720	0.99	111.1	113.6	46.5	High agricultural potential and strong fishing industry.
North Eastern	660	0.63	60.6	32.4	74.0	Arid land with large nomadic population whose mainstay is livestock.
National	28144	0.94	101.3	96.4	46.0	

GPI = Gender Parity Index, GER = Gross Enrolment Ratio. Source: 2014 Basic Education Statistical booklet

Table 1.1 shows the educational and socio-economic conditions in 2013 which was the year data was collected for SACMEQ IV. While recognizing that there is a near gender parity in all the regions, with the exception of North Eastern region, it should be noted that there are disparities within regions. The Gender Parity Index (GPI) indicates that girls are highly marginalized in the North Eastern region, while Nyanza region presents a unique situation where there are slightly more girls than boys.

Gross enrolment ratio (GER) is the proportion of the number of all pupils enrolled in primary school to the number of pupils of appropriate primary school age (6 – 14 years), and is expressed as a percentage. A high value indicates that there are many pupils who are under-age or over-age. Over-age population comprises those pupils who entered school late or have repeated classes. Central, Eastern, Western and Nyanza have high GER rates while Nairobi and North Eastern regions have the lowest rates.

Poverty, in this case, was defined as a single person living on less than KSh. 5,757 per month. From Table 1.1 poverty levels were highest in North Eastern and Coast regions. The lowest levels of poverty in Kenya were registered in Nairobi and Central regions.

The need to devolve government and make it more responsive to the needs of Kenyans has led

to decentralization of administration. At the time of writing this report, 47 counties had been established as centers of devolved government according to the Constitution of Kenya 2010, replacing the regions as administrative entities.

1.3 The Structure of Kenya's Education System

The structure of education in Kenya is 8-4-4, which translates to 8 years of primary, 4 years of secondary, and 4 years of university/tertiary education. Education transition is pegged on the performance in national examinations namely, the Kenya Certificate of Primary Education (KCPE) and the Kenya Certificate of Secondary Education (KCSE). These examinations are used as criteria for selection to secondary and university/tertiary levels. Primary to secondary transition rates have improved over the years, from 55.0 percent in 2009 to 74.7 percent in 2013, and 79.6 in 2014.

1.3.1 Primary Education

The introduction of Free Primary Education (FPE) in 2003 was a milestone in the provision of education in Kenya. This was in line with the Education for All (EFA) Goals as stated in the Dakar (2000) Framework of Action. Later, in 2010, the right to education was enshrined in the Constitution of Kenya (2010) as a basic right. Article 43 (1) (f) states that 'Everyone has a right to education.' Further, Article 53 (1) (b) states that 'Every child has the right to free and compulsory basic education.' The Basic Education Act of 2013 provides the legal framework for implementation of the constitutional obligations in the education sector. The Basic Education Act, Article 39 lists the obligations of government towards provision of quality basic education as to:

(a) provide free and compulsory basic education to every child;
(b) ensure compulsory admission and attendance of children of compulsory school age at school or an institution offering basic education;
(c) ensure that children belonging to marginalized, vulnerable or disadvantaged groups are not discriminated against and prevented from pursuing and completing basic education;
(d) provide human resource including adequate teaching and non-teaching staff according to the prescribed staffing norms;
(e) provide infrastructure including schools, learning and teaching equipment and appropriate financial resources;
(f) ensure quality basic education conforming to the set standards and norms;

(g) provide special education and training facilities for talented and gifted pupils and pupils with disabilities;
(h) ensure compulsory admission, attendance and completion of basic education by every pupil; and
(i) monitor functioning of schools.

The operationalization of this Act is expected to improve the gains accrued from the FPE policy of 2003 in regard to access, equity and quality of education. For instance, the Net Enrolment Rates (NER) improved from 87.5 percent in 2009 to 88.1 percent in 2013 while retention rates improved from 84.3 percent (Class 1 to 6) to 98.0 percent in the same period. Completion rates improved from 86.5 in 2009 to 80.0 percent in 2013, and transition rates from 55.0 percent to 74.7 percent in the same period.

1.3.2 Secondary and Higher Education

For secondary education, the curriculum offers both compulsory and elective subjects. In the first and second year, students study twelve subjects while in the third and the fourth years they specialize and study between a minimum of seven and a maximum of nine subjects. Mathematics, English and Kiswahili are, however, compulsory at all levels of secondary education. Performance in Mathematics, English and Kiswahili influences students' admission to various specialized courses at university/tertiary institutions.

University education is the apex of the educational ladder and provides high level skills. In 2013, there were 22 public universities and 17 private universities. By the end of 2016, this number had grown to 30 public chartered and 18 private chartered universities.

1.4 Teacher Education and Training

By 2016, Kenya had over 18 public universities offering bachelors degrees in education. There were also 105 primary teacher training colleges (PTTCs) comprising of 18 public and 87 private colleges. In addition there were 24 diploma teacher training colleges. The annual output of qualified teachers increased from 12,000 in 2007 to 16,179 in 2013. To enhance performance in Science and Mathematics a programme for Strengthening of Mathematics and Science in Secondary Education (SMASSE) was cascaded to primary school teachers.

1.5 Objectives and Policy Priorities

According to the National Education Sector Plan (NESP) 2013-2018, the overall objectives of the education sector are to:

(a) ensure equitable access, attendance, retention, attainment and achievement in education, science, research and technology by ensuring affordability of education services;
(b) ensure provision of affordable and quality education services;
(c) mobilize resources for sustainable and efficient delivery of relevant education and training, educational research, technological and other educational services;
(d) ensure co-ordination of the provision of education and training for efficient delivery of services between government, donors, NGOs and communities; and
(e) promote and popularize a Science and Technology Culture.

The Sessional Paper No. 14 of 2012 specifies goals of basic education. These include, to:

(a) ensure provision of free and compulsory basic education to all children of school going age;
(b) ensure access, equity and quality across all levels of basic education by 2020;
(c) eliminate gender and regional disparities in basic education by 2017;
(d) improve the quality of education and training so that Kenya's measureable learning outcomes in literacy, numeracy, scientific and communication skills are in the upper quartile on recognized International Standardized Tests by 2017;
(e) equip schools to ensure that all pre-primary, primary, and secondary schools meet minimum quality standards of teaching and learning by 2017;
(f) revise teachers conditions of service, institute performance contracts by 2013;
(g) strengthen quality assurance services in schools;
(h) review and develop guidelines for the establishment, registration and operation of pre-primary education centres including specifications on physical facilities, equipment, materials and qualifications of personnel required to operate them by 2015;
(i) require all primary schools to have a functioning pre-primary section, with admissions not subjected to entry interviews or examinations by 2015;
(j) create the conditions necessary to ensure that effective teaching of science, technology and ICT takes place in all schools by 2015;
(k) ensure that the design, implementation and assessment of the system of education is aligned to the Constitution of Kenya (2010) and the national development goals, including Kenya Vision 2030; and

(l) strengthen the quality of management capacities amongst education managers and other personnel involved in education at all levels including Boards of Management (BOM) by December 2013.

1.6 Management and Administration Of Education And Training

The MoE has the overall responsibility to manage all aspects of education and training. It is responsible for the education sector policy, planning, and development of sector strategies and regulation in the provision of education and training services. The management structure at the ministry headquarters includes the Cabinet Secretary, three Principal Secretaries as the accounting officers, the Director General, and Directors heading various directorates. The Director General oversees the operations of the directorates and reports to the Principal Secretary. The structure also includes a number of Semi Autonomous Government Agencies (SAGAs) responsible for the development and management of the various aspects of education and training.

1.7 Financing of Education

According to the Sessional Paper No. 14 of 2012, financing and resource mobilisation of education and training is guided by the principles of affordability; needs-based resource allocation including capitation grants; efficiency in resource utilization; partnerships; strong decentralized financing and accountability systems; and effective coordination. Overall, education and training financing sources include financial outlays by central and county governments, private sector providers of educational services, religious organizations, civil society, foundations, the private sector and Non-Governmental Organizations (NGOs), households, communities and other stakeholders.

A necessary precondition for the realization of the constitutional right to free and compulsory basic education is that central budgets match the demand.

It is worth noting that public spending on education and training increased from Ksh.92.6 billion in 2005/6 to Ksh.160 billion in 2009/10; accounting for 28 percent of the aggregate public expenditure in 2005/6 and 26 percent in 2009/10. The country's education expenditure as a percentage of GDP remained fairly constant, ranging from 6.1% in 2005/6 to 6.4 % in 2009/10. Recurrent spending, predominantly administration and teachers' salaries, accounted for 91% of education sector public spending in 2009/10.

The unit public spending at secondary education was 3.8 times higher than that of primary education in 2010 and constituted 58 percent of the GDP per capita. Technical and university education public unit spending was 8 times and 14 times higher than that of primary education respectively. Public spending per capita at technical and university education was 124 and 214 percent of the GDP per capita which was about Ksh.56,267 in 2010 at market prices. These costs exclude the off-budget expenditures such as household spending on education and off-budget financing by development partners and NGOs.

The funds from the national government to schools are disbursed into two accounts: Schools Instructional Materials Bank Account (SIMBA) for the purchase of learning and teaching materials, and General Purpose Account (GPA) that caters for repairs, maintenance, water, sanitation and conservancy expenses. This financing is aimed at ensuring access, equity, quality and retention for all. However, there have been a number of challenges in financing education such as:

a) Inadequate budgetary allocations; for instance, the capitation grant for primary schools is currently at Kshs.1,420 only.
b) Lack of accountability in the utilization of devolved funds at school and constituency levels;
c) Lack of effective monitoring and evaluation of programs and projects; and
d) Delays in completion of infrastructural projects due to design and procurement challenges, leading to under-expenditure.

1.8 Educational Policy Reviews and Reforms (2003 To 2012)

1.8.1 Background to Educational Policies in Kenya

Educational review and reform activities are informed by the work of earlier education commissions, task forces and working groups. These include: the Kenya Education Commission (Ominde Report, 1964); the National Commission on Educational Objectives and Policies (Gachathi Report, 1976); the Presidential Working Party on the Second University in Kenya (Mackay Report, 1981); the Presidential Commission on Development and Employment in Kenya: A Strategy for the Transformation of the Economy (Kamunge Report,1988); and Totally Integrated Quality Education and Training: Commission of Inquiry into the Education System of Kenya (Koech Report, 1999).

Over the years, the education sector in Kenya has focused on promoting access, retention, equity, quality and relevance, which have implications for the sector's efficiency. The Ministry of Education has therefore initiated key reforms to make education more responsive to the needs of the country and in alignment to international declarations of Education for All (EFA) and Millennium Development Goals (MDGs).

1.8.2 Free and Compulsory Primary Education:

In January 2003, the Government of Kenya introduced Free Primary Education (FPE) to give equal opportunities for access to basic education. In November the same year, a national stakeholders' conference deliberating on challenges for education and training in Kenya in the 21st Century made recommendations that were consolidated into Sessional Paper Number 1 of 2005 on *Policy Framework on Education, Training and Research*. This policy has been guiding the education sector since then. Later, in alignment with the Constitution of Kenya (2010), the Sessional Paper No. 14 of 2012 outlined policy provisions which address the constitutional requirements and national aspirations as well as offer direction in modernizing and rebranding the country's education and training system.

1.8.3 Kenya Education Sector Support Programme (KESSP)

The Kenya Education Sector Support Programme (KESSP) 2005-2010 was developed as an implementation plan for the Policy Framework on Education, Training and Research. KESSP was designed through a Sector Wide Approach to Planning (SWAP) as a pro-poor programme aimed at reducing the household cost burden of financing education previously borne by parents.

KESSP consisted of 23 investment programmes including some targeted interventions to address equitable and inclusive basic education. The targeted interventions include: School Health and Nutrition, School Infrastructure Improvement, Primary School Instructional Materials, Gender in Education, Expanding Education Opportunities in ASAL, Special Needs Education, HIV and AIDS in Education, Non Formal Education, and Guidance and Counseling. Among the achievements of these interventions is the increased access to primary education. Enrolment at primary school level at the end of 2012 stood at 9.4 million compared to 6.1 million in 2002, while GER and NER stood at 109.8% and 91.4% in 2010 up from 88.2% and 77.3%, respectively in 2002. However, there was a decline in enrolment between 2009 and 2012. The GER and NER in 2012 were 106.4% and 88.0%, respectively. The increased enrolment over the period 2003 to 2010 led to overstretched physical facilities and decreased

Teacher/Pupil Ratio (TPR). Gender Parity Index (GPI) stood at 0.94 in 2009 and increased to 0.96 in 2012, showing near gender parity, though regional disparities still persist. In collaboration with Development Partners, Civil Society, and NGOs, the GoK has made deliberate efforts to address the needs of marginalized groups with a view to bringing them into the mainstream education system for sustainable development.

1.8.4 Other policy documents

As the government continues to commit more resources to the education sector, it is imperative that feasible policies and strategies are implemented, to ensure that expected outcomes and outputs are achieved. Policy and legal framework documents that focus on the attainment of EFA and MDGs include: Economic Recovery Strategy for Wealth and Employment Creation (ERSWC) 2003-2007; the Sessional Paper No. 1 of 2005 on Education, Training and Research; Education Sector Policy on HIV and AIDS (2004); Gender in Education (2007); the Non- Formal Education Sub-Sector Policy (2008); Special Needs Education Policy (2008); and the Nomadic Education Sub-Sector Policy (2010). Some of the documents are outlined below.

1.8.5 The Kenya Vision 2030

Kenya Vision 2030 is an economic blue print for accelerating Kenya's transformation into a rapidly industrializing middle income nation by 2030. It was developed after the successful implementation of the Economic Recovery Strategy for Wealth and Employment Creation over a period of 5 years (2003-2007). Education is one of the components of the Social Pillar that is expected to provide skills required for the 21st Century. The vision also aims at creating a cohesive, equitable and just society based on democratic principles.

1.8.6 The Constitution of Kenya (2010)

The Constitution of Kenya, promulgated in August 2010, affirms the right to education for every person including persons with disabilities, the minorities and marginalized groups as stipulated in Chapter Four (Bill of Rights), Article 43 (1) (f), Article 53 (1) (b) and Article 54 (1) (b). Further, Article 55 (a) commits the state to take measures including affirmative action to ensure citizens access relevant education and training. In addition, the Constitution introduces major reforms on devolution across all sectors.

In order to review and re-align the education, training and research sector to the Constitution, the Task Force on the Re-alignment of the Education Sector to the Constitution of Kenya (2010)

was commissioned in January 2011. The task force was also mandated to review the education system in relation to: relevance and responsiveness of the curriculum to the new constitution and Vision 2030; improving access, equity, quality and transitional issues; and suggesting a new structure of education (Kenya Gazette No. 1063). The task force compiled and drafted a comprehensive education report; proposed a sessional paper; and drafted an education bill, a cabinet memorandum and policy brief. From the recommendations of the task force, two sessional papers were developed and launched:

a) Sessional Paper Number 14 of 2012, A Policy Framework for Education and Training;

b) Sessional Paper Number 28 of 2013, A Policy Framework for Science, Technology and Innovation.

Based on the policies and strategies articulated in the two policy documents, the following pieces of legislation were enacted by Parliament:

i. Basic Education Act, 2013;
ii. Kenya National Examinations Council Act, 2012;
iii. The Teachers Service Commission Act, 2012;
iv. The Science, Innovation and Technology Act, 2013;
v. The Education Standards Quality Assurance Council Act, 2013;
vi. The Technical and Vocational Training Act, 2013;
vii. The Kenya Institute for Curriculum Development Act, 2013.

These Acts provide a legal framework for provision of quality education and training.

1.8.6 National Education Sector Plan (NESP)- 2013-2018

The National Education Sector Plan (NESP) emphasizes a holistic and balanced development of the entire education sector, which is embodied in recent legislation, including the Basic Education Act 2013. The NESP Implementation Plan focuses on the urgent need to enroll all students in basic education, raise literacy and numeracy levels, reduce existing disparities, and improve the quality of education with a focus on teacher quality, school level leadership, more effective applications of teacher training in the classroom, increasing resources to the education sector, and targeting improvements and monitoring key results.

1.9 The Main Policy Concerns of the Ministry of Education

1.9.1 Expanding Education Opportunities in Arid and Semi-Arid Lands

The overriding policy concern of the Ministry of Education is to provide Education for All (EFA)

by 2015 and quality Universal Primary Education (UPE). The Task Force on Realignment of the Education Sector to the Constitution of Kenya (2010) recommended operationalisation of the Nomadic Education Policy framework. The policy framework was aimed at providing broad guidelines for the coordination and harmonization of efforts in the delivery of quality educational services to the nomadic communities in Kenya. It also recommended the establishment of the National Council for Nomadic Education in Kenya (NACONEK). The role of the council was to steer efforts towards education for all in the targeted communities.

1.9.2 Developing Responses to Social problems Affecting Learners and Teachers

Interventions have been put in place to address social problems such as HIV/AIDS, drug abuse, and other anti-social practices. This includes the review of the Education Sector Policy on HIV/AIDS in 2013. The revised policy provides the framework for prevention, treatment, care and support as well as the management of response within the education sector at all levels. The policy also proposes a strengthened coordination mechanism to improve implementation of HIV/AIDS interventions by various stakeholders.

1.9.3 Closing the Gender gap and Eliminating of Gender biases in the Education Sector

In order to enhance gender equality in the provision of education at all levels, the Ministry of Education undertook the review of the Gender in Education Policy (2007) in 2015. The revised policy's overall goal is to promote gender equality in regard to access, equity and equality in the education sector and to enhance empowerment for effective participation and contribution in national development by all. Ultimately this policy will work towards ensuring inclusiveness in issues of gender, empowerment and mainstreaming of needs and concerns of women, men, girls and boys in the sector. The general objective of the Gender Policy is to eliminate all gender disparities and inequalities in education, create a gender responsive learning and work environment, and enhance gender sensitive and responsive governance and management in the education sector.

1.9.4 Ensuring that Children with Special needs fully Participate in Learning Activities at all Levels

To ensure that the universal right to education is extended to individuals with special needs and disabilities, the National Special Needs Education Policy Framework was developed in 2009. The policy framework provides guidance to all actors involved in provision of special needs education to ensure consistency and coordination in implementation. It aims at

eliminating disparities and enhancing equity and equality for all learners and particularly inclusion of learners with special needs and disabilities in the education system.

However, special needs education has not been fully mainstreamed across the education sector. Clear guidelines and resources are required to implement the policy on inclusive education in schools.

1.10 The Role of SACMEQ in Educational Policy, Research and Training in Kenya

Since 1995 when Kenya became involved in the SACMEQ project, there are a number of benefits that have been derived from this participation. The most important is the entrenchment of the monitoring and evaluation culture in Kenya's education system. The results of this activity have become an integral part of policy-making in the education sector.

Through training, mentoring and exposure to international standards provided by the International Institute for Educational Planning (IIEP) and SACMEQ Coordination Centre (SCC), Kenya has built an effective capacity to manage national assessments. Participation in successive studies has built the capacity of the country's researchers and planners in the use of modern research methods, sampling and data processing techniques. Another key merit of this engagement is the development of capacity in data analysis, report writing, policy development and dissemination. Further SACMEQ reports have been valued for their robust findings and policy suggestions.

The implementation of the Free Primary Education (FPE) Policy adopted some key policy suggestions from SACMEQ I which included the Non Formal Education Programme, provision of instructional materials, and in-service teacher training (INSET) development. The outcome of this has been the provision of an all-inclusive quality education that is accessible and relevant to all, including the most vulnerable and marginalized groups. The policy research findings of SACMEQ II sought to address policy issues related to quality of education. Direct policy interventions informed by SACMEQ II findings included the provisions for over-age children, reduction of the curriculum load, and the promotion of a gender sensitive curriculum. SACMEQ III policy recommendations included: improving teaching/learning; improving parental and community involvement for quality education; addressing gender issues and human capacity development, especially in-service training; improving learning achievement, especially in Literacy and Numeracy; and mitigating the effects of HIV/AIDS in schools.

SACMEQ research is an international research in which standardized tests are administered in different education systems. Kenya therefore has been able to benchmark its performance with

that of other countries within the eastern and southern Africa region, and make an estimate of its relative progress in the achievement of quality education for all.

1.11 The SACMEQ IV General Policy Concerns

The starting point of the SACMEQ research project is the consultation held between the National Research Coordinator (NRC) and key decision makers in the Ministry of Education where the country-specific educational research agenda are defined. The information gathered is debated and refined by the SACMEQ NRCs, the outcome of which is the respective Project's General Policy Concerns. The SACMEQ IV Project sought to respond to the following 21 General Policy Concerns.

General Policy Concern 1: What are the individual (for example, age and gender) and home background characteristics (for example, parent education, regularity of meals, home language, etc.) of Standard 6 pupils that might have implications for monitoring equity, and/or that might impact upon teaching and learning?

General Policy Concern 2: What are the school context factors experienced by Standard 6 pupils (such as location, absenteeism (regularity and reasons), class repetition, and homework (frequency, amount, correction, and family involvement)) that might impact upon teaching/ learning and the general functioning of schools?

General Policy Concern 3: Do Standard 6 pupils have sufficient access to classroom materials (for example, textbooks, readers, and stationery) in order to participate fully in their lessons?

General Policy Concern 4: Do Standard 6 pupils have access to library books within their schools, and if they have access, is the use of these books being maximized by allowing pupils to take them home to read?

General Policy Concern 5: Has the practice of Standard 6 pupils receiving extra lessons in school subjects outside school hours become widespread, and are these paid lessons?

General Policy Concern 6: What are the personal characteristics of Standard 6 teachers (for example: age, gender, and socio-economic level), and what is the condition of their housing?

General Policy Concern 7: What are the professional characteristics of Standard 6 teachers

(in terms of academic, professional, and in-service training), and did they consider in-service training to be effective in improving their teaching?

General Policy Concern 8: How do Standard 6 teachers allocate their time among responsibilities concerned with teaching, preparing lessons, and marking?

General Policy Concern 9: What are Standard 6 teachers' viewpoints on (a) pupil activities within the classroom (for example, reading aloud, pronunciation, etc.), (b) teaching goals (for example, making learning enjoyable, word attack skills, etc.) (c) Teaching approaches/strategies (for example, questioning, whole class teaching, etc.), (d) assessment procedures, and (e) meeting and communicating with parents?

General Policy Concern 10: What is the availability of classroom furniture (for example, sitting/ writing places, teacher table, teacher chair, and bookshelves) and classroom equipment (for example, chalkboard, dictionary, maps, book corner, and teacher guides) in Standard 6 classrooms?

General Policy Concern 11: What professional support (in terms of education resource centres, inspections, advisory visits, and school head inputs) is given to Standard 6 teachers?

General Policy Concern 12: What factors have the most impact upon teacher job satisfaction?

General Policy Concern 13: What are the personal characteristics of school heads (for example, age and gender)?

General Policy Concern 14: What are the professional characteristics of school heads (in terms of academic, professional, experience, and specialized training)?

General Policy Concern 15: What are the school heads' viewpoints on general school infrastructure (for example, electrical and other equipment, water, and basic sanitation) and the condition of school buildings?

General Policy Concern 16: What are the school heads' viewpoints on (a) daily activities (for example, teaching, school-community relations, and monitoring pupil progress), (b) organizational policies (for example school magazine, open days, and formal debates), (c)

inspections, (d) community input, (e) problems with pupils and staff (for example, pupil lateness, teacher absenteeism, and lost days of school)?

General Policy Concern 17: What are the pupils' (a) knowledge levels about HIV and AIDS? (b) sources of information about HIV and AIDS? (c) attitudes towards HIV and AIDS?

General Policy Concern 18: What are the teachers' (a) knowledge levels about HIV and AIDS? (b) Sources of information about HIV and AIDS? (c) attitudes towards HIV and AIDS?

General Policy Concern 19: What are the school heads' attitudes towards HIV and AIDS? (b) What are the school policies regarding teachers with HIV and AIDS?

General Policy Concern 20: What are the levels (according to Rasch scores and descriptive levels of competence) and variations (among schools and regions) in the achievement levels of Standard 6 pupils and their teachers in Reading and Mathematics – for Kenya country and for all other SACMEQ countries? SACMEQ studies have continued to play a critical role of informing educational reform and contributing to policy planning. Results from SACMEQ IV study, which can be said are anticipated to play an evaluative role of the first decade FPE programme will inform the implementation of NESP as well as contributing to the development of the medium terms sector plans. Secondly, SACMEQ III results on HIV and AIDS on the levels of knowledge, attitudes and practices in Kenyan primary schools informed the review of the Education Sector Policy on HIV and AIDS (2013). It is envisaged that findings from SACMEQ IV should inform future programmes, and especially as prevalence of HIV/AIDS remains a challenge and particularly among the youth.

General Policy Concern 21: What is the Reading and Mathematics achievement levels of important sub-groups of Standard 6 pupils and their teachers (for example, pupils and teachers of different genders, socio-economic levels, and locations)?

1.12 The Structure and Content of this Report

The first two chapters are introductory in nature while the next 5 present the findings of the research. The last two chapters present the analysis and conclusion, and it is from here that the policy suggestions are derived and presented in the last chapter.

Chapter 1 discusses the socio-economic environment, as well as the structure and content of Education in Kenya. **Chapter 2** is concerned with the methodology used in this study. In particular, the chapter looks at sampling techniques, research instruments and data collection procedures. **Chapter 3** deals with pupils' characteristics and the quality of their learning environment. **Chapter 4** looks at the characteristics of teachers and their views on their work environment and professional issues. In **chapter 5,** discusses the characteristics of school heads and their views on educational infrastructure as well as the organization and operations of schools. **Chapter 6** highlights knowledge, attitudes and practices concerning HIV and AIDS among pupils, their teachers and head teachers. **Chapter 7** presents achievement of pupils and teachers in Reading and Mathematics, while further analyses of factors that affect pupil achievement are presented in **Chapter 8. Chapter 9** presents conclusions, key recommendations and policy suggestions.

CHAPTER 2

2.0 THE CONDUCT OF THE STUDY

2.1 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 similar instruments which must be kept confidential to remain valid. The methodology and instruments that were used in the SACMEQ IV project in 2013 were, therefore, similar to those in, SACMEQ II, and III. The SACMEQ IV research project also includes HIV and AIDS knowledge test (HAKT) for Grade 6 pupils and their teachers.

The SACMEQ IV project represents 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 fourteen school systems: Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania (Zanzibar), Uganda, Zambia, Zimbabwe and Kenya. 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 which learners and their teachers have about HIV and AIDS. The main data collection covered a total of **62, 218** pupils, **6, 667** teachers, and **2, 507** school heads.

In this chapter, specific aspects of the methodology followed in SACMEQ IV project are outlined. They include a description of the sample used, data collection, cleaning and analysis.

2.2 The Study Population

(a) Desired Target Population

The desired target population definition for SACMEQ IV Project was as follows:

"*All learners at Grade 6 level in 2013 (at the first week of the eighth month of the school year) who were attending registered mainstream (primary) schools.*"

The desired target population definition for SACMEQ IV Project was exactly the same (except for the year) as was employed for the SACMEQ I, II and III Projects. This consistency was

maintained in order to be able to make valid cross-national and cross-time estimates of 'change' in the conditions of schooling and the quality of education.

(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 and III, special schools which provide education to learners with severe educational needs were excluded from SACMEQ IV sample. 'Small' mainstream schools which had less than 15 learners enrolled in Grade 6 in 2013 were also **allocated** to the excluded from the desired target 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 have been presented.

Table 2.1: Desired, Defined and Excluded Populations

	Desired			**Defined**			**Excluded**	
	Schools	Pupils		Schools	Pupils		Schools	Pupils
Kenya	22,505 (100.00%)	790,111 (100.00%)		18,947 (84.19%)	757,705 (95.90%)		3,558 (15.81%)	32,406 (4.10%)

From the last column of Table 2.1, it can be observed that the excluded population of learners was 4.10 percent, which is less than the stipulated 5 percent to meet the SACMEQ criteria for accuracy in large-scale assessment data.

2.3 Data Collection

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

2.3.1 Preparations for the main data review

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 2011 SACMEQ Assembly of Ministers took a decision to conduct SACMEQ IV project in 2013, 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 2012 and 2013, the SACMEQ Coordinating Centre hosted at least three working sessions for the NRTs in Nairobi (Kenya), Lusaka (Zambia), and Pretoria (South Africa) 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, Mathematics and Health Knowledge test items. SACMEQ IV test items were piloted, first in a few primary schools in South Africa, and then in individual member countries. The pilot study was intended to ensure that the language in SACMEQ IV tests was accessible to learners, that there were no cultural biases in the items, and learners comprehended how to write their responses.

In some countries the tests were subsequently translated into respective language(s) of instruction (Kiswahili, Portuguese). Care was taken to ensure that translation from English to other languages used for the tests retained the same meaning to avoid unfair advantage in any of the language(s).

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

(b) Communication to Schools

Officials in the respective Ministries of Education informed the sampled schools through the regional offices in mid-2013. The National Research Teams were responsible for distributing the data collection schedules, intensifying and monitoring communication to schools and data collectors.

(c) Printing and Distribution of Data Collection Instruments

Data collection instruments included: a) School Head Booklets, b) School Information Booklets, c) Teacher Booklets, d) Pupil Booklets e) Pupil Name Forms, and f) School Forms. Each participating country received print-ready copies from the Coordinating Centre and was responsible for printing adequate numbers of copies for their respective schools.

When all instruments were printed, the NRTs conducted a 'hand check' of all materials so as to verify that there were no missing/extra pages, 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 'leakage' of information about the content of the learner and teacher Reading, Mathematics and Health Knowledge tests.

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

(d) Training of Data Collectors

On the first day of training, the NRT presented a 'simulated' data collection exercise in which they 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 sets out, 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 so that all data collectors understood the procedures to be completed within schools.

(e) Main Data Collection

'Main Data Collection' in this report refers to the actual field work. Three data collectors were assigned to each sampled school to carry out the data collection exercise. Special effort was made to ensure that data collection was 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 sampled schools, in all countries, and 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 IV data collection occurred, for most SACMEQ Ministries of Education, in the period between September and December 2013. In Kenya, data collection was carried out during the third week of October 2013.

Two days of data collection were required for each sampled school. On the first day the data collectors had to sample learners from all the Grade 6 classes in the sampled schools, using Random Tables provided. The sampled learners were then given the Pupil Questionnaire, the HAKT and the Reading test. On the second day they were given the Mathematics test. Part of the Pupil Questionnaire required learners to get confirmation of the accuracy of the information from their parents; therefore, the questionnaires were taken home by the pupils 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 Skills/Health 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 (Pupil, 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 Regional Coordinator for safekeeping, 'hand editing' and dispatching to the National Research Coordinator (NRC) at the Kenya National Examinations Council as soon as all data collection was completed.

2.4 Sampling and 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. In the second stage of sampling, learners were sampled from all the Grade 6 classes in each of the sampled schools using Simple Random Sampling. Computer-generated random numbers were used to facilitate the sampling of pupils. 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 IV project the reader, may refer to Ross and Saito (in press). The numbers of schools and learners in the planned and actually achieved sample are presented in Table 2.2.

Table 2.2: Planned and Achieved Samples for SACMEQ IV

Schools		Learners	
Planned	**Achieved**	**Planned**	**Achieved**
230 (100.0%)	224 (97.4%)	5,750 (100.0%)	5,325 (92.6%)

2.5 Response Rates, Design Effects and 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 SACMEQ IV project are presented in **Table 2.3.**

Figures in the first two columns under the heading 'Response Rate (%)' in **Table 2.3** are the response rates for schools and learners, respectively. The third, fourth and fifth columns under the heading 'Design Effect' 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 Size' 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 SACMEQ IV

	Response Rate (%)		Design Effect			Effective Sample Size		
	Schools	**Pupils**	**Reading**	**Maths**	**HAKT**	**Reading**	**Maths**	**HAKT**
	97.4	92.6	10.67	9.63	9.56	286	317	319

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 participated 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 percent. The response rates for schools and pupils were 97.4% and 92.5% respectively. This meets the International Association for the Evaluation of Educational Achievement (IEA) standards for large scale educational assessments.

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. In SACMEQ IV, the design effect for Reading, Maths and HAKT were 10.67, 9.63 and 9.56 respectively, which indicated that the variance of the sample estimates of the variance of pupil scores for Kenya were about 10 times larger than would be expected for a simple random sample of the same size. 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. The sample designs used in SACMEQ IV Project were selected so as to meet the standards set 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 is 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). The effective sample sizes for Reading (286), Maths (317) and HAKT (319) were below the target value of 400 pupils. Generally, the 'Effective Sample Size' will be smaller than the given actual multi-stage sample. Possible inaccuracies in this calculation may be due to the fact that not all the sampled pupils took all three tests.

2.6 Data Entry, Data Checking and Data Cleaning

In this section, the processes that were followed at national level to check, enter and clean the data have been described. Data preparation started soon after data collection was completed. The NRCs organized safe return of all materials to the Kenya National Examinations Council where data collection instruments could be checked, data captured, and then 'cleaned' to eliminate errors prior to data analyses. Data-checking involved 'hand editing' of data collection instruments by a team of trained staff. They were required to check that: (i) all questionnaires, tests, and forms had been brought back from the sampled schools, (ii) the identification numbers on all instruments were complete and accurate, and (iii) certain logical linkages between questions made sense (for example, the two questions to school heads concerning 'Do you have a school library' and "How many books do you have in your school library?")

The next step was the entry of data in computers using the Data Management Expert (DME) software. A team of sixteen (16) well trained data entry clerks undertook this exercise. The data entry teams were trained by technical staff trained earlier by the SACMEQ Director. The data entry manual provided by the SACMEQ Coordinating Centre was the main reference for data management guidelines and procedures. The DME software provided for a robust procedural data entry requirement. It is a user friendly platform with in-built mechanisms for data authentication, validation and verification to establish the accuracy of each variable captured. To ensure accuracy and quality of data, a second entry (double punch) was done for all instruments by different data punchers. Discrepancy checks between first and second entries were then performed and any errors corrected using the hard copy questionnaires.

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.

To clean the data, using the Data Management Expert (DME) 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.

2.7 Merging and Weighting

When data cleaning was complete, the NRT merged the data from all the sources and submitted to SACMEQ Coordinating Centre for further processing. At the Coordinating Centre, a further 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 were 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, Reading, and Health teacher, (c) the questionnaire data for his/her school head, and (d) school and learner forms.

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 SACMEQ IV 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. (2004).

2.8 Analyzing the Data

The data analyses for SACMEQ IV Project were very clearly defined because they were focused 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 'socio-economic level' was constructed by combining re-coded variables related to learners' homes, and the number of possessions in learners' homes. Second, the Coordinating Centre used SPSS tools to populate Dummy Tables with appropriate estimates and corresponding sampling errors. NRTs were free to carry out further analysis of variables such as distance to HIV testing centre, HIV test status, sources of info on HIV, preferred HIV lesson activities, etc, that were not done by the Coordinating Centre.

2.9 Writing the SACMEQ IV National Reports

The NRT commenced the process of drafting their national reports in 2015. A working meeting held in Mbabane, Swaziland in February 2015 was organized to support the NRT in this work. This working meeting permitted the NRT to work together and exchange ideas concerning the policy implications of the research results.

2.10 Conclusion

The aim of this Chapter was to describe the research procedures that were, applied for the implementation of the SACMEQ IV project. The Chapter was prepared to give an overview of how the study was conducted in individual countries. The sample design procedures and the construction of the Reading, Mathematics and HAKT tests for learners and their teachers were to a large extent, modeled on the SACMEQ II and III projects.

Following the trend started in SACMEQ II project, the fourth SACMEQ project moved away from traditional approaches of calculating test scores (based on numbers of correct responses to test items) to the use of Modern Item Response Theory to generate descriptions of 'levels of increasing learner competence'. This approach to describing learner Reading, Mathematics and HAKT achievements 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

3.0 PUPILS' CHARACTERISTICS AND THEIR LEARNING ENVIRONMENTS

3.1 Introduction

In this chapter, selected information about personal characteristics of Standard 6 pupils in Kenya, their home background and learning environment is presented. Home and school environment, access to and use of teaching and learning materials are important variables for understanding learning outcome trends. These factors are considered important because research studies have consistently linked them with pupil academic achievement. Wasanga et al. (2010) showed that these factors have significant influence on learning outcomes in Kenya. Knowledge and awareness of these factors is central to making informed policy decisions at different levels of the educational sector. Further, this could inform strategies and approaches addressing contextual issues of access, equity and quality of education. The personal characteristics analysed were age and gender. The home background characteristics included parental education, number of meals eaten by pupils per day, speaking English language at home, pupil's place of residence during the school week, availability of reading materials at home and pupil's socio-economic status (as measured by the number of possessions at home). English language was selected because of the language policy in Kenya which stipulates that pupils in upper primary (Standards 4 to 8) are instructed in English which is also the language of examination at the end of the primary cycle.

With regard to school learning environment, the analysis focused on the distance covered by the pupil between home and school, which took into account: the urban and rural settings; frequency and reasons of absenteeism; grade repetition; frequency of homework assignments; family involvement in assisting pupils with the homework, and the extent to which teachers correct it. In addition, pupils' access to classroom and library materials as well as their participation in extra tuition was analysed.

This chapter addresses five general policy concerns:

1. What were the personal characteristics (for example, age and gender) and home background characteristics (for example, parent education, regularity of meals, home language, etc.) of Standard 6 pupils that might have implications for monitoring equity, and/or that might impact upon teaching and learning?

2. What were the school context factors experienced by Standard 6 pupils such as location, absenteeism and reasons for it, grade repetition, and homework (frequency, amount, correction, and family involvement) that might have impacted upon teaching, learning and the general functioning of schools?

3. Did Standard 6 pupils have sufficient access to classroom materials (for example, textbooks and stationery) in order to be able to participate fully in their lessons?

4. Did Standard 6 pupils have access to library books in their schools, and (if they did have access) was the use of these books maximised by allowing pupils to take them home to read?

5. Was the practice of Standard 6 pupils receiving extra lessons in school subjects outside school hours becoming widespread?

3.2 A Note on the Interpretation of the Data Analyses

In the interpretation of results in this study, it is imperative to stress that the variables discussed are based on the responses from a sample of pupils, teachers and school heads where data was collected, and this was taken as a representative sample of Kenya's pupils', teachers' and school head teachers' attitudes, perceptions and behaviours. In some tables, the Standard/Sampling Errors (SE) are provided. Where SE is provided, it should be noted that error distribution is multinomial, approximating normality across the dataset, that is, the distribution of each error term is binomial, because only two outcomes are possible for each observation, but when the error terms are accumulated across all the observations (as they are for estimation), the binomial errors approximate normality. The standard errors for means are also given in some tables and the principle applies for the upper and lower limits standard errors of sampling.

Kenya's data is presented as a sub-group of a larger dataset because the entire population sample involved participants from all the fourteen (14) SACMEQ IV participating countries. As such, percentages and means presented for a sub-group of pupils has a greater standard error than one presented for the sample as a whole. This occurs, in part, because the sample sizes for sub-groups are smaller than the total sample sizes. To gain a smaller SE, the Kenyan sample of participants would have had to be increased, incurring a higher budget in order to undertake much larger field data collections and data analyses.

3.3 Personal Characteristics of Pupils

General Policy Concern 3.1:

What were the personal and home background characteristics of Standard 6 pupils that might impact upon teaching and learning?

The major personal characteristic variables analysed in this section were age and gender. Home background characteristics were the parents' levels of education, frequency of meals served per day, use of English language at home, pupil's place of residence during the school week, availability of reading materials at home and the pupil's socio-economic status as measured by the number of possessions at home.

Pupil age and gender

What were the age and gender distribution of pupils?

The official age for primary school entry in Kenya is 72 months (6 years). Assuming that the pupil does not repeat subsequent classes, then by the time they are in Standard 6 they should be at least 132 months old (11 years). This means that by the time of the SACMEQ data collection (i.e. the month of September/October), their expected age would be 141 months (11.8 years). The national mean age during SACMEQ IV, was 150.8 months (12.6 years). This represented a difference of 14.3 months (1.2 years) above the expected Standard 6 age. This is a slight improvement in comparison to SACMEQ III where the national average age was 165.1 months (13.7 years).

Table 3.1 shows data on age and gender characteristics of pupils for SACMEQ III and SACMEQ IV, respectively.

Table 3.1: Age and Gender distribution in SACMEQ III and SACMEQ IV

Region	Pupil age in months				Pupil sex (%Female)			
	SACMEQ III		SACMEQ IV		SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE	%	SE	%	SE
Central	155.4	1.29	141.5	1.6	48.2	1.43	47.8	1.7
Coast	174.8	3.11	156.4	2.1	45.2	2.82	49.6	1.9
Eastern	167.5	1.69	148.0	1.3	52.9	2.1	46.4	3.7
Nairobi	155.1	2.75	139.2	1.2	49.7	1.71	47.7	3.0
North Eastern	179.5	3.04	159.2	7.7	25.9	3.84	29.6	4.9
Nyanza	163.7	1.63	154.4	1.6	47.4	1.75	51.2	1.8

Region	Pupil age in months				Pupil sex (%Female)			
	SACMEQ III		SACMEQ IV		SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE	%	SE	%	SE
Rift Valley	164.9	1.58	151.3	1.3	53.1	2.43	51.7	2.3
Western	171.6	1.48	153.8	1.6	45.2	2.97	54.3	1.4
Kenya	**165.1**	**0.7**	**150.8**	**0.7**	**49.3**	**0.93**	**49.7**	**1.1**

There were notable regional disparities in age of Standard 6 pupils against the expected age of 141 months (11.8 years). During SACMEQ IV, the region with the oldest pupils in Standard 6 was North-Eastern with the age of 159.2 months (13.3 years), lower from 179.5 months (15 years) during SACMEQ III. This was followed by Coast region whose mean age for Standard 6 was 156.4 months (13 years) down from 174.8 months (14.6 years) in SACMEQ III; then next was Nyanza region with a mean age of 154.4 months (12.9 years), which was an improvement from the previous 163.7 months (13.6 years) during SACMEQ III. Western region had a mean of 153.8 (12.8 years), which was an improvement from 171.6 months (14.3 years) during SACMEQ III. Finally, Eastern region had a Standard 6 mean age of 148.0 months (12.3 years) which was an improvement from 167.5 months (14 years) in SACMEQ III. As it can be seen from these descriptions, all regions recorded an improvement in the mean age for Standard 6 during SACMEQ IV.

It is likely that factors such as grade repetition, poverty, HIV and AIDS challenges, distances from home to school, and late entry to primary school, contributed to the noticeable proportion of over-age pupils in Standard 6 across these regions (UNESCO 2010). The region with the youngest pupils in Standard 6 was Nairobi with a mean age of 139.2 months (11.6 years), an improvement of the one recorded during SACMEQ III, of 155.1 months (12.9 years). The other regions in this category recorded a marked improvement in the pupil mean age in Standard 6, that is, Central region 141.5 months (11.8 years) down from 155.4 months (12.9 years) in SACMEQ III, and Rift Valley region down to 151.3 months (12.8 years) from 164.9 months (13.7 years) in SACMEQ III. However, the North Eastern region registered the highest improvement from 179.5 months (15 years) in SACMEQ III to 159.2 months (13.3 years) in SACMEQ IV.

Policy Suggestion 3.1:

There is need for the Ministry of Education and other stakeholders to carry out independent and focused action research on incidences of over-age pupil enrolment, and formulate appropriate interventions to mitigate the situation.

Concerning the distribution of pupils by gender, the national figures indicate a minor increase in the enrolment of girls from 49.3 percent in SACMEQ III, to 49.7 percent in SACMEQ IV. North-Eastern region still remained the lowest in girl enrolment in Standard 6 with 29.6 percent in SACMEQ IV and 25.9 percent in SACMEQ III which is a notable increase of 3.7 percent. Western, Rift Valley and Nyanza regions recorded the highest percentage girl enrolment in SACMEQ IV: 54.3 percent, 51.7 percent and 51.2 percent, respectively. The rest of the regions recorded girl enrolment percentages of 46.4 percent to 49.6 percent in Standard 6, but with some slight drops compared to the ones recorded during SACMEQ III.

Policy Suggestion 3.2:

There is need for action by all stakeholders to address gender disparities in enrolment particularly in the North-Eastern region and marginalized regions.

Parental education

What were the levels of parents' education?

Parental educational status has some bearing on children's education. Children whose parents have attained some education are likely to benefit from greater parental support in education than those whose parents do not have any education. The findings on parents' education levels are presented in **Table 3.2** and **Table 3.3.**

Table 3.2: Cross-tabulation of father's and mother's level of education (SACMEQ III)

		Mother's Education							
		No School	Some Primary	All Primary	Some Secondary	All Secondary	Some Post-Sec.	Completed Univ.	All Mothers
Father's Education	No School	67	20	7	5	1	0	0	100
	Some Primary	11	62	14	7	3	2	1	100
	All Primary	7	25	53	5	8	1	1	100
	Some Secondary	3	23	28	31	8	5	1	100
	All Secondary	3	8	24	17	42	5	1	100
	Some Post-Sec.	2	9	13	18	22	34	2	100
	Completed Univ.	2	5	5	5	18	12	53	100
	All Fathers	9	23	24	13	17	8	6	100

Table 3.3: Cross-tabulation of father's and mother's level of education (SACMEQ IV)

		Mother's Education							
		No School	Some Primary	All Primary	Some Secondary	All Secondary	Some Post-Sec.	Completed Univ.	All Mothers
Father's Education	No School	60.8	26.8	7.9	1.3	1.6	1.7	0.0	100.0
	Some Primary	10.0	63.4	15.7	3.4	2.7	3.6	1.2	100.0
	All Primary	3.8	18.0	58.1	6.1	7.5	4.4	2.2	100.0
	Some Secondary	1.3	12.5	28.6	40.1	10.7	4.6	2.3	100.0
	All Secondary	1.2	8.3	21.2	11.8	49.3	5.1	3.1	100.0
	Some Post-Sec.	1.6	5.2	12.2	6.7	20.1	36.1	18.2	100.0
	Completed Univ.	1.0	4.4	6.7	4.3	10.7	18.2	54.8	100.0
	All Fathers	5.8	19.2	23.5	9.8	16.7	11.6	13.3	100.0

From these tables, it can be seen that the most common level of a mother's education was all primary. This accounted for 24 percent of Standard 6 pupils in SACMEQ III and also 23.5 percent in SACMEQ IV. Overall the pattern in the levels of mothers' education has fairly improved between the two studies with 11.6 and 13.3 percent having some post secondary and completing university education respectively in SACMEQ IV compared to 8.0 and 6.0 percent in SACMEQ III. Further, only 5.8 percent of mothers of Standard 6 who were sampled had no schooling in SACMEQ IV compared to 9.0 percent in SACMEQ III.

Policy Suggestion 3.3:

The Ministry of Education, and particularly the Department of Adult Education, should carry out an evaluation of adult education programmes, especially for mothers, with a view to assessing its effectiveness and impact on pupils' education and learning outcomes.

Pupil meals per week

How often did pupils eat meals each week?

Pupils were asked the number of meals they had per day. In many cases, lack of regular meals may lead to lack of concentration and reduced effort and attendance at school. Hence, the regularity of meals is among other factors that contribute to the quality of learning at school. **Table 3.4** gives a summary of the frequency of meals per day for pupils in Standard 6 during SACMEQ III and IV.

Table 3.4: Means for meals per week

Region	SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE
Central	11.6	0.11	13.2	0.76
Coast	10.6	0.21	12.9	0.18
Eastern	11.2	0.14	12.4	0.36
Nairobi	11.3	0.13	12.7	0.00
North-Eastern	9.6	0.67	13.5	0.66
Nyanza	10.6	0.14	11.2	0.11
Rift Valley	11.6	0.08	12.2	0.03
Western	10.2	0.24	11.6	0.31
Kenya	**11.1**	**0.06**	**12.2**	**0.23**

As shown in **Table 3.4**, the national average of meals per week for Standard 6 pupils was around 12.2 for SACMEQ IV, which was a slight improvement compared to the results of SACMEQ III (11.1). The mean number of meals per week improved for all the regions with North Eastern region recording the highest improvement from 9.6 in SACMEQ III to 13.5 in SACMEQ IV. This could be attributed to the School Feeding Programme implemented in Arid and Semi-Arid Lands (ASALs).

Use of English Outside school

What percentage of pupils uses the language of instruction outside school?

The government policy stipulates that English should be used as the language of instruction in schools for pupils in Standard 4 upwards. However, in some regions local languages are used for instruction due to inadequate competence in English. Pupils were asked how often they spoke English outside school. For the purposes of reporting in Table 3.5, if pupils reported that they spoke the language 'sometimes', 'most of the time', or 'all the time', they were considered as having spoken the language of instruction at home.

Table 3.5: Means for pupils' use of English language outside school

Region	SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE
Central	88.0	2.75	80.4	3.00
Coast	93.1	1.16	84.5	2.37
Eastern	88.6	2.89	80.3	3.97
Nairobi	95.3	1.85	89.5	4.24
North Eastern	97.8	0.89	95.1	1.41
Nyanza	94.8	1.48	86.6	2.44

Region	SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE
Rift Valley	89.5	2.52	82.4	1.81
Western	90.9	1.84	86.2	2.23
Kenya	**90.9**	**0.96**	**83.7**	**1.13**

From **Table 3.5** the national percentage of pupils using English at home declined from 90.9 percent in SACMEQ III to 83.7 percent in SACMEQ IV. In regional comparisons, North Eastern region had the highest percentage of pupils who spoke English at home in both cases with 97.8 percent in SACMEQ III and 95.1 percent in SACMEQ IV. This was followed by Nairobi region with 89.5 percent, Nyanza region with 86.6 percent and Western region with 86.2 percent. The high percentages in North Eastern are notable and need further investigation in view of the fact that North Eastern region has the lowest adult literacy levels for men (64%) and women (21%) in the country (KNBS, 2010).

Pupils' living places

Where did pupils live during the school week?

The information concerning places of pupil residence while in school is important in order to assess the level of caregiver's support including moral, material and intellectual in determining pupils' levels of achievement. **Table 3.6** and **Table 3.7** give a summary of the places where pupils reside during school week.

Table 3.6: Place where pupils stayed during the school week (SACMEQ III)

Region	Home with Family		Home with Other People		Hostel/ Boarding Sch.		Orphanage		Others	
	%	SE	%	SE	%	SE	%	SE	%	SE
Central	90	4.86	1.4	0.43	7.6	4.92	0.2	0.18	0.9	0.44
Coast	94.9	1.62	3.3	1.07	1.0	0.71	0.3	0.27	0.5	0.54
Eastern	89.2	4.98	2.1	0.87	6.6	4.37	1.6	1.39	0.5	0.36
Nairobi	97.2	0.85	1.1	0.63	0.4	0.27	0.8	0.45	0.5	0.33
North-Eastern	81.6	5.15	1.4	0.72	14.9	4.93	0.0	0.0	2.0	0.76
Nyanza	95	0.89	3.2	0.65	0.8	0.35	0.7	0.31	0.3	0.24
Rift Valley	89.7	4.5	1.6	0.53	8.3	4.62	0.1	0.11	0.3	0.20
Western	96.2	1.13	2.4	1.08	0.6	0.4	0.0	0.0	0.8	0.34
Kenya	**92.2**	**1.58**	**2.1**	**0.29**	**4.6**	**1.55**	**0.5**	**0.22**	**0.5**	**0.12**

Table 3.7: Place where pupils stayed during the school week (SACMEQ IV)

REGION	Home with Family		Home with Other People		Hostel / Boarding Sch		Orphanage		Other	
	%	SE	%	SE	%	SE	%	SE	%	SE
Central	82.0	5.6	3.1	0.8	10.7	5.4	1.8	0.8	2.4	0.9
Coast	77.8	3.7	5.8	1.1	9.7	3.1	5.5	2.1	1.3	0.6
Eastern	80.5	4.2	9.0	3.0	7.5	3.0	1.8	0.6	1.2	0.6
Nairobi	94.0	1.7	1.2	0.7	3	1.1	0.4	0.4	1.5	0.7
North Eastern	85.5	4.8	5.7	2.6	7.0	2.4	1.0	0.7	0.8	0.6
Nyanza	75.2	4.0	9.5	1.8	7.6	1.4	4.7	1.3	3.0	1.3
Rift Valley	73.0	4.1	7.4	1.0	15.2	3.9	3.1	0.6	1.4	0.5
Western	82.2	2.3	7.1	1.3	5.3	1.1	4.3	1.1	1.1	0.7
Kenya	**78.3**	**1.7**	**7.1**	**0.8**	**9.7**	**1.4**	**3.2**	**0.4**	**1.6**	**0.3**

As shown in **Tables 3.6** and **3.7** above, the vast majority (78.3 percent) of pupils stay at home with their families across the nation which is a drop of 13.9 percentage points from SACMEQ III. Nairobi region has over 90 percent of their pupils staying at home with their families. Only 9.7 percent nationally are in hostel/boarding schools with Rift Valley region having the highest percentage at 15.2. Nyanza region has 9.5 percent of pupils staying with other people while Coast region has the highest number of children (5.5 percent) residing in orphanages.

Books at home

How many books did pupils have at home?

Books at home are essential to improve levels of reading (Duru-Bellat, 2004). Access to and use of reading materials beyond school is a critical input for learning. The results on the number of books at home are presented in **Table 3.8.**

Table 3.8: Means for pupils' books at home (SACMEQ III and IV)

Region	SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE
Central	20.5	10.05	12.3	3.80
Coast	9.8	2.17	19.4	4.67
Eastern	10.2	2.40	33.4	19.83
Nairobi	35.4	7.46	26.9	5.97
North Eastern	6.3	2.44	9.0	2.69
Nyanza	14.0	3.07	14.5	3.92
Rift Valley	10.1	1.73	7.5	0.85

Region	SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE
Western	7.9	1.35	12.2	2.66
Kenya	**13.1**	**1.67**	**16.4**	**4.32**

Table 3.8 shows that pupils reported having access to more reading materials at home during SACMEQ III compared to SACMEQ IV (13.1 and 16.4, respectively). All regions recorded an increase in the number of books at home except Central, Nairobi and Rift Valley that recorded a decrease from 20.5, 35.4 and 10.1 respectively during SACMEQ III compared to 12.3, 26.9 and 7.5 during SACMEQ IV.

Policy Suggestion 3.4:

To support reading and learning, parents/ guardians should be encouraged to provide books at home for their children. They can be guided on what to buy as well as being advised on their importance.

Pupil home possessions

What was the socio-economic background of the pupils in terms of home possessions?

Pupils were asked what sort of possessions were present in their homes, which included, a daily newspaper, weekly or monthly magazine, radio, TV set, video cassette recorder (VCR), cassette player, telephone, car, motorcycle, bicycle, piped water, electricity (mains, generator, solar), and a table to write on. The number of possessions owned in the home was summed for each pupil. The lowest score possible was zero and the highest 13. The summary of results is presented in **Table 3.9.**

Table 3.9: Means for pupils' home possessions

Region	SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE
Central	5.8	0.22	8.5	0.21
Coast	5.0	0.22	7.8	0.45
Eastern	4.5	0.31	7.5	0.56
Nairobi	8.1	0.45	9.4	0.34
North- Eastern	3.2	0.40	6.6	0.94
Nyanza	4.8	0.23	7.0	0.25
Rift Valley	5.0	0.25	7.2	0.23
Western	4.7	0.26	6.9	0.27
Kenya	**5.1**	**0.10**	**7.4**	**0.15**

The overall average number of possessions nationally increased from 5.1 in SACMEQ III to 7.4 in SACMEQ IV. In each region there was an improvement in possessions. This increase could be seen as a sign of an improving economy. However, there was considerable variation among the regions from a high of 3.4 (North Eastern) to a low of 1.3 (Nairobi).

According to (KNBS, 2015) North-Eastern is depicted as the least wealthy region with 76.3 percent of its population falling within the lowest wealth quantile thus corroborating these findings. Nairobi region had the highest number of possessions in both studies (8.1 in SACMEQ III and 9.4 in SACMEQ IV).

Pre-school attendance

How long did pupils attend pre-school before Standard 1?

Some studies have linked pre-school exposure with better future academic achievement, especially at primary school level. For example, Hungi (2011) analysing data from the SACMEQ III study, found that pupils who had attended pre-school for two or three years generally achieved better in Reading and Mathematics than pupils who had attended pre-school for shorter durations of time, or who never attended pre-school before joining Standard 1.

The percentages for various durations of pre-school are presented in **Figures 3.1** and **3.2.**

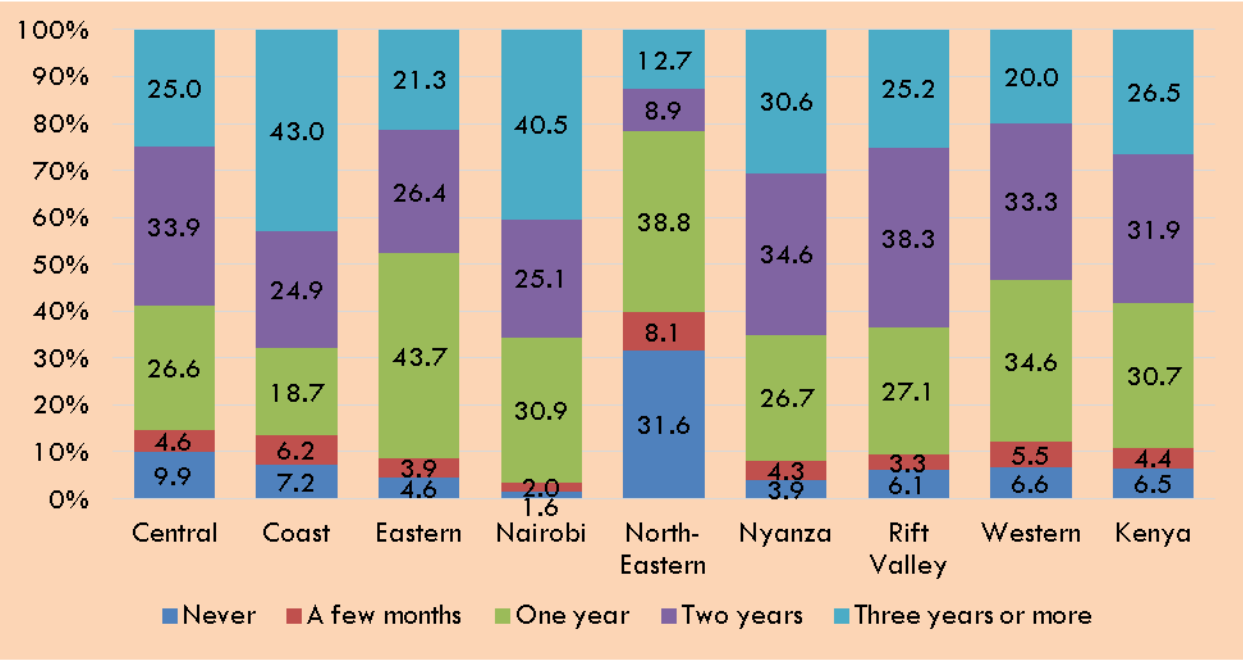


Figure 3.1: Percentages of Standard 6 pupils attending pre-school by regions

From **Figure 3.1,** it can be seen that majority of Standard 6 pupils had attended pre-school, with 58.4 percent having attended pre-school for two years and above. It can also be seen that there were large variations among the regions in pupil pre-school attendance. Coast was the region with the highest percentage of pupils attending pre-school for at least two years (67.9%) followed by Nairobi with 65.6 percent. North Eastern region had the highest percentage of pupils (31.6%) who had never attended this level of education. In this region, only 21.6 percent had attended pre-school for two or more years. Figure 3.2 presents percentages of standard 6 pupils attending pre-school by socio-economic status, gender and school location.

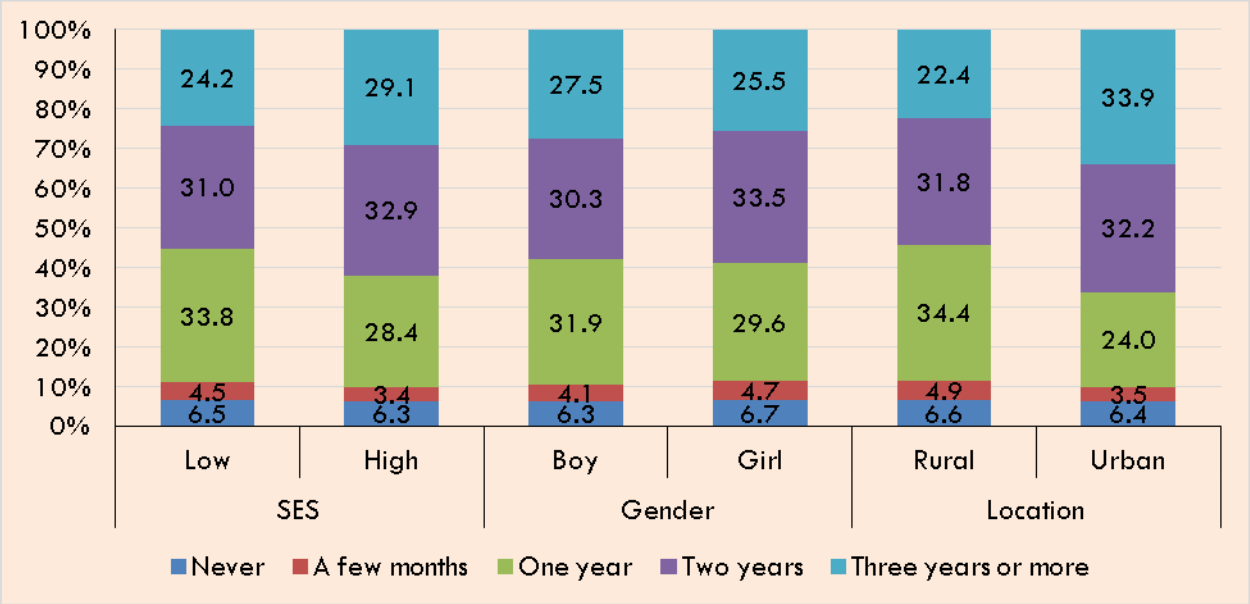


Figure 3.2: Percentages of Standard 6 pupils attending pre-school by socio-economic status, gender and school location

From Figure 3.2, it is evident that in SACMEQ IV, the percentages of pre-school attendance for at least two years for girls (33.5%) were better than for boys (30.3%). Pupils in urban schools (32.2%) had almost the same exposure to pre-school to their rural counterparts in this category (31.8%). As expected, pupils from higher socio-economic status (32.9%) were considerably more exposed to pre-school than pupils from lower socio-economic status (31.0%).

3.4 School Context Factors Experienced by Pupils

General Policy Concern 3.2:

What were the school context factors experienced by Standard 6 pupils – such as location, absenteeism, grade repetition, and homework- that might have impacted upon teaching,

learning and the general functioning of schools?

In this section, the findings about school context factors experienced by pupils that might have an impact on the teaching and learning process as well as the general functioning of schools are presented. Some of these factors are school location, absenteeism (frequency and reasons for absence), grade repetition and homework (frequency, level, correction, and family involvement) among others. Comparisons were made between the findings of SACMEQ III and IV with regard to these school context factors.

Travel distance to school

How far did the pupils have to travel to school each day?

The distance covered by a pupil from home to school is an important variable in educational achievement. This is because the time and energy spent in accessing school directly affects learning, and in extreme situations the dangers encountered on the way to school such as wild animals and insecurity may completely prevent pupils from going to school. This sub-section presents the findings on the distance covered by pupils to school in rural and urban areas as seen in **Table 3.10** and **Table 3.11**respectively.

Table 3.10: Distance to school in rural areas (SACMEQ IV)

Region	Rural				
	<1km	1km-2km	2km-3km	3km-4km	>4km
	%	%	%	%	%
Central	50.2	22.2	8.7	4.0	14.9
Coast	27.1	21.9	18.3	12.9	19.9
Eastern	55.0	15.9	11.0	3.2	14.8
Nairobi	0.0	0.0	0.0	0.0	0.0
North Eastern	37.6	19.1	12.8	8.1	22.4
Nyanza	30.9	20.6	16.3	11.6	20.5
Rift Valley	44.2	18.7	16.2	7.2	13.8
Western	34.0	29.3	13.3	6.1	17.3
Kenya	**39.9**	**21.0**	**14.6**	**7.8**	**16.8**

In the rural areas, nationally, 39.9 percent of the pupils live within less than a kilometre of the school they attend, while 60.2 percent live beyond a kilometre from their school with the exception of Nairobi which does not belong to the category of rural areas. Regionally, Eastern had the highest percentage of pupils (55.0%) living within less than a kilometre. On the other hand, Coast region had the lowest percentage of pupils living within less than a kilometre from their school (27.1%). Nyanza, Coast and North Eastern regions had the highest percentages of

pupils who travel more than 3 kilometres to school every day at 32.1, 32.8 and 30.5 percent respectively.

Table 3.11: Distance to school in Urban Areas (SACMEQ IV)

Region	Urban				
	<1km	1km-2km	2km-3km	3km-4km	>4km
	%	%	%	%	%
Central	42.1	19.6	15.1	8.0	15.3
Coast	41.1	15.9	12.4	8.3	22.4
Eastern	35.7	33.6	12.1	5.3	13.3
Nairobi	60.4	17.5	5.9	5.4	10.9
North Eastern	42.3	41.0	3.8	3.6	9.3
Nyanza	51.5	16.4	23.3	4.4	4.4
Rift Valley	34.3	21.9	15.3	8.1	20.4
Western	28.8	22.0	19.0	13.2	16.9
Kenya	**38.7**	**24.5**	**13.5**	**7.4**	**15.8**

As for the urban areas, nationally, 38.7 percent of the pupils live within less than a kilometre of their school while 15.8 percent live beyond four kilometre from the school they attend. Regionally, Nairobi has the highest percentage of pupils, 60.4 percent, living within less than a kilometre from their school while Western region has the lowest percentage of pupils living within less than a kilometre from their school (28.8%). Coast and Rift Valley had the highest percentage of pupils travelling more than 4 kilometres in urban areas at 22.4 and 20.4 percent respectively.

Absenteeism

How many days were pupils absent from school in the previous month?

Absenteeism has a disruptive effect on learning and learning achievement of pupils and as such it was important for SACMEQ studies to measure the mean number of days absent per month. The results from SACMEQ III and SACMEQ IV are given in **Table 3.12.**

Table 3.12: Days absent (SACMEQ III and SACMEQ IV)

Region	SACMEQ III		SACMEQ IV	
	Days absent		Days absent	
	Mean	SE	Mean	SE
Central	1.0	0.2	1.1	0.16
Coast	1.2	0.16	1.8	0.41
Eastern	1.2	0.14	1.3	0.25
Nairobi	0.8	0.16	1.2	0.24
North Eastern	1.5	0.32	2.5	0.92

Region	SACMEQ III		SACMEQ IV	
	Days absent		Days absent	
	Mean	SE	Mean	SE
Nyanza	1.0	0.13	1.7	0.14
Rift Valley	1.6	0.22	1.6	0.20
Western	1.6	0.61	1.4	0.16
Kenya	**1.3**	**0.11**	**1.5**	**0.10**

In SACMEQ IV, the national mean for absenteeism was 1.5 days per month, a slight increase from 1.3 in SACMEQ III. Regionally, Central has the lowest level of absenteeism with a mean of 1.1 days per month whereas North Eastern region has the highest mean of 2.5 days per month, which was above the national mean. In comparison to SACMEQ III, all the regions had a slight increase in the rate of absenteeism except Western Region that recorded a slight drop of 0.2 (from 1.6 to 1.4) and Rift Valley remained constant at 1.6. North Eastern region had the highest increase from 1.5 to 2.5 days.

What were the reasons for absenteeism?

This study further examined the reasons for absenteeism by region. The main reasons given by pupils for absenteeism were that the pupil was ill, caring for an ill family member or caring for a sibling. There were other varied reasons as indicated in **Table 3.13** and **Table 3.14.**

Table 3.13: Reasons for pupil absenteeism (SACMEQ III)

	Was ill		Family Member ill		Was Taking Care of Brothers & Sisters		Other Reasons	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Central	70.4	4016	8.1	1.69	6.7	2.19	15.7	3.15
Coast	64.9	4.14	8.1	2.28	7.7	2.14	25.3	3.25
Eastern	68.0	3.19	13.6	2.94	9.9	2.27	24.2	4.04
Nairobi	66.9	5.3	8.5	2.61	8.5	2.04	32.6	5.73
North Eastern	78.0	5.14	16.2	3.9	10.5	3.42	17.5	3.63
Nyanza	67.2	4.42	18.7	3.28	11.2	1.98	24.9	3.77
Rift Valley	69.9	3.91	19	2.64	13	2.38	23.7	3.81
Western	61.6	3.86	24.3	6.33	18.6	3.9	28.6	2.9
Kenya	**67.7**	**1.71**	**16.2**	**1.51**	**11.6**	**1.1**	**23.9**	**1.59**

Table 3.14: Reasons for pupil absenteeism (SACMEQ IV)

Region	Was ill		Family Member ill		Was Taking Care of Brothers & Sisters		Other Reasons	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Central	64.7	6.1	17.9	4.5	12.6	4.7	6.0	0.36
Coast	64.6	7.2	30.0	5.3	30.9	5.7	6.4	0.59
Eastern	62.9	4.4	17.9	4.5	19.0	5.0	6.6	0.30
Nairobi	73.4	5.4	15.6	4.3	9.2	4.0	5.6	0.29
North Eastern	74.4	5.1	28.8	10.1	15.4	7.9	5.8	0.66
Nyanza	70.0	2.9	30.9	4.4	25.9	4.8	4.8	0.31
Rift Valley	66.2	4.1	33.8	4.2	27.5	4.8	5.5	0.26
Western	63.8	4.8	30.9	3.9	23.7	3.9	5.1	0.25
Kenya	**66.3**	**1.9**	**28.6**	**2.0**	**23.7**	**2.1**	**5.7**	**3.02**

Nationally, illness was the most common reason for absenteeism in SACMEQ IV and accounted for 66.3 percent of the total while the least common reason was taking care of brothers and sisters, (23.7%). North Eastern region reported the highest percentage of pupils giving illness as a reason, at 74.4 percent, while Eastern region recorded the lowest at 62.9 percent. These results reflect that pupils' illness was a major cause of absenteeism from school. Coast region registered the highest percentage (30.9%), followed by Rift Valley region (27.5%), for pupils who were absent due to taking care of their siblings. The lowest percentage of pupils in this category was recorded in Nairobi region with 9.2 percent.

Another reason provided for being absent from school by pupils was the illness of a family member. The national average for pupils was 28.6 percent. Regionally, Rift Valley had the highest percentage (33.8%) of pupils citing this as a reason. In contrast, Nairobi region had the lowest percentage of pupils at 15.6 percent.

Nationally, 5.7 percent of pupils cited reasons other than the ones described above. These reasons included: lack of school fees; religious functions; visiting relatives; ceremonies such as birthdays and work at home.

Policy Suggestion 3.5:

There is need to fully implement the National School Health Strategy Implementation Plan (2011-2015). The school environment must create an enabling atmosphere for social, cultural and emotional wellbeing that promotes a healthy child friendly school. An efficient and effective healthy school environment ensures access, retention, quality and equity in education.

Grade repetition

What percentage of pupils had repeated grades?

Grade repetition has been linked with poor pupil achievement in Kenya (Hungi and Thuku, 2010 a&b). Others have linked grade repetition with low academic motivation in pupils repeating classes (Brophy, 2006), and it is likely that low academic motivation could lead to other problems such as indiscipline and eventual dropping out of school.

The Ministry of Education has a policy that discourages grade repetition as a remedial strategy in learning. This is because this strategy has been associated with inefficiency and inequity in the provision of education. It can also lead to poor performance and subsequent school drop-out (UNESCO, 2010). Due to this lack of a general consensus on the benefits and losses of repetition, it is likely that some educational practitioners still use it with the intention of improving the school's achievement and particularly the mean score at the end of cycle examinations; despite the government policy prohibiting it. This study therefore sought to establish the prevalence of this practice in Kenya.

The percentages of pupils who said they had repeated classes at least once since they joined Standard 1 are presented in **Table 3.15.**

Table 3.15: Grade repetition (SACMEQ III and SACMEQ IV)

Region	SACMEQ III		SACMEQ IV	
	Repetition		Repetition	
	%	SE	%	SE
Central	49.3	0.16	47.8	4.0
Coast	42.4	0.41	54.1	4.7
Eastern	52.8	0.25	50.3	6.8
Nairobi	30.7	0.24	28.1	4.1
North Eastern	21.3	0.92	22.9	3.9
Nyanza	50.3	0.14	63.3	3.4
Rift Valley	45.8	0.20	54.6	2.9
Western	54.3	0.16	57.3	2.7
Kenya	**48.2**	**0.10**	**53.2**	**1.8**

For SACMEQ IV, nationally 53.2 percent of the pupils had repeated a class compared to 48.2 percent in SACMEQ III. This represents a 5.0 percentage point increase. Regionally, Nyanza had the highest percentage of those who had repeated at least one class (63.3 percent), with North Eastern region posting the lowest percentage (22.9 percent).

Generally as can be seen in Figure 3.3, a high percentage of pupils (53.3%) have repeated one or more classes. Apart from North Eastern, Nairobi and Central, in other regions, more than 50 percent of Standard 6 pupils have repeated one or more classes.

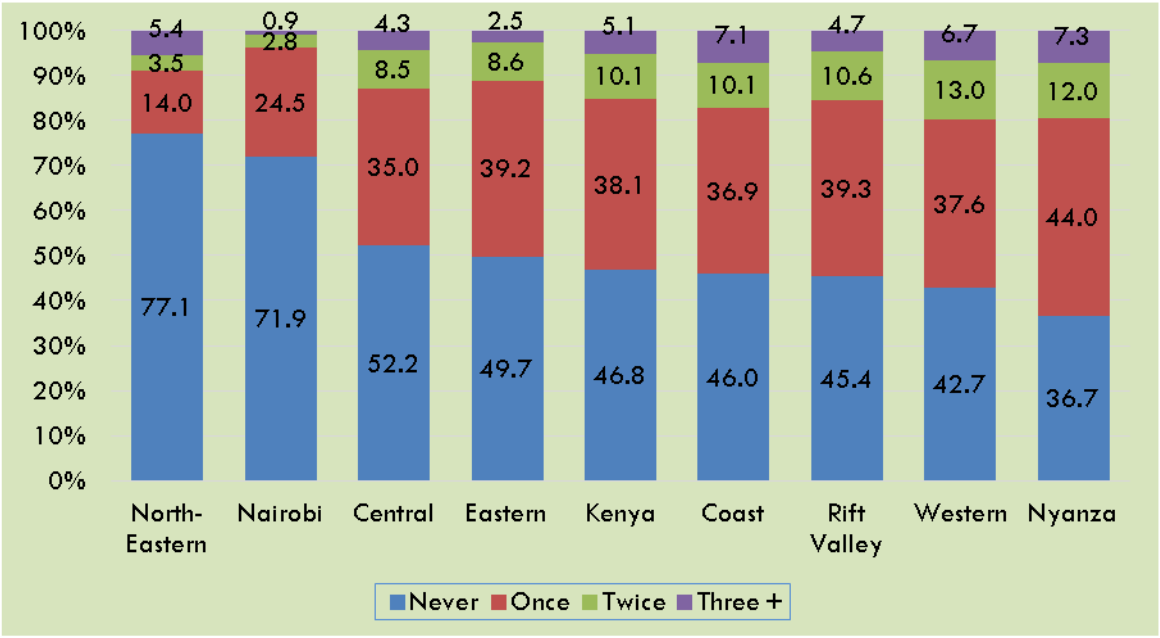


Figure 3.3: Frequency of grade repetition (SACMEQ IV)

Policy Suggestion 3.6:

The policy on class repetition should be reinforced.

Frequency of homework given

How often do the pupils receive homework from their teachers?

Homework given to pupils helps to build upon and reinforce learning done in the classroom and thus make them understand and accomplish most of the learning tasks in the syllabus. It is essentially good for teachers to give learners homework as it helps to provide teachers with useful feedback on learners' progress. Pupils were asked about the frequency of homework given to them by teachers. Their responses are summarised in **Figure 3.4.**

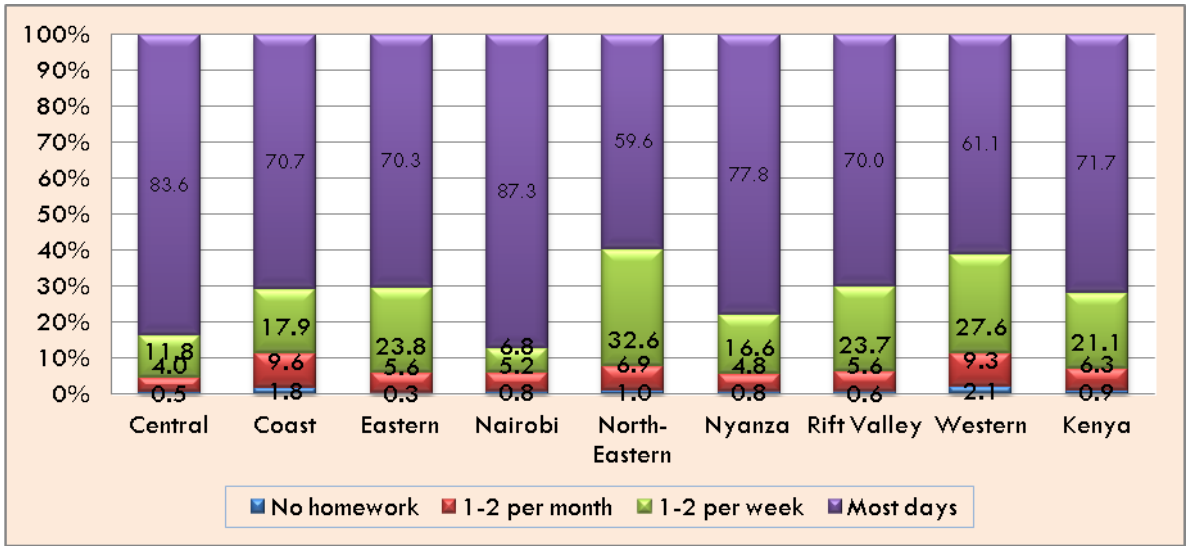


Figure 3.4: Frequency of homework given (SACMEQ IV)

Results of the analysis presented in **Figure 3.4** indicate that majority of pupils in nearly all regions said that they were given homework most of the days. Nationally 71.7 percent reported getting homework most days while only 0.9 percent reported that they never received any homework. The leading regions were Nairobi (87.3%) and Central (83.6%) In addition, North Eastern and Western regions had quite large percentages of pupils reporting to be getting homework once or twice a week at 32.6% and 27.6% respectively. Western region reported the highest percentage of pupils who were not given homework (2.1%) followed closely by Coast region (1.8%).

Help with homework at home

What percentage of pupils received help with their homework at home?

Assistance with homework is an important factor in determining a pupil's success in school. In addition to helping them with the actual learning of the task, it also displays an interest in, and gives importance to school work and education in general. Indeed, education is a joint effort of the home and the school. Thus, pupils were asked whether they are given assistance with their homework at home, and the summary of their responses is presented in **Figure 3.5.**

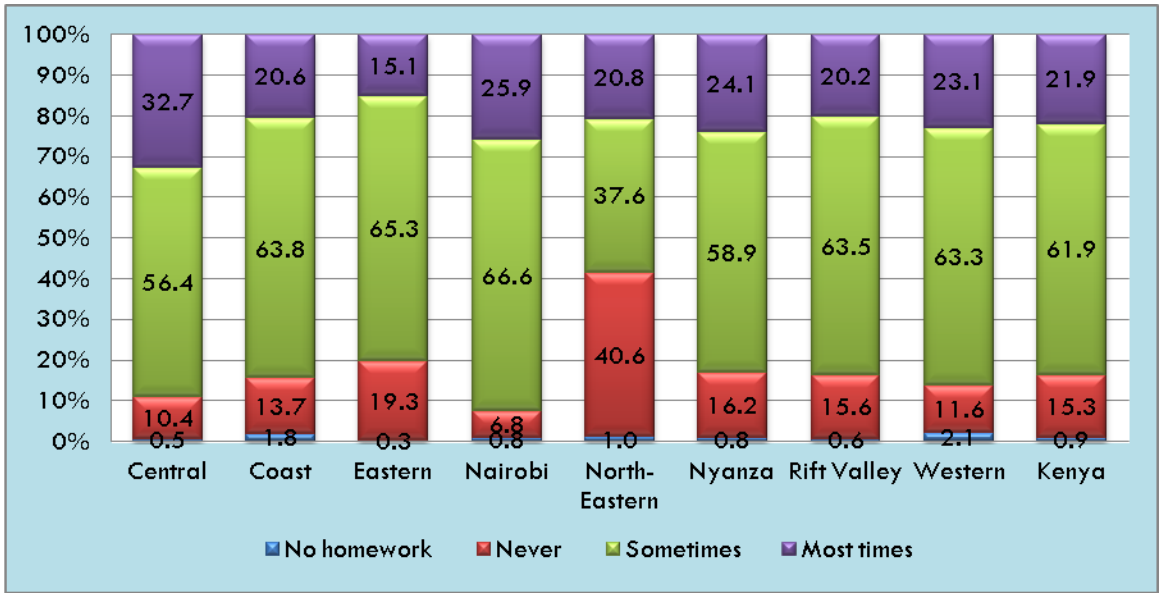


Figure 3.5: Percentage of pupils receiving assistance with homework at home (SACMEQ IV)

According to the findings in **Figure 3.5**, the response option of 'sometimes' was chosen by the majority of pupils in all regions except in North Eastern. Hence, the national percentage for sometimes getting assistance was 61.9 percent, while 'most of the time' was mentioned by 21.9 percent of pupils. The regions which had the highest percentages of pupils being assisted at home 'most of the time' were: Central (32.7%), followed by Nairobi (25.9%) and Nyanza (24.1%).

North Eastern region had the highest percentage of pupils that were never helped with their homework (40.6%), followed by Eastern (19.3%).

Homework corrected

How often did the teachers correct homework?

Teachers' correction of pupils' homework is vital as it enables them to provide formative feedback to both themselves and learners in order to identify areas of concern in the overall teaching-learning process. Hence, learners were asked how often their Reading and Mathematics homework was corrected by the teacher. These results are presented in **Figure 3.6.**

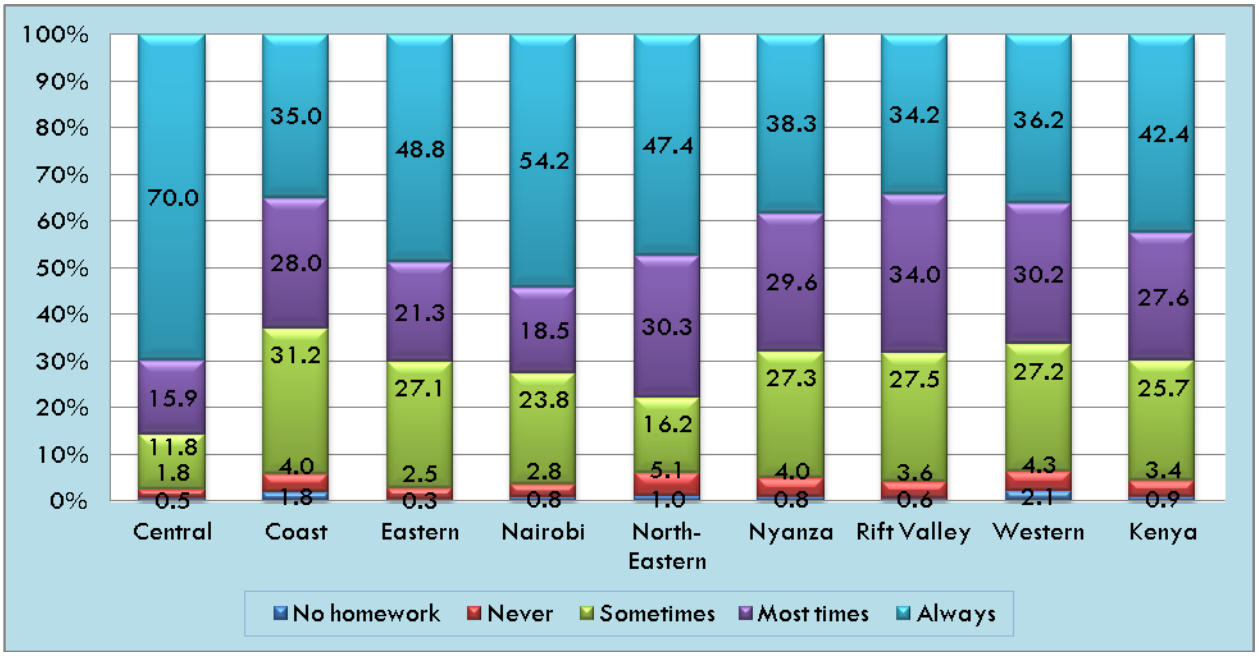


Figure 3.6: Frequency of homework corrected by teacher (SACMEQ IV)

From Figure **3.6,** nationally 42.4 percent of pupils said that teachers always corrected their homework. Central region recorded the highest percentage of pupils whose teachers always corrected homework (70.0%), followed by Nairobi with 54.2 %, Eastern with 48.8 % and North Eastern with 47.4 %. On the other hand, in North Eastern and Western regions pupils who never had their homework corrected were 5.1% and 4.3% respectively. Western region had the highest percentage of pupils reporting no homework being given (2.1%).

3.5 Pupil Access to Learning Materials

General Policy Concern 3.3

Did Standard 6 pupils have sufficient access to classroom materials, including textbooks and stationery, in order to be able to participate fully in the lessons?

In this section, the focus of the analysis was access to teaching and learning materials in the classroom. The aim was to establish whether pupils had access to textbooks and stationery. This is also viewed in the context of Free Primary Education in which the Government of Kenya has been funding the supply of textbooks and stationery to pupils.

Pupil access to Reading and Mathematics textbooks

What percentage of pupils had Reading and Mathematics textbooks?

A marked decrease in pupils having their own textbooks can be seen from **Table 3.16** which compares the results of SACMEQ III with those of SACMEQ IV in terms of the percentages of pupils who have access to reading and mathematics textbooks.

Table 3.16: Pupils having their own Reading and Mathematics textbooks

Region	SACMEQ III				SACMEQ IV			
	Own Reading textbook		Own Mathematics textbook		Own Reading textbook		Own Mathematics textbook	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Central	20.4	6.24	19.9	5.93	23.3	4.0	17.4	4.2
Coast	21.3	3.83	15.5	3.96	30.6	7.4	22.5	8.0
Eastern	17.8	5.21	18.5	5.53	13.2	2.9	13.1	2.4
Nairobi	43.4	7.43	46.8	8.36	32.2	7.0	29.6	7.7
North Eastern	19.1	5.35	14.8	4.71	34.0	7.7	26.0	2.3
Nyanza	18.2	2.99	14.3	2.53	27.4	3.1	13.7	2.8
Rift Valley	14.5	4.6	9.4	3.63	16.0	2.1	12.4	2.5
Western	10.5	2.62	7.3	2.56	14.1	2.4	7.4	1.7
Kenya	**17.8**	**1.87**	**15.1**	**1.71**	**20.1**	**1.4**	**14.4**	**1.4**

Nationally, there was an increase in the number of pupils with Reading textbooks from 17.8 percent in SACMEQ III to 20.1 percent in SACMEQ IV. However, the percentage of pupils owning Mathematics textbook declined from 15.1 in SACMEQ III to 14.4 in SACMEQ IV. The national pattern of increased textbook ownership was seen across most regions for Reading. North Eastern region recorded the highest increase in pupils owning Reading and Mathematics textbooks at 14.9 and 11.2 percentage points respectively, followed by Coast in ownership of Mathematics books at 7 percentage points. Only Nairobi and Eastern regions recorded a decline of 11.2 and 4.6 percent of pupils owning reading textbooks. With regard to the ownership of Mathematics textbooks, three regions registered an increase, with Coast region having the highest increase of 7.0 percent followed by Rift Valley with 3.0 percent and Western at 0.1 percent.

Figures 3.7 and **3.8** indicate percentages of pupils owning textbooks, sharing, and those who have no textbooks at all in Reading and Mathematics from the SACMEQ IV study.

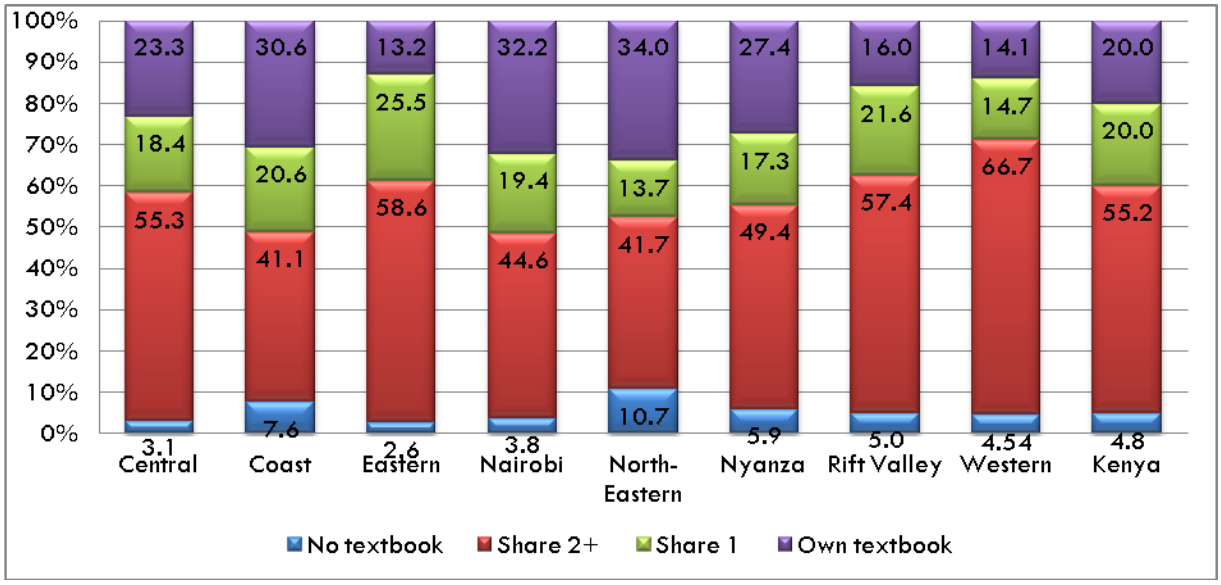


Figure 3.7: Percentages for ownership of Reading textbooks (SACMEQ IV)

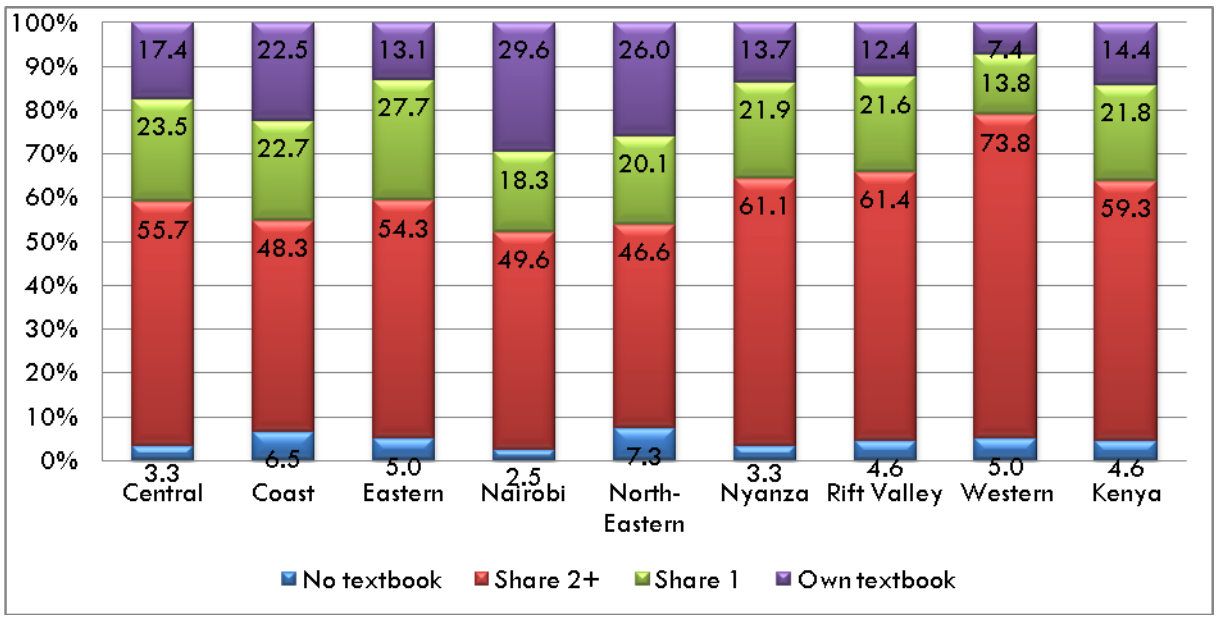


Figure 3.8: Percentages for ownership of Mathematics textbooks (SACMEQ IV)

Nationally, majority of Standard 6 pupils (55.2% in Reading and 59.3% in Mathematics) shared textbooks with two or more pupils. North Eastern region had the highest percentage of pupils owning Reading textbooks at 34.0 % followed by Nairobi region at 32.2 %. Nairobi and North Eastern regions also recorded the highest percentage of pupils owning Mathematics textbooks at 29.6 % and 26.0 % respectively. However, at the national level, majority of the pupils shared both the Reading and Mathematics textbooks with two or more other pupils. Western region had the highest percentage of pupils sharing Reading (66.7%) and Mathematics (73.8%) textbooks.

According to the KESSP Mid Term Evaluation report, the national Textbook:Pupil ratio was 1:2 in the financial year 2007/2008 down from 1:5 in 2005/2006. The 2009 textbooks audit by the Ministry of Education and DfID shows that, 'On average, 8.3 million primary school pupils have access to nearly five books covering the core seven subjects of Kiswahili, English, Mathematics, Science, Social Studies, Religious Education and Creative Arts' (Republic of Kenya, 2009, p.16). The national surveys also reveal persistence in regional disparities especially with regard to the North Eastern region.

In addition, the textbook report also indicates that there is a wide variation in allocations of books in individual schools which may deviate from the national average. For instance, 'Nationally, there are 1,100 schools with less than three textbooks per pupil and some 1,300 with more than 10 textbooks per pupil' (Republic of Kenya, 2009, p.16). The report also states that despite an improved supply of textbooks, there is a high rate of textbook losses due to wear and tear. The survey also reveals an unfortunate tendency of schools to hoard textbooks for fear of losses, resulting in the textbooks being kept 'safely' in stores but rarely used by pupils.

Policy Suggestion 3.7:

The emphasis on access to reading materials should move beyond provision and maintenance of textbooks to pupils having the reading materials in their hands and using them. The MoE should strengthen the monitoring and evaluation process to ensure schools buy the requisite books and effective utilization of books by pupils at all levels.

Pupil access to basic learning materials

What percentage of pupils had basic classroom stationery?

The data analysis also compared the percentage of the pupils who had access to basic stationery per region between SACMEQ III and SACMEQ IV.

Table 3.17: Availability of basic classroom material: exercise books, notebooks and pencils

Region	SACMEQ III						SACMEQ IV					
	Exercise books		Note books		Pencils		Exercise books		Note books		Pencils	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Central	0.7	0.33	34.3	7.7	8.6	5.48	27.0	1.6	23.0	1.71	23.6	1.7
Coast	1.7	1.29	33.7	5.96	8.0	2.60	35.2	1.6	32.4	1.67	33.0	1.7
Eastern	2.6	1.01	44.6	7.78	9.8	3.88	31.3	1.6	27.6	1.61	28.8	1.6

Region	SACMEQ III						SACMEQ IV					
	Exercise books		Note books		Pencils		Exercise books		Note books		Pencils	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Nairobi	7.5	1.4	42.4	4.66	8.5	2.08	28.3	2.2	21.7	2.26	23.2	2.2
North Eastern	8.8	2.46	44.4	7.96	11.5	3.55	44.4	2.4	40.6	2.52	43.2	2.5
Nyanza	1.4	0.46	45.8	5.37	6.8	1.53	22.3	1.3	19.5	1.37	19.4	1.4
Rift Valley	2	0.63	36.9	6.29	7.7	3.26	29.8	1.2	24.1	1.17	26.9	1.2
Western	2	0.72	30.0	6.55	8.0	1.88	26.0	1.3	21.7	1.36	22.9	1.4
Kenya	**2.1**	**0.3**	**38.4**	**2.67**	**8.1**	**1.35**	**27.0**	**1.6**	**23.0**	**1.71**	**23.6**	**1.7**

The results in **Table 3.17** indicate an increase in the ownership of exercise books among pupils nationally in SACMEQ IV from 2.1percent to 27.0 percent. In comparison with SACMEQ III North Eastern and Coast regions recorded the highest increase at 35.6 and 33.5 percentage points respectively.

The ownership of notebooks decreased from 38.4 percent in SACMEQ III to 23.0 percent in SACMEQ IV at the national level. There was a general decrease of26.3 and20.7percentage points in the ownership of notebooks by pupils in Nyanza and Nairobi regions respectively.

Nationally there was an increase in the ownership of pencils with results indicating an increase from 8.1 percent in SACMEQ III to 23.6percent in SACMEQ IV. North Eastern and Coast regions recorded the highest increase of 31.7 and 25.0 percentage points.

Policy Suggestion 3.8:

The Ministry of Education and other stakeholders in education should strengthen the monitoring of use of FPE funds in the acquisition of stationery for learners.

3.6 Access to Books in the Class Library

General Policy Concern 3.4:

Did Standard 6 pupils have access to library books in their schools, and (if they did have access) was the use of these books maximised by allowing pupils to take them home to read?

This section aimed at establishing the proportion of pupils who have access to library Reading, Mathematics and Life Skills textbooks in their classrooms and whether their schools permit them to take those books home. The results of the analysis are shown in **Table 3.18.**

Table 3.18: Availability of library books to Standard 6 pupils in their schools (SACMEQ IV)

Region	No School Library		Not Allowed to Borrow Books		Allowed to Borrow Books		Do not Know	
	%	SE	%	SE	%	SE	%	SE
Central	64.6	9.0	5.1	2.0	28.2	7.8	2.2	0.8
Coast	45.1	12.4	3.9	1.9	46.9	11.1	4.1	1.4
Eastern	63.4	11.4	6.1	3.3	28.2	8.8	2.3	0.9
Nairobi	45.2	12.7	5.7	3.1	38.7	9.6	10.4	4.9
North Eastern	43.9	9.3	8.1	2.6	44.6	10.0	3.3	1.5
Nyanza	40.6	7.9	4.5	2.1	51.0	8.1	3.8	1.1
Rift Valley	28.7	6.9	3.1	1.1	64.3	6.8	4.0	1.0
Western	33.3	7.7	9.8	3.2	52.1	7.9	4.9	1.4
Kenya	**43.9**	**3.7**	**5.3**	**1.0**	**47.1**	**3.4**	**3.8**	**0.5**

Nationally, 43.9 percent of the pupils reported that there was no library in their school and only 47.1 percent of pupils in schools with libraries could borrow books. Rift Valley region recorded the highest percentage of pupils who were allowed to access books from the library at 64.3 percent followed by Western with 52.1 and Nyanza with 51.0 percent. Central region had the highest percentage of pupil who reported that they had no school library at 64.6 percent.

3.7 Extra Tuition

General Policy Concern 3.5

Was the practice of Standard 6 pupils receiving extra lessons in school subjects outside school hours becoming widespread and were these paid lessons?

Bray (2007) has strongly advocated against private tuition due to its effect on quality and equality in the education system. Extensive tuition has the capability of enhancing social inequality and its continued use by teachers result in discrimination against those who cannot afford, by offering quality private sessions and covering the syllabus compared to what they do during official class time. This is likely to lead to a lower quality of education for those who cannot afford extra tuition. A study by Wasanga et al. (2010) reported that Kenyan teachers also offer out-of-school tuition for the purposes of getting an extra income.

This section reports the findings of the data analysed to establish whether there was change between SACMEQ III and SACMEQ IV in the percentage of Standard 6 pupils who receive out-of-school tuition.

Levels of extra tuition

What percentage of pupils received extra tuition?

This study sought to establish the percentage of pupils receiving extra tuition outside school hours. The results are presented in **Table 3.19.**

Table 3.19: Pupils who receive extra tuition

Region	SACMEQ III		SACMEQ IV	
	%	SE	%	SE
Central	50.5	9.35	68.8	7.6
Coast	66.5	10.33	55.9	11.8
Eastern	68.9	9.68	52.1	10.4
Nairobi	57.5	7.18	61.4	9.2
North Eastern	32.9	9.33	62.0	11.5
Nyanza	97.0	1.6	72.2	7.5
Rift Valley	65.1	7.34	64.9	5.8
Western	74.5	10.06	65.1	6.8
Kenya	**70.2**	**3.23**	**63.0**	**3.4**

Nationally, there was a drop in the percentage of pupils receiving extra tuition outside school hours from 70.2 percent in SACMEQ III to 63.0 percent in SACMEQ IV. However, there was a dramatic increase in three of the regions with North Eastern region recording an increase of 29.1 percentage points (from 32.9 to 62.0), followed by Central (from 50.5 to 68.8) and Nairobi (from 57.5 to 61.4). Nyanza region recorded the highest decline of 24.8 percentage points followed by Eastern region with a decline of 16.8 percentage points.

The above results show that although teachers still engage in out-of-school tuition, there were regions such as Coast, Eastern, Nyanza and Western which had remarkable decline in the number of pupils attending these classes.

Policy Suggestion 3.9:

There is need to strengthen and streamline teacher support and supervision to ensure adequate coverage of syllabus during regular class hours.

3.8 Conclusion

The gender distribution of Standard 6 pupils in Kenya has remained constant at approximately 50 percent between SACMEQ III and SACMEQ IV. Despite regional variations in the age distributions ranging between 155.1 to 179.5 months, on average, children in Standard 6 are older (165.1 months) than the expected national mean age of 141 months.

There was some regional disparity in the percentage of pupils who got regular meals in that some pupils got approximately 13.5 meals per week compared to approximately 11.2 meals per week for pupils in other regions. The national mean is 12.2 meals per week compared to the desired mean of 15.0 or 3 meals per day for 5 school days.

Although regional differences were noted, there was a general increase in the number of pupils who use English outside school. The study showed that majority of the pupils resided at home with their parents during the school week with a small minority being either in boarding school, with other people, or in an orphanage.

There was a considerable increase in the mean number of books available to pupils in their homes, with the exception of three regions namely, Nairobi, Central and Rift Valley. There was a remarkable regional disparity with pupils in some of the regions having more books at their disposal and others having very few. Similarly, the percentage of pupils with basic possessions at home increased nationally but again with some notable regional disparities. From the findings, there is increase in accessing textbooks in Reading. However, there is a slight decrease in accessing textbooks in Mathematics. There is still a high percentage of pupils sharing Reading and Mathematics textbooks with two or more pupils and this could lead to a decline in learning outcomes.

About two thirds of the pupils lived within 2 kilometres from school to their schools with the rest residing over 2 kilometres from the school. Approximately 15.0 % of the pupils travelled more than 4 kilometres from home to school. In this category, pupils who travelled long distances were in rural North Eastern (22.4%) and Nyanza (20.5%) regions as well as urban areas in the Coast region (22.4%).

The mean number of days of absenteeism increased from 1.3 in SACMEQ III to 1.5 in SACMEQ IV nationally. This implies that, on average, Standard 6 pupils were absent for nearly two days during the school days in a month. The main reasons given by pupils for absenteeism included illness, taking care of ill family members, and taking care of siblings. Similarly, the rate of class repetition by pupils has increased remarkably from 48.2 percent in SACMEQ III

to 53.2 percent in SACMEQ IV.

Nationally, majority of the pupils were given homework regularly. However, less than half of the pupils said their teachers always corrected their assignments. This points to lack of adequate formative feedback. At the same time, only one in five pupils received assistance with their homework at home from their guardians and parents most of the time. This indicates low parental/guardian involvement in pupils' school work.

The percentage of pupils with their own Reading textbooks increased while that of Mathematics textbooks decreased at the national level.

With regard to basic stationery, the ownership of exercise books and pencils had increased while the ownership of notebooks decreased.

Most pupils did not have a library from where they could borrow books. Where there was one, about half of the pupils were allowed to borrow books to read at home.

Although there was some decline in the percentage of pupils receiving extra tuition in SACMEQ IV as compared to SACMEQ III both nationally and regionally, a considerable percentage of pupils were still attending paid out-of-school tuition. About half of the pupils who attended extra tuition were paying for the teaching service rendered by teachers. There was, however, a regional disparity in regions such as North-Eastern, Central and Nairobi where the percentage of those who were paying had dropped drastically, while for Nyanza region the proportion paying for extra tuition increased.

CHAPTER 4

4.0 CHARACTERISTICS OF TEACHERS AND THEIR VIEWS ABOUT CLASSROOM RESOURCES AND PROFESSIONAL SUPPORT

4.1 Introduction

Teachers as curriculum implementers are among the most important stakeholders in an educational system. Thus, it is important for any study investigating factors which contribute to learning within an educational system to highlight some of the important teacher characteristics and how these impact on the achievement of educational goals. This chapter focuses on the description of personal and professional characteristics of Standard 6 teachers in Kenya. It also highlights teachers' viewpoints on teaching, classroom resources and professional support. The personal characteristics include age, gender and housing conditions; while professional characteristics include academic, professional and in-service training, their viewpoints with regard to teaching, time spent on lesson preparation, actual teaching and marking of pupils' work. On classroom resources, the study dealt with classroom furniture and equipment. The chapter also analyses teachers' professional support in terms of educational resource centres, school assessments and school heads' input. The analyses of these factors are discussed and comparisons of the findings made with those of SACMEQ III findings where relevant.

4.2 Teacher Personal Characteristics and Housing Conditions

General Policy Concern 4.1

What were the personal characteristics of Standard 6 teachers and what were their housing conditions?

In this section, several characteristics of teachers are discussed. The analyses of the age, gender, and possessions of teachers are summarised below.

Teacher age

What was the age distribution of Standard 6 teachers?

Data analysis on age distribution for Standard 6 teachers is presented in **Tables 4.1** and **4.2.**

Table 4.1: Mean age of Standard 6 Reading teachers by region

REGION	SACMEQ III		SACMEQ IV	
	Mean Age	SE	Mean Age	SE
Central	43.1	1.48	40.0	2.00
Coast	35.7	2.69	38.0	2.32
Eastern	37.4	1.93	43.3	4.11
Nairobi	39.5	1.44	32.8	4.82
North Eastern	29.7	0.98	29.2	1.93
Nyanza	34.2	1.44	36.4	1.87
Rift Valley	35.3	1.53	33.7	1.62
Western	39	1.95	38.1	1.99
Kenya	**37.2**	**0.72**	**37.6**	**1.14**

Table 4.1 shows that the SACMEQ III and IV recorded generally the same national mean age of Reading teachers at approximately 37 years. Eastern region had the highest mean age of Reading teachers at 43.3 years, closely followed by Central region and Western region at 40.0 years and 38.1 years respectively while North Eastern region had the lowest mean age of Reading teachers at 29.2 years. Central region recorded a decrease in the mean age by 3.1 years while Nyanza recorded an increase of 2.2 years. This could mean that fewer younger Reading teachers were hired in Nyanza, Eastern, and Coast regions in the period between 2007 and 2013.

Table 4.2: Mean age of Standard 6 Mathematics teachers by region

REGION	SACMEQ III		SACMEQ IV	
	Mean Age	SE	Mean Age	SE
Central	44.0	1.63	43.5	2.70
Coast	38.3	2.13	33.3	1.40
Eastern	37.4	1.80	34.4	2.27
Nairobi	41.1	1.30	33.6	3.96
North Eastern	32.5	1.35	31.2	1.97
Nyanza	37.3	1.79	36.5	2.39
Rift Valley	36.7	1.41	37.3	1.80
Western	36.5	2.09	36.5	2.02
Total	**38.2**	**0.71**	**36.7**	**0.92**

The national mean age of Mathematics teachers was 36.7 years in SACMEQ IV, which is a decrease of 1.5 years from 38.2 years in SACMEQ III. Mathematics teachers in Central region had the highest mean age of 43.5 years, followed by Rift Valley at 37.3 years, while teachers in North Eastern had the lowest mean age of 31.2 years. It is notable that, with the

exception of Rift Valley and Western regions, the mean age of Mathematics teachers decreased between SACMEQ III and SACMEQ IV. Nairobi registered the highest decrease by 7.5% years, followed by Coast region with a decrease of 5 years.

What was the gender distribution of Standard 6 teachers?

Table 4.3: Gender distribution of Standard 6 Reading teachers by region

REGION	SACMEQ III		SACMEQ IV	
	% Female	SE	% Female	SE
Central	47.4	10.42	69.3	9.96
Coast	65.9	12.9	35.4	10.75
Eastern	53.5	10.54	51.5	13.83
Nairobi	64.0	10.54	65.3	13.49
North Eastern	11.3	7.08	9.6	9.71
Nyanza	38.6	8.2	19.5	8.09
Rift Valley	45.6	7.9	45.5	9.28
Western	31.4	9.47	61.2	10.18
Total	**46.0**	**3.77**	**45.9**	**4.41**

In SACMEQ IV, the percentage of sampled female Reading teachers was 45.9 percent which was the same as in SACMEQ III. Central region had the highest percentage of pupils with female Reading teachers at 69.3 percent followed by Nairobi and Western at 65.3 and 61.2 percent respectively. Nyanza region had the greatest decline (19.1 percentage points) from SACMEQ III. North Eastern region had the lowest percentage of pupils with female Reading teachers at 9.6, a decline of 1.7 percentage points from SACMEQ III. Although there was near gender parity at the national level, there were notable differences across the regions.

Table 4.4: Gender distribution of Standard 6 Mathematics teachers by region

REGION	**SACMEQ III**		**SACMEQ IV**	
	% Female	**SE**	**% Female**	**SE**
Central	27.6	9.38	39.1	12.78
Coast	32.2	11.96	13.2	6.22
Eastern	44.2	10.83	33.0	11.47
Nairobi	47.5	11.61	47.0	18.37
North Eastern	6.2	5.69	0.0	0.00
Nyanza	16.8	5.4	4.0	3.75
Rift Valley	21.4	5.85	28.3	8.74
Western	20.7	8.03	16.3	6.82
Kenya	**26.7**	**3.2**	**22.7**	**3.55**

Nationally, the percentage of pupils with female Mathematics teachers was 22.7 percent, which was a decrease from 26.7 percent in SACMEQ III. Regionally, Nairobi had the highest percentage of female Mathematics teachers at 47.0 percent, followed by Central region at 39.1 percent. North Eastern and Nyanza had the lowest percentage of female Mathematics teachers at 0.0 per cent and 4.0 per cent respectively.

Policy Suggestion 4.1

The MoE to ensure gender balance in recruitment of teacher trainees for both Reading and Mathematics.

Policy Suggestion 4.2

The TSC should ensure that there is gender balance in deployment of Reading and Mathematics teachers in all the regions.

Teacher housing conditions

What were the general conditions of teachers' houses?

Data on teachers' housing conditions were analysed and presented in **Table 4.5** below.

Table 4.5: Teachers' housing

A. Opinion of Grade 6 teachers on availability of teachers' housing

Region ID	Not very important		Of some Importance		Important		Very Important	
	%	SE	%	SE	%	SE	%	SE
Central	10.0	8.12	6.1	4.90	34.1	13.07	49.9	13.74
Coast	0.0	0.00	15.6	13.89	31.9	12.54	52.5	13.53
Eastern	2.3	1.74	3.0	2.30	64.3	11.46	30.4	10.56
Nairobi	7.4	7.14	0.0	0.00	9.4	9.56	83.2	11.23
North Eastern	0.0	0.00	0.0	0.00	31.3	20.85	68.7	20.85
Nyanza	1.9	1.98	5.2	4.14	24.4	9.65	68.4	10.14
Rift Valley	12.0	6.60	5.1	3.75	16.7	6.87	66.2	9.01
Western	2.9	2.16	3.1	3.13	53.1	10.21	40.9	9.93
Kenya	**5.2**	**1.85**	**5.4**	**2.09**	**36.4**	**4.72**	**53.0**	**4.69**

B. *Opinion of Grade 6 Teachers on Quality of Teachers' Housing*

Region ID	Not very important		Of some Importance		Important		Very Important	
	%	SE	%	SE	%	SE	%	SE
Central	0.0	0.00	0.0	0.00	28.3	11.50	71.7	11.50
Coast	4.9	4.93	0.0	0.00	41.3	13.90	53.8	13.51
Eastern	1.7	1.73	26.4	11.69	31.0	11.51	40.9	11.08
Nairobi	9.4	9.56	0.0	0.00	30.7	15.53	59.9	16.60
North Eastern	0.0	0.00	1.1	1.33	16.2	14.85	82.7	15.06
Nyanza	1.9	1.98	15.0	9.70	20.4	8.23	62.7	10.99
Rift Valley	13.5	5.77	1.2	1.19	19.1	7.23	66.2	8.68
Western	0.0	0.00	4.4	3.16	48.4	10.38	47.2	10.29
Kenya	**4.4**	**1.43**	**8.2**	**2.92**	**29.7**	**4.07**	**57.7**	**4.44**

In **Table 4.5 (A)** and **(B)**, findings regarding the perceptions of Grade 6 teachers on availability and quality of teachers' housing are presented. Nationally, 53.0% of pupils had teachers who considered the availability of teachers' houses to be 'very important' while 57.7% considered the quality of housing to be 'very important'. Those who considered the availability and quality of housing to be 'not very important' comprised 5.2% and 4.4% respectively. Nairobi region had the highest percentage of pupils in schools where teachers considered availability of housing to be 'very important' at 83.2%. On the other hand, North Eastern region had the highest percentage of pupils whose teachers considered the quality of housing to be 'very important' at 82.7%. Surprisingly, this region registered 0.0% of those who considered availability and quality of housing to be 'not very important'.

Policy Suggestion 4.3

The Government and stakeholders should construct affordable housing and amenities for teachers in marginalized and rural areas.

4.3 Teacher Professional Characteristics

General Policy Concern 4.2:

What were the professional characteristics of Standard 6 teachers (in terms of academic qualification, pre-service training and in-service training), and did they consider in-service training to be effective in improving their teaching?

The analysis of results on Standard 6 teachers' characteristics, which included academic,

professional and in-service training, is presented in Table 4.7 and discussed in the following sub-sections.

Academic Qualification

What were the highest levels of academic qualification attained by the teachers?

Table 4.6: Academic qualification of Reading teachers (SACMEQ III)

Region	Primary		Junior secondary		Senior		Secondary / A-level		Tertiary/ First Degree	
	%	SE	%	SE	%	SE	%	SE	%	SE
Central	7.7	7.42	8.1	7.75	48.8	10.79	31	9.83	4.5	4.46
Coast	2.5	2.58	0.0	0.0	81.9	8.37	12.3	6.84	3.2	3.24
Eastern	0.0	0.0	9.9	7.59	55.3	10.76	28.5	9.67	6.3	6.16
Nairobi	0.0	0.0	0.0	0.0	60.1	11.18	28.3	10	11.6	7.01
North Eastern	0.7	0.68	1.8	1.8	66.3	12.83	31.2	12.28	0.0	0.0
Nyanza	1.5	1.49	4.4	3.18	57.3	8.67	31.6	8.52	5.2	3.67
Rift Valley	3.2	3.04	3.6	2.81	65.3	7.75	25.7	6.48	2.3	2.3
Western	0.0	0.0	0.0	0.0	80.2	7.19	19.8	7.19	0.0	0.0
Kenya	**2.3**	**1.36**	**4.4**	**1.86**	**63.2**	3.7	**26.2**	3.29	**3.9**	1.49

Table 4.7: Academic qualification of Reading teachers (SACMEQ IV)

Region	Primary	SE	Junior	SE	Senior	SE	A-level	SE	Tertiary	SE
Central	0.00	0.00	0.00	0.00	22.81	11.85	36.48	12.40	40.70	13.93
Coast	4.21	3.05	0.00	0.00	20.50	9.02	60.09	12.05	15.20	7.35
Eastern	4.80	3.85	9.23	8.11	8.21	4.77	57.85	12.69	19.91	8.76
Nairobi	5.89	6.21	0.00	0.00	6.11	6.06	50.59	17.34	37.41	17.06
N. Eastern	15.83	13.71	0.00	0.00	16.81	15.03	52.92	25.27	14.44	14.23
Nyanza	20.50	9.44	0.00	0.00	24.12	9.80	40.79	10.88	14.58	6.78
Rift Valley	6.61	4.10	0.00	0.00	16.74	7.30	60.26	9.42	16.39	7.36
Western	2.46	2.50	0.00	0.00	36.26	9.59	47.39	10.61	13.89	7.01
Kenya	7.23	2.19	1.83	1.64	20.14	3.42	51.31	4.69	19.49	3.46

Table 4.7 shows that the majority of pupils had Reading teachers who had senior secondary education and above. At the national level, a small percentage (10.4%) of Reading teachers had completed only primary and junior secondary. The highest percentage of pupils taught Reading by teachers with only primary and junior secondary education were in Central and Rift Valley regions at 15.0% and 14.8% respectively.

There was a notable decrease of percentage of Reading teachers with senior secondary education from 63.2% in SACMEQ III to 27.2 % in SACMEQ IV. There has been an increase of Reading teachers with 'A' level and Tertiary/First degree qualification from 30.1 percent in SACMEQ III to 62.4 percent in SACMEQ IV. Nairobi region had the highest number of graduates with 42.5 percent, followed by Nyanza with 29.0 percent.

Table 4.8: Academic qualification of Mathematics teachers (SACMEQ III)

Region	Primary		Junior secondary		Senior		Secondary / A-level		Tertiary / First Degree	
	%	SE	%	SE	%	SE	%	SE	%	SE
Central	2.8	2.72	0.0	0.00	52.9	10.06	42.2	10.67	2.2	2.20
Coast	0.0	0.00	0.0	0.00	84.8	9.13	15.2	9.13	0.0	0.00
Eastern	0.0	0.00	0.0	0.00	82.9	7.57	17.1	7.57	0.0	0.00
Nairobi	0.0	0.00	0.0	0.00	44.5	9.8	21.4	8.67	34.2	8.75
North Eastern	0.0	0.00	0.0	0.00	51.4	15.51	34.1	13.36	14.5	13.5
Nyanza	0.0	0.00	1.2	1.23	61.1	8.4	32.8	8.79	4.8	2.70
Rift Valley	2.8	2.74	3.5	2.51	73.8	6.3	19.9	5.84	0.0	0.00
Western	0.0	0.00	0.0	0.00	54	11.08	36.9	11.07	9.1	6.72
Kenya	**1.1**	**0.82**	**1.1**	0.67	**66.6**	3.46	**27.1**	3.46	**4.1**	1.19

Table 4.9: Academic qualification of Mathematics teachers (SACMEQ IV)

Region	Primary	SE	Junior	SE	Senior	SE	A-level	SE	Tertiary	SE
Central	0.0	0.00	0.0	0.00	22.8	11.85	36.5	12.40	40.7	13.93
Coast	4.2	3.05	0.0	0.00	20.5	9.02	60.1	12.05	15.2	7.35
Eastern	4.8	3.85	9.2	8.11	8.2	4.77	57.9	12.69	19.9	8.76
Nairobi	5.9	6.21	0.0	0.00	6.1	6.06	50.6	17.34	37.4	17.06
North Eastern	15.8	13.71	0.0	0.00	16.8	15.03	52.9	25.27	14.4	14.23
Nyanza	20.5	9.44	0.0	0.00	24.1	9.80	40.8	10.88	14.6	6.78
Rift Valley	6.6	4.10	0.0	0.00	16.7	7.30	60.3	9.42	16.4	7.36
Western	2.5	2.50	0.0	0.00	36.3	9.59	47.4	10.61	13.9	7.01
Kenya	7.2	2.19	1.8	1.64	20.1	3.42	51.3	4.69	19.5	3.46

Table 4.9 shows that similar results were observed for Mathematics teachers where 47.7 percent of pupils had Mathematics teachers who had completed A-Levels, followed by 27.3 percent who had completed Senior Secondary and 14.3 percent who had Tertiary/First degree education. Significant progress was made between SACMEQ III and SACMEQ IV in terms of teachers completing A-Level and Tertiary education.

There was an increase of approximately 20 percentage points in teachers who had completed A-Level, for both Mathematics and Reading. There was an increase of about 10 percentage points in pupils whose Mathematics teacher had completed Tertiary/First degree education.

In SACMEQ IV, North Eastern had the highest percentage of Mathematics teachers with tertiary education, while Nairobi had the highest in Reading. Nairobi, North Eastern and Central regions had no Reading teachers with junior secondary qualifications, while Nairobi, Nyanza and Rift Valley regions had no Mathematics teachers with Junior secondary qualifications.

Of concern is the increase of both Reading and Mathematics teachers with only primary education qualification between SACMEQ III and SACMEQ IV.

Policy Suggestion 4.4

The Government should develop a professional development policy for teachers linked to the Schemes of Service for teachers and in line with Kenya's Vision 2030.

Pre-service training and teaching experience

How many years of pre-service training and teaching experience had Standard 6 teachers completed?

The number of years of pre-service training and teaching experience are two of the variables that influence learning achievement of learners. The results for these indicators are presented in **Tables 4.10** and **4.11.**

Table 4.10: Years of pre-service training for Reading and Mathematics teachers (SACMEQ III and SACMEQ IV)

Region	SACMEQ III				SACMEQ IV			
	Reading		Mathematics		Reading		Mathematics	
Central	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Coast	2.0	0.00	2.1	0.2	2.6	0.19	2.6	0.19
Eastern	2.0	0.21	2.2	0.21	3.0	0.21	3.0	0.21
Nairobi	2.6	0.16	2.1	0.11	2.6	0.31	2.6	0.31
North Eastern	2.0	0.42	1.8	0.18	3.0	0.00	3.0	0.00
Nyanza	2.2	0.14	1.9	0.21	1.7	0.00	1.7	0.00
Rift Valley	1.9	0.11	2.1	0.14	2.3	0.06	2.4	0.05
Western	2.2	0.22	2.1	0.09	2.3	0.24	2.3	0.24
Kenya	**2.0**	**0.07**	**2.0**	**0.07**	**2.6**	**0.11**	**2.6**	**0.11**

Table 4.11: Means of the years of teaching experience (SACMEQ III and SACMEQ IV)

Region	SACMEQ III				SACMEQ IV			
	Reading		Mathematics		Reading		Mathematics	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Central	19.5	1.37	19.6	1.86	15.6	1.99	18.6	2.76
Coast	12.5	2.81	13.8	2.26	12.5	2.46	8.2	1.47
Eastern	13.0	1.98	12.5	1.97	18.0	3.25	9.4	1.74
Nairobi	15.0	1.67	17.0	1.27	11.3	5.0	11.6	4.2
North Eastern	5.7	0.84	8.7	1.52	6.6	1.15	3.0	0.87
Nyanza	9.5	1.4	13.3	1.62	11.2	2.18	10.8	2.34
Rift Valley	12.4	1.46	12.3	1.41	8.0	1.14	10.1	1.52
Western	14.0	2.55	11.0	1.84	13.3	2.06	13.1	2.1
Kenya	**13.3**	**0.73**	**13.6**	**0.71**	**12.7**	**1.01**	**11.3**	**0.85**

According to **Table 4.10**, the average number of years of pre-service training received by Mathematics and Reading teachers was 2.6 years in SACMEQ IV. This compares well with the requisite 2 year pre-service teacher training for primary school teachers. In comparison to SACMEQ III, there has been an increase in the mean number of years of teacher training from 2.0 years to 2.6 years in SACMEQ IV. This could be attributed to the increasing number of teachers with Diploma and First degree levels of qualification.

Looking at **Table 4.11** in SACMEQ IV, at the national level, teachers had an average teaching experience of 12.7 years for Reading teachers and 11.3 years for Mathematics teachers. Central and Eastern regions had the most experienced teachers with 15.6 and 18.0 years in Reading. Central and Western had Mathematics teachers with 18.6 and 13.1 years respectively. North Eastern had teachers with the lowest number of years of experience with a mean of 6.6 years for Reading and 3.0 years for Mathematics.

In comparison with SACMEQ III, there has been a decrease in the mean number of years of teaching for Mathematics and Reading teachers from 13.3 years and 13.6 respectively to 12.7 and 11.3 years respectively in SACMEQ IV. In SACMEQ IV, Central region had the most experienced teachers with an average of 17.1 years (Reading and Mathematics) while North Eastern had the least experienced teachers (4.8 years).

In-service training

How many days were spent by Reading and Mathematics teachers on in-service courses?

The number of days spent on in-service courses by Reading and Mathematics teachers was of interest in this study. Results of the data analysis are presented in **Table 4.12.**

Table 4.12: Number of days spent on in-service courses (SACMEQ IV)

Region	Reading		Mathematics	
	Mean	SE	Mean	SE
Central	123.4	79.65	28.6	11.85
Coast	49.5	29.53	45.8	16.72
Eastern	13.0	5.48	19.4	8.81
Nairobi	11.3	5.43	11.9	4.09
North Eastern	64.4	63.07	14.5	11.0
Nyanza	46.1	19.48	46.3	14.82
Rift Valley	20.6	5.47	32.0	9.78
Western	44.8	20.91	49.3	22.94
Kenya	**43.3**	**11.91**	**35.0**	**5.76**

Nationally, a Reading teacher spent on average 43.3 days on in-service courses compared to a Mathematics teacher who spent 35.0 days, over a period of three years (2010-2013). In Western, Nyanza and Coast regions, Mathematics teachers had the highest number of days attending in-service courses, at 49.3, 46.3 and 45.8 respectively. In Nairobi region, Mathematics teachers spent the least number of days on in-service courses (11.9 days). Central region Reading teachers spent the highest number of days on in-service courses at 123.4 while Nairobi region Reading teachers spent the least number of days on in-service courses (11.3 days).

Effectiveness of in-service training

What percentage of teachers considers in-service training for Reading and Mathematics effective?

The study sought to establish the percentage of teachers that considered in- service training in Reading and Mathematics effective. The results are presented in Table 4.13.

Table 4.13: Effectiveness of in-service training for Reading, Mathematics and Health teachers (SACMEQ IV)

Region	Reading	Mathematics	Health
	%	%	%
Central	66.0	79.9	68.0
Coast	46.3	77.6	80.8

Region	Reading	Mathematics	Health
	%	%	%
Eastern	50.9	38.6	52.8
Nairobi	62.4	67.2	63.8
North Eastern	62.4	40.5	29.0
Nyanza	50.0	75.1	71.6
Rift Valley	55.1	72.1	64.7
Western	70.2	81.2	65.9
Kenya	**59.4**	**68.8**	**65.4**

Nationally, majority of the teachers found in-service training to be effective: 59.4 percent of Reading teachers, 68.8 of Mathematics and 65.4 percent of Health teachers. In some regions, the percentage of teachers considering in-service training to be effective was less than 50 percent. For example, in Eastern region, 38.0 percent of Mathematics teachers felt that in-service courses were effective, while 46.3 percent of Reading teachers from Coast and 29.0 percent of Health teachers from North Eastern reported in-service training to be effective.

Policy Suggestion 4.5

In-service training needs to be restructured, linking the functions of the Curriculum Support Staff to the Kenya Institute of Curriculum Development (KICD) and Directorate of Quality Assurance and Standards (DQAS) with enhanced systems that inform in-service training.

Policy Suggestion 4.6

KICD in liaison with DQAS should carry out regular need assessment; to identify the areas that teachers require in-service training.

4.4 Teacher Time Allocation

General Policy Concern 4.3: How did Standard 6 teachers allocate their time among responsibilities concerned with teaching, preparing lessons, and marking?

Lessons taught per week

What was the mean number of periods taught by Reading and Mathematics teacher per week?

The study aimed at establishing the mean number of periods taught by teachers per week. The results are presented in **Table 4.14.**

Table 4.14: Means of the number of periods per week taught by Reading and Mathematics teachers

Region	SACMEQ III				SACMEQ IV			
	Reading		Mathematics		Reading		Mathematics	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Central	36.8	0.93	37.0	0.83	31.8	2.85	29.2	3.29
Coast	32.9	1.53	33.4	1.21	28.5	1.94	24.5	2.81
Eastern	33.2	1.75	36.1	1.12	34.1	1.99	35.6	1.59
Nairobi	32.2	1.22	32.3	1.37	26.9	2.64	26.6	1.81
North Eastern	34.8	2.24	33.8	1.89	18.7	6.36	26.5	5.71
Nyanza	32.6	1.15	34.0	1.26	26.9	2.33	27.9	2.57
Rift Valley	33.8	0.81	33.5	0.83	30.0	1.65	22.6	1.87
Western	33.2	1.28	33.1	1.67	32.4	4.39	27.5	1.73
Kenya	**33.7**	**0.48**	**34.3**	**0.46**	**30.4**	**1.08**	**27.9**	**1.00**

In SACMEQ III the mean number of periods taught per week was 33.7 (19.65 hours) for Reading and 34.3 (20.00 hours) for Mathematics teachers. For SACMEQ IV, the national mean number of periods taught by Reading teachers per week was 30.4 (17.73 hours) compared to 27.9 (16.27 hours) for Mathematics teachers. This represents a decline in the mean number of periods taught by a teacher per week. Teachers from Eastern region had the highest mean number of periods per week at 34.1 and 35.6 for Reading and Mathematics respectively. Western (32.4) and Central (31.8) are the other regions with teachers reporting mean number of periods per week above the national mean in Reading. It is notable that on average, Reading and Mathematics teachers mean number of lessons was far below the recommended 40 periods per week for primary school teachers.

Policy Suggestion 4.7

The current policy of a minimum of 40 teaching periods per week is not realistic and the TSC should consider revising downwards to a maximum of 35 periods per week to give teachers time for lesson preparations and marking.

Time spent on lesson preparation

General policy concern 4.3

What was the mean number of hours per week spent by teachers on lesson preparation and marking?

With regard to the mean number of hours that Reading and Mathematics teachers spent on preparing and marking, the results of the data analysis for SACMEQ III and IV are presented in **Table 4.15** and **Table 4.16.**

Table 4.15: Means for time spent by teachers on lesson preparation and marking outside school hours (SACMEQ III)

Region	Reading lesson (hours)		Mathematics lesson (hours)	
	Mean	SE	Mean	SE
Central	11.6	1.55	8.8	1.47
Coast	10.6	1.21	10.7	1.65
Eastern	10.9	1.81	12.3	1.73
Nairobi	12.1	1.52	11.9	1.16
North Eastern	13.7	2.03	12.7	2.28
Nyanza	12.7	1.04	11.4	0.95
Rift Valley	10.7	0.79	10.6	0.94
Western	12.5	1.37	14.4	1.68
Kenya	**11.6**	**0.50**	**11.4**	**0.53**

Table 4.16: Means for time spent by teachers on lesson preparation and marking outside school hours (SACMEQ IV)

REGION	Reading lesson (hours)		Mathematics lesson (hours)	
	Mean	SE	Mean	SE
Central	7.8	0.95	9.7	1.75
Coast	9.5	1.46	9.3	1.80
Eastern	11.9	3.55	10.4	2.26
Nairobi	12.4	2.89	14.9	4.26
North Eastern	11.7	4.24	18.8	7.41
Nyanza	11.6	1.73	20.4	5.38
Rift Valley	16.0	4.58	14.5	4.68
Western	16.3	2.24	15.0	2.88
Total	**12.7**	**1.32**	**14.0**	**1.65**

The national mean number of hours spent on lesson preparation outside school hours by Reading teachers was 12.7 hours and by Mathematics teacher was 14.0. Reading teachers from Western region had the highest mean number of hours per week spent on preparation

and marking (16.3 hours) and Mathematics teachers from Nyanza region spent the highest number of hours on preparation and marking (20.4 hours). Reading teachers from Central, Coast, Nyanza, North Eastern and Eastern regions spent the lowest number of hours per week on preparation and marking at 7.8, 9.5, 11.6, 11.7, and 11.9 respectively whereas Coast region's Mathematics teachers spent the lowest number of hours per week on preparation and marking at 9.3.

In comparison to SACMEQ III, presented in **Table 4.15** above, the mean number of hours spent on these tasks per week was 11.6 for Reading and 11.4 for Mathematics. This means that there had been a significant increase in the amount of time spent on preparation and marking over the past six years. This could be attributed to the decline in teaching workload, giving teachers fewer lessons to prepare for and more time in school to do preparation and marking.

Policy Suggestion 4.8

a) KICD should give guidelines on the average time to be spent on lesson preparation and marking.
b) There is need to strengthen supervision of teachers at school, sub-county and county levels.

4.5 Assessment and Communication with Parents

General Policy Concern 4.4

What were Standard 6 teachers' views on (a) assessment procedures, and (b) meeting and communicating with parents?

This sub-section presents results of the data analysis with regard to Reading and Mathematics teachers' views on assessment procedures and communication with parents.

Frequency of giving written tests

What was the frequency with which Reading and Mathematics teachers gave written tests to pupils?

This study intended to find out the frequency with which Reading and Mathematics teachers gave written tests to pupils. The results are presented in **Tables 4.17** to **4.20.**

Table 4.17: Frequency of Reading Teacher giving written tests (SACMEQ III)

Region	Less often		2/3 per month		1+ per week	
	%	SE	%	SE	%	SE
Central	40.6	9.82	35.9	9.47	23.5	9.09
Coast	57	13.55	21.4	12.23	21.6	10.03
Eastern	58.1	9.89	16.7	6.48	25.2	8.78
Nairobi	48.4	10.62	27.7	8.52	24	9.04
North Eastern	54.4	12.88	19.1	7.37	26.5	13.89
Nyanza	35.1	7.75	29.2	8.11	35.6	8.44
Rift Valley	46.4	7.9	33.9	7.94	19.7	5.56
Western	45.4	11.07	23.4	9.02	31.1	10.52
Kenya	**46.2**	**3.78**	**27.9**	**3.45**	**25.9**	**3.30**

Table 4.18: Frequency of Reading teacher giving written tests (SACMEQ IV)

Region	Less often		2/3 per month		1+ per week	
	%	SE	%	SE	%	SE
Central	23.6	9.82	24.3	9.47	52.2	9.09
Coast	37.2	13.55	46.1	12.23	16.8	10.03
Eastern	20.9	9.89	13.4	6.48	65.7	8.78
Nairobi	33.7	10.62	6.7	8.52	59.6	9.04
North Eastern	17.6	12.88	40.4	7.37	42	13.89
Nyanza	33.4	7.75	45.1	8.11	21.6	8.44
Rift Valley	40.9	7.9	35.3	7.94	23.8	5.56
Western	39.2	11.07	9.6	9.02	51.2	10.52
Kenya	32.5	3.78	28.2	3.45	39.3	3.3

There was a general improvement between SACMEQ III and SACMEQ IV in the frequency of giving Reading tests. Nationally, the percentage of teachers who gave written tests once or more per week increased by 13.4 percentage points from 25.9 percent in SACMEQ III to 39.3 percent in SACMEQ IV. On the other hand, 32.5 percent of pupils had Reading teachers who gave written tests less often as compared to 46.2 percent in SACMEQ III. Teachers from Rift Valley region had the highest percentage of teachers giving written tests less often at 40.9 percent followed by Western, Coast and Nairobi at 39.2, 37.2 and 33.7 respectively.

Table 4.19: Frequency of Mathematics teacher giving written test (SACMEQ III)

Region	Less often		2/3 per month		1+ per week	
	%	SE	%	SE	%	SE
Central	31.2	41	45.2	10.37	23.6	9.65
Coast	47.4	12.58	34.8	12.91	17.8	9.11
Eastern	35.2	10.1	21.4	8.52	43.4	10.77
Nairobi	33.1	10.63	43.3	11.25	23.6	7.66
North Eastern	31.4	11.59	54.6	13.41	13.9	8.04

Region	Less often		2/3 per month		1+ per week	
	%	SE	%	SE	%	SE
Nyanza	47.0	8.73	29.3	7.69	23.6	7.92
Rift Valley	54.3	8.21	24.6	5.73	21.1	5.67
Western	36.3	11.05	39.1	10.64	24.7	10.15
Kenya	**42.7**	**3.85**	**31.7**	**3.39**	**25.6**	**3.38**

Table 4.20: Frequency of Mathematics teacher giving written test (SACMEQ IV)

Region	Less often		2/3 per month		1+ per week	
	%	SE	%	SE	%	SE
Central	23.6	9.82	24.3	9.47	52.2	9.09
Coast	37.2	13.55	46.1	12.23	16.8	10.03
Eastern	20.9	9.89	13.4	6.48	65.7	8.78
Nairobi	33.7	10.62	6.7	8.52	59.6	9.04
North Eastern	17.6	12.88	40.4	7.37	42	13.89
Nyanza	33.4	7.75	45.1	8.11	21.6	8.44
Rift Valley	40.9	7.9	35.3	7.94	23.8	5.56
Western	39.2	11.07	9.6	9.02	51.2	10.52
Kenya	32.5	3.78	28.2	3.45	39.3	3.3

The expected common practice of giving tests is a minimum of three times a term. However, each school has its own policy. From Table 4.20 it can be seen that there is a general improvement in the frequency of tests given by Mathematics teachers. In SACMEQ IV, 32.5 percent of Mathematics teachers gave written tests three times or less per term which is a decrease of approximately 10 percentage points from SACMEQ III. Rift valley region had the highest number of teachers giving written tests less often at 40.9 percent. Coast region had the lowest percentage of Mathematics teachers giving tests once or more per week at 16.8 percent.

Policy Suggestion 4.9

The MoE should come up with clear guidelines on pupil assessment in order to ensure rationalisation and monitoring of the time spent on assessments.

Asking parents to sign homework

What percentage of Reading and Mathematics teachers asked parents to sign pupils' homework?

With regard to the question of whether Reading and Mathematics teachers asked parents to sign their pupil's homework, the data analysis produced the results presented in Table 4.21 and Table 4.22.

Table 4.21: ***Reading teachers who asked parents to sign pupils' homework***

Region	SACMEQ III		SACMEQ IV	
	%	SE	%	SE
Central	38.9	8.33	65.5	10.57
Coast	23.2	10.18	37.8	12.43
Eastern	29.5	10.38	54.0	9.86
Nairobi	66.6	9.42	98.1	8.89
North Eastern	25.6	7.39	11.6	9.90
Nyanza	43.7	9.35	43.6	8.91
Rift Valley	35.8	7.68	41.6	7.83
Western	48.1	9.42	51.1	11.12
Kenya	**38.8**	**3.69**	**49.4**	**3.81**

There was a national increase in the proportion of Reading teachers who asked parents to sign pupils' homework (49.4 percent in SACMEQ IV and 38.8 percent in SACMEQ III), which represented 10.6 percentage point increase. In SACMEQ IV, the regions with the lowest proportion of Reading teachers requiring parents to sign homework was North Eastern (11.6) per cent, Coast (37.8) percent Rift Valley (41.6) percent and Nyanza (43.6) percent. Nairobi region, had the highest percentage of Reading teachers asking parents to sign pupils' homework at 98.1 percent.

Table 4.22: Mathematics teachers who asked parents to sign pupils' homework

Region	SACMEQ III		SACMEQ IV	
	%	SE	%	SE
Central	36.0	9.28	65.5	10.86
Coast	32.1	11.04	37.8	13.22
Eastern	48.4	6.56	54.0	10.85
Nairobi	65.4	9.40	98.1	10.01
North Eastern	34.6	10.02	11.6	13.61
Nyanza	39.4	10.00	40.6	8.53
Rift Valley	32.0	9.04	41.6	7.18
Western	52.9	10.33	51.1	10.99
KENYA	**40.9**	**3.74**	**48.8**	**3.83**

A trend similar to that of Reading, described above, was observed in Mathematics where teachers who asked parents to sign their children's homework increased from 40.9% in SACMEQ III to 48.8 % in SACMEQ IV. Nairobi region had the highest number of Mathematics teachers asking parents to sign pupils homework (98.1%) while North Eastern had the lowest (11.6%).

Policy Suggestion 4.10

The school administration through the PTA and BoM should strengthen strategies on

involvement of parents in the learning of pupils.

4.6 Availability of Teaching Aids, Teacher Chair and Teacher Table

General Policy Concern 4.5

What was the availability of classroom furniture (for example, sitting/writing places, teacher table, teacher chair, and bookshelves) and classroom equipment (for example, chalkboard, dictionary, maps, book corner, and teacher guides) in Standard 6 classrooms?

This section provides a comparative data analysis of findings about classroom furniture and equipment by region.

Teaching aids

What percentage of pupils had teachers who had access to teaching aids in their schools?

The question of whether teachers had teaching aids in their schools was of interest to this study. This is because the FPE funds were meant to ensure schools had adequate teaching aids. The findings are presented in Tables **4.23** and **4.24.**

Table 4.23: Teachers with teaching aids in the school (SACMEQ III)

Region	For teaching Reading				For teaching Mathematics	
	Map		English dictionary		Geometrical instruments	
	%	SE	%	SE	%	SE
Central	92.5	4.17	92.5	4.17	93.1	3.51
Coast	95.1	3.49	100	0.0	77.5	10.81
Eastern	95.9	3.03	98.6	1.41	92.2	5.44
Nairobi	83	8.1	81.6	7.96	85.8	5.33
North Eastern	98.2	1.28	99.1	0.9	92.3	4.28
Nyanza	86.5	5.29	89.9	4.63	94.0	3.86
Rift Valley	96.6	2.41	98.6	1.42	97.6	1.79
Western	95.8	4.2	93.4	4.82	98.0	2.01
KENYA	**93.3**	**1.55**	**94.8**	**1.34**	**93.4**	**1.58**

Table 4.24: Teachers with teaching aids in the school (SACMEQ IV)

Region	For teaching Reading				For teaching Mathematics	
	Map		English dictionary		Geometrical instruments	
	%	SE	%	SE	%	SE
Central	100.0	0.00	94.8	5.54	100.0	0.00
Coast	80.8	23.74	97.0	4.36	85.6	16.17
Eastern	100.0	0.00	98.2	2.42	91.5	2.48
Nairobi	91.6	0.00	100.0	0.00	100.0	0.00

North Eastern	100.0	0.00	100.0	0.00	100.0	0.00
Nyanza	96.3	0.37	93.4	5.06	96.1	0.46
Rift Valley	85.2	1.87	96.0	2.77	90.9	2.20
Western	94.6	2.19	100.0	0.00	95.6	1.81
KENYA	**93.0**	**2.32**	**96.6**	**1.51**	**93.6**	**0.80**

There was a general improvement in the provision of teaching aids for Reading and Mathematics teachers. As shown in Table **4.24**, in Reading, 93.0 percent of pupils had teachers who had a map, 96.6 had an English dictionary. For Mathematics, 93.6 percent had a geometrical set. Regionally, Coast region had a lower percentage of teachers with resources while their colleagues from North Eastern region had the highest percentage of the selected teaching aids. The availability of teaching aids could be an indication that schools have been receiving the FPE grants and have utilized them to ensure teachers have the required teaching and learning materials.

Policy Suggestions 4.11

The government should monitor to ensure equitable provision and development of teaching aids in schools in all regions.

Teacher table and chair

What percentage of pupils had teachers with chairs and tables?

This question of whether teachers had necessary furniture in their classrooms was of interest to study. The results are presented in **Table 4.26.**

Table 4.25: Availability of classroom resources: Teacher tables and chairs (SACMEQ III)

Region	Reading				Mathematics			
	Teacher table		Teacher chair		Teacher		Teacher chair	
	%	SE	%	SE	%	SE	%	SE
Central	58.2	10.83	51.1	10.61	52.3	10.4	46.0	10.34
Coast	38.7	12.85	46.5	12.96	31.4	11.4	48.6	12.91
Eastern	38.2	10.63	54.3	10.81	50.9	10.8	57.5	10.71
Nairobi	83.5	7.11	85.5	7.21	87.3	5.01	87.3	5.01
North Eastern	37.0	13.71	59.7	15.27	29.0	12.1	49.6	14.10
Nyanza	53.2	8.69	63.9	8.52	49.7	8.99	50.8	9.06
Rift Valley	59.5	7.65	56.7	7.91	67.5	6.95	65.6	6.86
Western	80.1	8.45	90.0	5.98	76.7	8.68	85.4	6.82
Kenya	**57.2**	**3.74**	**62.1**	**3.69**	**58.8**	**3.66**	**61.3**	**3.60**

Table 4.26: Availability of classroom resources: Teacher tables and chairs (SACMEQ IV)

Region	Reading				Mathematics			
	Teacher table		Teacher chair		Teacher table		Teacher chair	
	%	SE	%	SE	%	SE	%	SE
Central	95.3	4.41	87.0	0.12	95.3	4.41	87.0	0.12
Coast	41.6	6.04	41.6	6.04	41.6	6.04	41.6	6.04
Eastern	65.0	9.50	65.5	13.0	65.0	9.50	65.5	13.80

Region	Reading				Mathematics			
	Teacher table		Teacher chair		Teacher table		Teacher chair	
	%	SE	%	SE	%	SE	%	SE
Nairobi	87.2	0.00	93.9	0.00	87.2	0.00	93.9	0.00
North Eastern	36.0	0.00	36.0	0.00	36.0	0.00	36.0	0.00
Nyanza	49.0	0.15	71.0	4.63	49.0	0.15	71.0	4.63
Rift Valley	61.9	4.81	70.8	0.28	61.9	4.81	70.8	0.28
Western	75.4	1.85	84.8	4.70	75.4	1.85	84.8	4.70
Kenya	**64.0**	**2.68**	**70.8**	**2.45**	**64.0**	**2.68**	**70.8**	**2.45**

There was a remarkable increase in the percentage of teachers having a table and a chair in comparison to SACMEQ III both nationally and regionally. The percentage of Reading teachers with tables and chairs increased from 57.2 and 62.1 percent in SACMEQ III to 64.0 and 70.8 percent, respectively in SACMEQ IV. The increase was also observed with regard to Mathematics teachers having a table and a chair from 58.8 and 61.3 percent to 64.0 and 70.8 percent, respectively in SACMEQ IV.

However, it is noteworthy that about 40 percent of teachers did not have a table while about 30 percent did not have a chair. The situation is worse in the two regions of North Eastern and Coast where more than 50 percent of both Reading and Mathematics teachers lacked both table and chair. In Nairobi and Central regions, however, nearly 90 percent of teachers had both table and chair.

Policy Suggestions 4.12:

The government should ensure equitable and adequate provision of classroom furniture and equipment in all schools and regions.

4.7 Professional Support

General Policy Concern 4.6:

What professional support (in terms of education resource centres and school head inputs) was given to Standard 6 teachers?

The utilisation of educational resource centres by teachers and the reasons for using them were of interest to this study. Below are the findings of the analysis with regard to the percentage of teachers who were using these services and the reasons for it.

Availability of Educational Resource Centres

What was the percentage of pupils with teachers who (a) had access to Educational Resource Centres, and (b) visited education resource centres?

It is important for teachers to receive support from resource centres so as to be informed of the new developments in their respective subject areas and referencing, among other reasons. This study aimed to find out how often and why teachers used the educational resource centres. The results of the data analysis are presented in **Table 4.27** and **Table 4.28**.

Table 4.27: Availability of education resource centres for teachers (SACMEQ III)

Region	Reading Teacher						Mathematics Teacher					
	None available		Have not visited		Have visited		None available		Have not visited		Have visited	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	31.8	9.68	15.4	7.02	52.8	11.02	39.9	10.48	27.3	9.36	32.9	10.58
Coast	0.0	0.00	43.1	13.15	56.9	13.15	17.3	9.99	29.5	10.61	53.2	12.92
Eastern	43.9	10.91	23.1	9.16	33.0	9.91	44.7	10.50	19.1	7.74	36.2	10.75
Nairobi	14.5	7.21	40.0	9.50	45.5	11.39	16.8	5.84	41.5	9.27	41.6	9.37
N. Eastern	66.6	14.52	10.7	10.40	22.8	12.71	72.7	11.25	8.1	5.95	19.2	10.08
Nyanza	32.6	8.19	29.8	7.83	37.5	8.55	30.5	8.04	25.6	7.74	43.9	8.31
Rift Valley	3.1	2.27	49.0	8.18	48.0	8.27	6.4	3.68	46.5	8.47	47.1	8.38
Western	40.6	10.68	21.3	9.07	38.1	11.36	41.5	10.86	12.2	7.48	46.3	11.32
Kenya	**24.6**	**3.08**	**31.9**	**3.48**	**43.5**	**3.95**	**27.9**	**3.27**	**29.3**	**3.43**	**42.8**	**3.94**

Table 4.28: Teachers using educational resource centres (SACMEQ IV)

Region	Reading teacher						Mathematics teacher					
	None available		Have not visited		Have used		None available		Have not visited		Have Used	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	50.4	9.68	0	7.02	49.6	11.02	50.4	10.48	0.0	9.36	49.6	10.58
Coast	66.5	0.00	9.6	13.15	23.9	13.15	66.5	9.99	9.6	10.61	23.9	12.92
Eastern	58.1	10.91	5.5	9.16	36.4	9.91	58.1	10.5	5.5	7.74	36.7	10.75
Nairobi	47.8	7.21	1.7	9.5	50.5	11.39	47.8	5.84	1.7	9.27	50.5	9.37
N. Eastern	85.1	14.52	0.0	10.4	14.9	12.71	85.1	11.25	0.0	5.95	14.9	10.08
Nyanza	51.9	8.19	1.8	7.83	46.3	8.55	51.4	8.04	1.8	7.74	46.3	8.31
Rift Valley	61.7	2.27	9.7	8.18	28.6	8.27	61.7	3.68	9.7	8.47	28.6	8.38
Western	66.1	10.68	7.8	9.07	26.1	11.36	66.1	10.86	7.8	7.48	26.1	11.32
Kenya	**59.1**	**3.08**	**5.7**	**3.48**	**35.1**	**3.95**	**59.1**	**3.27**	**5.7**	**3.43**	**35.1**	**3.94**

Table 4.28 shows that the national percentage of pupils whose Reading teachers did not have access to a resource centre was 59.1 percent. However, extreme variations in the availability of resource centres were found among the regions. In North Eastern, 85.1 percent of the pupils had both Reading and Mathematics teachers who had no access to a resource centre

compared to a low of 47.8 percent of pupils in Nairobi. The Mathematics teachers in the Coast region are similarly disadvantaged with 66.5 percent of pupils with teachers who report that no resource centre was available. The percentage of Standard 6 pupils whose Reading and Mathematics teachers had not visited a resource centre was at 5.7 percent for both. Rift Valley region had the highest percentage of 9.7 percent for both Reading and Mathematics teachers who had not visited resource centres.

Nationally, 35.1 percent of Reading teachers and Mathematics teachers had used resource centres. Compared with SACMEQ III results, there was a drop in the use of resource centres for both Reading and Mathematics teachers. Regionally, the highest use of resource centres was recorded in Nairobi region by Reading teachers at 50.5 percent and Central region by Mathematics teachers at 49.6 percent.

Policy Suggestions 4.13

The government should establish functional educational resource centres in all regions. There is also need to sensitize teachers on the importance of visiting and using the resource centres with a view to positively impacting on the quality of teaching and learning.

Use of Educational Resource Centres

Why did teachers visit Educational Resource Centres?

In response to this question, teachers provided different reasons for their visits to the resource centres. These are presented in Tables 4.29 and 4.30.

Table 4.29: Reading teachers' purposes for using resource centres (SACMEQ III)

	Don't use		Borrow material		Make material		Training		Speak with	
Region	%	SE	%	SE	%	SE	%	SE	%	SE
Central	42.1	10.91	39.2	10.39	16.7	8.53	46.4	11.25	45.0	10.16
Coast	13.9	9.66	13.9	9.66	5.2	5.28	30.7	13.36	44.7	13.43
Eastern	11.8	5.82	10.5	6.41	17	7.27	22.8	8.25	27.3	8.87
Nairobi	33.7	11.23	15.6	7.64	17.9	8.41	37.8	10.07	30.3	9.66
North	11.9	7.08	5.0	3.72	3.2	3.34	2.8	2.74	13.8	8.18
Nyanza	27.3	8.01	24.3	7.47	22.9	7.24	25.7	6.90	29.3	7.63
Rift Valley	28.2	8.05	28.6	7.97	19.7	7.46	42.8	8.38	38.1	8.26
Western	28.5	11.39	30.4	11.27	28.5	11.39	25.1	11.33	30.7	11.35

Table 4.30: Reasons given by Reading teachers for visiting a resource centre (SACMEQ IV)

Region ID	Look at Materials		Borrow Materials		Make Materials		Attend Courses		Exchange Ideas		Seek Advice	
	Yes	SE	Yes	SE	Yes	SE	Yes	SE	Yes	SE	Yes	SE
Central	100.0	0.00	78.6	21.25	73.9	24.33	100.0	0.00	100.0	0.00	100.0	0.00
Coast	21.6	23.10	0.0	0.00	32.9	26.34	88.6	13.55	67.1	26.34	88.6	13.55
Eastern	24.3	17.58	24.3	17.58	24.3	17.58	84.9	13.14	100.0	0.00	84.9	13.14
Nairobi	100.0	0.00	100.0	0.00	56.5	40.38	93.6	8.96	100.0	0.00	93.6	8.96
North Eastern	66.4	33.45	32.7	33.00	66.4	33.45	66.4	33.45	100.0	0.00	66.4	33.45
Nyanza	65.3	19.59	54.5	20.95	54.5	20.95	82.9	16.51	100.0	0.00	82.4	13.68
Rift Valley	85.5	8.61	77.4	11.41	52.6	15.02	45.1	15.48	74.1	11.51	65.4	13.46
Western	71.6	22.77	86.7	13.75	30.6	20.95	89.9	10.83	79.3	19.61	89.9	10.83
Kenya	**63.1**	**10.37**	**57.3**	**10.08**	**44.5**	**9.67**	**74.7**	**6.90**	**89.1**	**4.01**	**80.4**	**6.08**

Table 4.30 shows that 89.1% of pupils had Reading teachers who went to resource centres to exchange ideas with teachers from other schools and staff, followed by 74.7 % who went to attend training courses. These were higher percentages compared to SACMEQ III, where 34.7 percent of Reading teachers went to resource centres to exchange ideas and 33.2 percent went for training. The percentage borrowing materials was also higher in SACMEQ IV with 57.3% up from 24.8% in SACMEQ III. In Nairobi region, there was an increase in the percentage visiting resource centres to attend training courses from 37.8% in SACMEQ III to 93.6% in SACMEQ IV.

Table 4.31: Reasons given by Mathematics teachers for visiting a resource centre (SACMEQ III)

Region	Look at Materials		Borrow Materials		Make Materials		Attend Courses		Exchange Ideas		Seek Advice	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	23.9	9.80	16.3	8.77	8.2	5.04	32.9	10.58	20.8	8.53	20.8	8.53
Coast	28.5	13.07	21.7	10.53	15.1	8.96	42.0	13.13	29.0	11.23	44.7	13.40
Eastern	15.2	8.71	8.4	6.41	8.4	6.41	26.2	9.89	30.4	10.25	25.4	10.17
Nairobi	23.4	8.61	22.7	8.42	20.1	8.40	38.3	9.59	29.6	9.51	26.3	8.86
North Eastern	9.1	6.16	10.4	5.61	0.0	0.00	12.1	7.91	15.4	8.58	18.3	9.73
Nyanza	30.4	8.03	33.1	7.95	15.0	5.10	33.0	7.88	38.4	8.19	41.9	8.26
Rift Valley	25.6	6.31	22.2	7.54	26.0	7.71	33.7	8.32	35.4	8.17	37.4	8.31
Western	23.9	10.13	19.1	9.97	9.7	5.06	24.4	10.56	20.1	8.02	37.0	11.32
Kenya	**24.4**	**3.39**	**20.7**	**3.32**	**15.2**	**2.77**	**31.7**	**3.80**	**30.1**	**3.60**	**33.9**	**3.81**

Table 4.32: Reasons given by Mathematics teachers for visiting a resource centre (SACMEQ IV)

Region ID	Look at Materials		Borrow Materials		Make Materials		Attend Courses		Exchange Ideas		Seek Advice	
	Yes	SE	Yes	SE	Yes	SE	Yes	SE	Yes	SE	Yes	SE
Central	72.9	24.91	80.3	20.00	48.9	26.06	72.9	24.91	72.9	24.91	100.0	0.00
Coast	21.6	23.10	0.0	0.00	32.9	26.34	88.6	13.55	67.1	26.34	88.6	13.55
Eastern	24.3	17.58	24.3	17.58	24.3	17.58	84.9	13.14	100.0	0.00	84.9	13.14
Nairobi	100.0	0.00	100.0	0.00	56.5	40.38	93.6	8.96	100.0	0.00	93.6	8.96
N. Eastern	78.1	25.67	38.4	35.97	78.1	25.67	78.1	25.67	100.0	0.00	78.1	25.67
Nyanza	65.3	19.59	54.5	20.95	54.5	20.95	82.9	16.51	100.0	0.00	82.4	13.68
Rift Valley	84.8	9.10	76.3	12.04	50.1	15.84	45.2	16.10	72.8	12.18	63.6	14.21
Western	71.6	22.77	86.7	13.75	30.6	20.95	89.9	10.83	79.3	19.61	89.9	10.83
Kenya	**60.8**	**10.45**	**57.1**	**10.19**	**42.0**	**9.67**	**73.3**	**7.33**	**86.8**	**4.68**	**80.5**	**6.10**

As indicated in **Table 4.32**, nationally, a large majority of Mathematics teachers visited resource centres for the purposes of exchanging ideas and seeking advice at 86.8% and 80.5% respectively. These percentages were considerably higher compared to those in SACMEQ III, where the percentages were 30.1% and 33.9% respectively. Making materials as a reason for visiting the resource centres was the least popular at 42.0%. Compared to other regions, Mathematics teachers in Nairobi region recorded the highest use of resource centres for most of the reasons, except 'make materials'.

Policy Suggestions 4.14

There is a need to ensure that all teachers visit and use resource centres to improve their skill levels and to develop teaching and learning materials.

4.8 Conclusion

This chapter focused on the analysis and description of the personal and professional characteristics of Standard 6 teachers, as well as their view points on teaching, classroom resources and professional support.

The average age of Standard 6 teachers was 36.7years for Mathematics and 37.6years for Reading teachers. With regard to gender balance, there was near gender parity at national level. However, disparities across regions persisted. There were more male teachers in Mathematics while Reading had a near gender parity with 45.9 percent female teachers. To ensure gender equality, there is need to have gender balance in recruitment and distribution of teaching staff.

The national mean for years of experience for Standard 6 teachers was 12.7 years for

Reading teachers and 11.3 years for Mathematics teachers. However, regional comparisons puts North Eastern region at approximately half the national mean (6.6 years for Reading and 3.0 years for Mathematics), thus indicating high attrition or increase in recruitment of young teachers. It is also the region with the youngest teachers, at a mean of 29.2 years for Reading and 31.2 years for Mathematics teachers.

The findings of this study also indicated that the national mean of teaching periods per week per teacher is 30.4 for Reading and 27.9 for Mathematics, far below the MoE recommended 40 periods per week per teacher. In addition, the study found out that the amount of time spent on preparation and marking by teachers outside school hours generally increased from 11.6 hours for Reading and 11.4 hours for Mathematics in SACMEQ III to 12.7 hours and 14.0 hours for Reading and Mathematics respectively in SACMEQ IV.

With regard to the availability of teaching-learning materials and equipment in schools, the study showed that in most regions, there was an improvement in the provision of teaching-learning materials and equipment. For example, there was an increase in the percentage of teachers having tables and chairs, as well as teaching aids.

The study found out that there has been an improvement in involvement of parents, with more Reading and Mathematics teachers asking parents to sign their children's homework. Parental involvement should be emphasized in all regions in order to raise performance levels.

It was also found out that there was an increase in frequency of giving Reading and Mathematics tests between SACMEQ III and SACMEQ IV.

The study also established that both Reading and Mathematics teachers visited resource centres for a number of reasons. These included exchange of ideas, seeking advice, attendance of training, looking at materials. Borrowing materials and making materials, in that order, with percentages ranging between 44.5% to 89.1% for Reading teachers and 42.0% to 86.8% for Mathematics teachers. Since teachers seemed to use resource centres for their professional development, there is need for more functional resource centres in all the regions.

CHAPTER 5

5.0 SCHOOL HEADS' CHARACTERISTICS AND THEIR VIEWS ON EDUCATIONAL INFRASTRUCTURE, THE ORGANIZATION AND OPERATION OF SCHOOLS

5.1 Introduction

School heads have major responsibilities that, to a large extent, impact on the quality of instruction and the overall management of schools. These include; ensuring provision of teaching and learning materials, professional support and development for teachers, ensuring effective curriculum implementation at school level, and working effectively with the school Board of Management (BoM) to provide an environment that fosters strong school-community relationships. The reforms instituted in 2003 by the government in the education sector including direct allocation of financial resources to schools have entrusted school heads with an even greater managerial role. These added responsibilities require continuous improvement of school heads in management, in terms of providing professional support to teachers, facilitating a conducive teaching and learning environment, and ensuring good resource utilisation.

This chapter examines the characteristics of school heads and their views on school facilities and infrastructure, and the organization and operation of their schools.

5.2 Characteristics of School Heads

General Policy Concern 5.1:

What were the personal characteristics of school heads?

The school heads' characteristics, such as age, gender and years worked as head of their respective schools were investigated and analysed under policy concern 13. Analysis of the data is presented in tables and descriptions that follow.

What were the age and gender distributions of the school heads?

Data on the age distribution of school heads is useful for planning purposes, especially for employment agencies like the Teachers Service Commission, which require such information for purposes of recruitment and replacement of school heads. Likewise, data on the gender distribution is useful in ensuring gender equity in the deployment of school heads. Information on age and gender in both SACMEQ III and IV, which are presented for comparison purposes, is summarised in **Table 5.1**.

Table 5.1: Female school heads' age and gender (SACMEQ III and SACMEQ IV)

Region	SACMEQ III				SACMEQ IV			
	Age		Female		Age		Female	
	Mean	SE	%	SE	Mean	SE	%	SE
Central	45.5	1.03	8.7	5.31	49.8	1.43	30.6	11.79
Coast	44.3	1.95	16.3	9.15	46.6	1.62	24.8	13.29
Eastern	46.1	1.20	10.4	7.76	46.2	2.95	28.2	12.77
Nairobi	47.4	1.56	57.5	13.23	41.4	2.00	40.1	15.63
North Eastern	36.0	1.17	14.1	10.68	36.7	3.25	0.0	0.00
Nyanza	46.5	0.99	12.6	6.40	48.6	1.43	7.1	5.16
Rift Valley	43.7	0.90	15.0	6.09	43.8	1.15	14.0	5.58
Western	46.9	1.47	12.5	7.61	51.0	1.02	8.2	4.72
Kenya	**45.4**	**0.46**	**14.7**	**2.79**	**46.6**	**0.74**	**18.1**	**3.71**

Results in **Table 5.1** show that the mean age for school heads in the SACMEQ IV study was 46.6 years and this is an increase of 1.2 years from SACMEQ III. Western, Central and Nyanza regions had relatively older school heads with mean ages of 51.0, 49.8 and 48.6 years, respectively. The rest of the regions had school heads with mean ages between 41.4 and 46.6 years, except North-Eastern, which had relatively young school heads with a mean age of 36.7 years.

As for gender distribution, the percentage female school head obtained during SACMEQ IV was 18.1 compared to 14.7 during SACMEQ III; an increase of 3.4 percentage points. Out of the eight regions, Nairobi had the highest percentage of female school heads at 40.1. With the exception of Central, Coast and Eastern, the rest of the regions recorded a decline in the percentage of female school heads. Notably, the percentage of female school heads in Nairobi region declined from 57.5 in SACMEQ III to 40.1 in SACMEQ IV. Western and Nyanza had lower than 10 percent of the head teachers who were female, at 8.2 and 7.1 percent, respectively. North Eastern region had 0.0 percent of female head teachers compared to 14.1 in SACMEQ III.

Policy Suggestion 5.1

There is need for TSC to take affirmative action on the appointment of female head teachers especially in North Eastern region.

5.3 Professional Characteristics of School Heads

General Policy Concern 5.2

What were the professional characteristics of school heads (in terms of academic, professional experience and specialised training)?

Under policy concern 14, the professional characteristics of school heads in terms of academic qualifications, teaching experience, teacher training and specialized training was analysed and results presented in tables 5.2 and 5.3.

Academic qualification

What is the highest level of academic qualifications of school heads?

The minimum required academic qualification for primary school heads is senior secondary education. Table 5.2 and Table 5.3 show the percentages of school heads reaching each level in SACMEQ III and SACMEQ IV respectively.

Table 5.2: Highest academic education of school heads (SACMEQ III)

Region	Primary		Junior sec		Senior sec		A-level		Tertiary	
	%	SE	%	SE	%	SE	%	SE	%	SE
Central	0.0	0.00	3.3	3.35	66.5	10.77	26.4	10.36	3.8	3.86
Coast	0.0	0.00	0.0	0.00	44.0	13.38	56.0	13.38	0.0	0.00
Eastern	0.0	0.00	0.0	0.00	84.5	8.49	15.5	8.49	0.0	0.00
Nairobi	0.0	0.00	0.0	0.00	25.7	10.81	37.8	13.00	36.5	13.50
North Eastern	0.0	0.00	9.1	9.01	40.0	15.39	26.1	12.25	24.8	15.30
Nyanza	0.0	0.00	0.0	0.00	62.6	8.75	35.6	8.69	1.8	1.81
Rift Valley	2.6	2.56	0.0	0.00	75.3	7.09	16.7	6.21	5.4	3.17
Western	0.0	0.00	0.0	0.00	70.8	10.5	22.3	9.28	6.9	6.75
Kenya	**0.7**	**0.66**	**0.5**	**0.46**	**67.6**	**3.67**	**26.1**	**3.47**	**5.1**	**1.57**

Table 5.3: Highest academic education of school heads (SACMEQ IV)

Region	Primary		Junior sec		Senior sec		A-level		Tertiary	
	%	SE	%	SE	%	SE	%	SE	%	SE
Central	0.0	0.00	0.0	0.00	25.9	11.56	48.6	12.30	25.5	10.64
Coast	1.3	1.35	0.0	0.00	33.2	9.85	41.3	12.74	24.3	9.44
Eastern	0.0	0.00	0.0	0.00	17.5	7.64	44.6	12.60	37.9	12.67
Nairobi	3.3	3.42	0.0	0.00	7.5	7.55	22.3	11.82	67.0	13.65
North Eastern	0.0	0.00	0.0	0.00	36.6	19.05	22.8	11.53	40.6	18.08
Nyanza	0.0	0.00	0.0	0.00	38.6	10.44	49.4	10.49	12.0	5.56
Rift Valley	1.3	1.28	0.0	0.00	21.3	6.69	52.1	7.91	25.3	7.00
Western	0.0	0.00	0.0	0.00	35.5	9.52	56.5	9.93	7.9	5.47
Kenya	**0.6**	**0.38**	**0.0**	**0.00**	**26.7**	**3.52**	**47.8**	**4.23**	**24.9**	**3.73**

Table 5.3 shows that nationally, 26.7 percent of standard pupils were in schools where the school heads had attained senior secondary (Form 4/O level) education. The percentage of pupils with primary school heads who had attained A-Level education was 47.8, while those with tertiary education were 24.9. Regionally, the regions that posted the highest percentage of school heads with senior secondary education level were Nyanza (38.6%), North Eastern (36.6%), Western (35.5%), Coast (33.2%), and Central (25.9%). Nairobi region recorded the highest percentage of (67.0%) followed by North Eastern where 40.6 percent of pupils were in schools with a head teacher who had completed tertiary education. There was a marked increase at the national level of school heads who had attained 'A' level and tertiary education from 26.1 and 5.1 percent in SACMEQ III to 47.8 and 24.9 percent, respectively, in SACMEQ IV.

Policy Suggestion 5.2

The Ministry of Education in collaboration with the TSC should base the appointment of school heads and other management positions in the Ministry on relevant higher qualifications.

5.4. Professional training

This study sought to answer the question 'How many years of teacher training had school heads completed'?

It is a government policy that all primary school teachers undergo a 2-year pre-service teacher training programme before certification. Changes in the education system in 1984 led to the recruitment of untrained teachers to meet increased educational demands, and they had to undergo in-service training programmes (equivalent to the pre-service course) that took place during school holidays. Since 1995, the government has recruited trained teachers who have completed the regular 2-year teacher training programme. Information on the number of years the school heads had undergone training was analysed and presented in **Table 5.4.**

Table 5.4: Number of years of teacher training that school heads have completed

	SACMEQ III		SACMEQ IV	
Region	Mean	SE	Mean	SE
Central	2.1	0.07	3.0	0.26
Coast	2.2	0.23	2.5	0.16
Eastern	2.1	0.12	2.7	0.28
Nairobi	2.2	0.16	3.4	0.30
North Eastern	2.0	0.38	2.4	0.42
Nyanza	2.0	0.07	2.5	0.21
Rift Valley	2.1	0.06	2.8	0.17
Western	2.0	0.02	2.6	0.18
Kenya	**2.1**	**0.03**	**2.5**	**0.10**

Table 5.4 shows that nationally, the school heads had attained the required minimum professional qualification of 2 years pre-service training. Across all regions, there has been an increase in the mean number of years of professional training for school heads from 2.1 to 2.5 years. This implies that head teachers had higher professional qualification in SACMEQ IV than in SACMEQ III.

5.5. Teaching experience

How many years of teaching experience did school heads have?

The data in **Table 5.5** shows the mean number of year's school heads had been teaching. The results shows that the national mean number of years for school heads' teaching experience was 23.3 years during SACMEQ IV, which is a slight increase compared to SACMEQ III at 21.3 years. The regions which posted high mean years of school heads' teaching experience during SACMEQ IV were Western with 27.1 years, Central 25.4 years, Nyanza 24.3 years and Coast 23.1 years, whereas North-Eastern had the least with 13.2 years.

Table 5.5: Number of years of teaching experience school heads have completed

Region	SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE
Central	21.5	1.03	25.4	1.46
Coast	20.7	1.74	23.1	1.80
Eastern	22.5	1.32	21.9	2.25
Nairobi	24.7	1.97	17.2	2.02
North Eastern	11.7	1.38	13.2	3.34
Nyanza	20.8	0.93	24.3	1.46
Rift Valley	19.7	0.95	19.2	1.12
Western	23.1	1.46	27.1	1.14
Kenya	**21.3**	**0.47**	**23.3**	**0.93**

5.6. Experience as a school head

How many years of experience did school heads have as school managers?

One of the aims of this study was to investigate the average number of years that one had served as school head in a particular school. The results are summarised in **Table 5.6**.

Table 5.6: The mean number of years as a head teacher

Region	SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE
Central	7.3	1.31	10.2	1.13
Coast	6.9	1.04	9.3	1.17
Eastern	9.3	1.53	10.3	1.52
Nairobi	5.9	0.95	8.1	1.91
North Eastern	4.3	0.92	6.5	1.97
Nyanza	5.3	0.63	9.1	1.03
Rift Valley	8.3	0.83	9.0	1.03
Western	8.8	1.18	10.9	1.43
Kenya	**7.6**	**0.43**	**9.2**	**2.45**

Table 5.6 shows that nationally, the average number of years school heads had been serving at the position was 9.2 years in SACMEQ IV, compared to 7.6 years in SACMEQ III. The school heads with most years of experience were recorded in Western (10.9 years), Eastern (10.3 years) and Central (10.2 years) regions while the least number of years school heads served was recorded in North Eastern region at (6.5 years). In addition, Nyanza region recorded the largest increase in the mean number of years teachers had served as school heads from 5.3 years to 9.1 years in SACMEQ III and SACMEQ IV respectively.

5.7. Specialized trainings on school management and health issues

What percentage of school heads had received (a) specialized training on school management, and (b) specialized training on HIV and AIDS issues?

Analysis was carried out on the amount of specialised training for school heads in school management, health, safety, life skills and HIV/AIDS. The percentages of school heads who had received specialised training received by school management and those who had received specialized training in health issues (life skills or HIV and AIDS) are presented in **Table 5.7.**

Table 5.7: School heads with special training (SACMEQ III & IV)

Region	SACMEQ III				SACMEQ IV			
	School Management		Health Issues		School Management		Health Issues	
	%	SE	%	SE	%	SE	%	SE
Central	77.3	8.73	76.2	8.94	84.2	0.09	74.0	0.20
Coast	80.9	10.36	73.1	11.46	88.2	0.06	84.9	9.68
Eastern	82.1	9.7	91.2	6.1	81.4	0.13	85.9	3.92
Nairobi	82.6	9.73	86.5	9.21	100	-	94.0	0.00
North Eastern	87.3	9.62	65.6	15.12	78.4	0.19	78.0	1.61
Nyanza	76.3	7.63	71.1	8.18	94.5	0.04	83.2	2.27
Rift Valley	82	7.11	72.8	7.95	81.8	0.06	68.9	3.38
Western	90.4	5.65	92.3	5.57	100	-	94.2	2.45
Kenya	**81.5**	**3.22**	**79.1**	**3.23**	**87.5**	**0.03**	**81.0**	**0.35**

Table 5.7 shows that nationally, 87.5 percent of pupils had school heads who received specialised training in school management. In terms of regional comparison, the highest percentage of school heads who received specialised training in school management were in Nairobi and Western regions at 100 percentage, while the lowest percentage was recorded in North Eastern region at 78.4 percentage.

In terms of specialised training in health, safety, life skills and HIV/AIDs teaching, 81.0 percent of pupils were in schools where school heads had received this form of special training in SACMEQ IV compared to 79.1 percent in SACMEQ III. Western and Nairobi regions had the highest percentage of pupils in schools where head teachers had received this form of special

training at 94.2 and 94.0 percent, respectively. Rift Valley region had the lowest percentage (68.9 percent) of pupils in schools where school heads had received this form of training. In general, majority of pupils were in schools where school heads had received some specialised training in school management, health, safety, life skills and HIV/AIDs teaching.

5.8 School Resources

General Policy Concern 5.3

What were the views of school heads about the general school infrastructure (for example, electrical and other equipment, water, and basic sanitation) and the conditions of school buildings?

The SACMEQ IV study sought to examine the availability and conditions of school buildings, school grounds, general services and equipment. The school facilities surveyed were grouped in four categories (school buildings, school grounds, general services and equipment). The summary of their availability in percentages as reported by the school heads in SACMEQ IV is compared to SACMEQ III and presented in **Table 5.8**.

Table 5.8: Buildings, grounds and general services at School

School buildings	SACMEQ III		SACMEQ IV	
	%	SE	%	SE
School library	38.9	3.50	52.0	4.04
School hall	16.9	3.00	15.2	3.40
Staff room	92.0	2.00	86.3	2.65
School head's office	79.0	3.10	71.8	3.47
Store room	64.9	3.70	60.9	3.78
Guidance & Counselling area	13.6	2.60	29.5	3.90
Sick Room	3.7	1.60	6.7	2.94
Shop/Kiosk	4.3	1.50	-	-
Sports area/ playground	89.9	2.40	92.9	1.93
Fence	86.2	2.30	79.2	3.13
School garden	62.3	3.90	59.7	4.07
Piped water (well or bore-hole)	86.2	3.00	84.7	2.79
Electricity	22.7	3.00	43.4	3.97
Telephone	**13.5**	**2.50**	**13.3**	**2.50**

Note: The dash (-) indicates that no data was available

Table 5.8 shows the available school resources during SACMEQ IV. According to the school

heads' reports, 86.3 percent of pupils were in schools with staff rooms, 71.8 percent with school head's office and 60.9 percent in schools with a store room. The percentage of schools with staff rooms and school head offices decreased from 92.0 percentage and 79.0 percentage respectively in SACMEQ III to 86.3 percentage and 71.8 percentage respectively in SACMEQ IV. Further, in SACMEQ IV 52.0 percent of school heads reported to have a school library, an increase from 38.9 percent who had a library in SACMEQ III. It is important to note that there is a percentage of schools lacking essential facilities such as storage (39.1%) and school head's office (28.2%). This is a big challenge for schools which have to provide books and other materials and for some schools storage of food for the School Feeding Programme. The least common school building was sick rooms (6.7%). School grounds facilities were available in the following respective percentages; sports area/playground at 92.9 percent, fence at 79.2 percent (down from 86.2 per cent in SACMEQ III) and school garden at 59.7 percent (down from 62.3 percent in SAQMEQ III). Under general services, majority (84.7%) of the pupils were in schools with piped water (i.e. well or borehole), a drop from SACMEQ III, where 86.2 percent had this service.

There was also an improvement in electricity supply from 22.7 percent in SACMEQ III to 43.4 percent in SACMEQ IV. This means that almost 60 percent of primary schools lacked electricity. There was a slight reduction in telephone services from 13.5 percent in SACMEQ III to 13.3 percent in SACMEQ IV. The reduction in telephone services provision may have been caused by non-prioritization of landline telephones after the advent of mobile telephones where head teachers largely use personal mobiles for communication.

Policy Suggestion 5.3

a) There is need for the Ministry of Education to allocate adequate funds for infrastructural development which have a direct impact on curriculum implementation.

b) There is need for the Directorate of Quality Assurance and Standards to enhance the monitoring of implementation of infrastructural projects in schools.

The other category of facilities surveyed was general equipment at school, and the summary of the results is presented in **Table 5.9.**

Table 5.9: School equipment

Equipment	SACMEQ III		SACMEQ IV	
	%	SE	%	SE
First-aid kit	33.9	3.7	51.1	4.03
Fax machine	1.1	0.7	1.3	0.69
Typewriter	19.8	3.0	10.5	2.24
Duplicator	14.7	2.7	7.1	1.64
Radio	89.4	2.3	57.8	4.30
Tape recorder	13.9	2.6	5.1	1.40
Overhead projector	0.6	0.4	4.2	1.47
Television set	8.0	2.1	8.6	2.07
Video-cassette recorder	4.5	1.5	5.9	1.78
Photocopier	3.5	1.2	11.0	2.35
Computer	11.4	2.1	19.7	3.08
Website	1.5	0.8	7.5	1.82
CD Player	2.1	0.8	6.2	1.82
Clock	91.0	2.2	86.3	2.51

Results in **Table 5.9,** shows that 86.3 percent of pupils were in schools that had clocks and 57.8 percent had radios. Other common equipment included a first aid kit at 51.1 percent, typewriter (10.5%), duplicator (7.1%), tape recorder (5.1%) and computer (19.7%). Indeed, there was some improvement in many of the categories in SACMEQ IV compared to SACMEQ III.

At least 7.5 percent of the sampled Standard 6 pupils were in primary schools with a website, which is an important development given the role of ICT in the facilitation of learning.

Policy Suggestion 5.4

There is need for Ministry of Education in collaboration with other relevant government ministries to facilitate provision and supply of ICT facilities and equipment necessary for enhanced curriculum implementation.

Toilets are part of the basic and essential facilities of a school. The provision of appropriate sanitary facilities is critical to the process of learning in schools. A question was asked about the number of toilets available in a school and a pupil per toilet ratio was calculated. The results of the analysis are presented in **Table 5.10**.

Table 5.10: Pupil to toilet ratios

Region	SACMEQ III		SACMEQ IV	
	Mean	SE	Mean	SE
Central	23.4	1.96	26.1	4.46
Coast	87.9	12.81	60.6	8.18
Eastern	46.9	8.03	30.2	3.96
Nairobi	50.1	6.01	54.0	7.61
North Eastern	177.2	85.71	99.7	14.26
Nyanza	56.6	5.39	46.6	3.97
Rift Valley	47.2	3.57	52.8	12.34
Western	48.8	3.44	44.2	3.39
Kenya	**50.4**	**2.35**	**45.8**	**3.77**

The average number of pupils per toilet in SACMEQ IV was 45.8 which is an improvement compared to SACMEQ III where the pupils per toilet was 50.4. However, there were considerable regional disparities with North Eastern having the highest pupil to toilet ratio of 99.7:1 and Central having the smallest with 26.1:1. Although North Eastern region had the highest pupil to toilet ratio, it registered a remarkable improvement from 177.2:1 in SACMEQ III to 99.7:1 in SACMEQ IV. Rift Valley, Nairobi and Coast had over 50 of pupils sharing a toilet. The high pupil to toilet ratio could be as a result of increased enrolment over the past decade. This shows that efforts by the schools to construct more toilets have not matched the need. It also indicates that nationally, the established benchmarks on pupil to toilet ratio by gender are yet to be met. The National School Health Policy (NSHP, 2009), recommends a pupil to toilet/latrine ratio of 25:1 (girls) and 30:1(boys).

Policy Suggestion 5.5

Education stakeholders should take urgent measures to construct enough toilets of good quality especially in the areas with the highest pupil to toilet ratio.

5.9. School Operations and School Challenges

General Policy Concern 5.4

What were the school heads' views about a) daily activities (for example, teaching, school-community relations, and monitoring pupil progress), b) organizational policies, c) inspections, d) community input, and e) problems with pupils and staff (for example, pupil lateness, teacher absenteeism, and lost days of school)?

A range of activities and undertakings at school define school heads' administrative and managerial roles. These include daily activities (such as, teaching, school-community relations and monitoring pupils' progress), inspections, community input, and problems with pupils and staff (e.g pupil lateness, teacher absenteeism, and lost days of school). Hence, it is important to highlight some of their views on and involvement in these activities as summarised in the **Table 5.11**.

5.9.1 School head teaching load

What was the school heads' teaching load?

The study sought to find out the teaching load in terms of periods per week and teaching hours per week. This was analysed as means per region as indicated in **Table 5.11.**

Table 5.11: School head periods per week and teaching hours per week

Region	SACMEQ III				SACMEQ IV			
	Periods per week		Hours per week		Periods per week		Hours per week	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Central	25.3	2.25	14.8	1.31	22.2	1.07	13.1	0.61
Coast	22.4	2.87	13.1	1.67	19.0	2.07	11.0	1.17
Eastern	24.8	1.63	14.5	0.95	25.3	2.13	14.8	1.24
Nairobi	9.5	0.91	5.5	0.53	17.1	2.57	10.4	1.51
North Eastern	22.8	3.44	13.5	2.00	20.2	3.49	11.7	2.01
Nyanza	27.6	1.33	16.1	0.78	24.3	2.02	14.3	1.18
Rift Valley	26.4	1.16	15.4	0.68	22.1	1.19	13.0	0.70
Western	25.1	1.92	14.5	1.10	20.5	1.29	12.0	0.75
Kenya	**24.9**	**0.66**	**14.5**	**0.38**	**22.3**	**0.66**	**13.1**	**0.38**

The national mean of teaching periods per week for school heads was 22.3. This is a drop of 2.6 periods per week compared to SACMEQ III. Eastern and Nyanza regions recorded the highest school heads' teaching workload at 25.3 and 24.3 periods per week respectively while those in Nairobi region recorded a mean of just 17.1 periods per week. The national mean in SACMEQ IV is below the recommended 24 periods per week.

Policy Suggestion 5.6

Policy guidelines on school heads teaching work loads should be revised to ensure balance between management, teaching and supervisory roles.

5.9.2 Important school activities

What school activities did school heads consider to be important?

The school heads were also asked to rate some of their daily activities in order of importance. This was done on a six point rating scale beginning with 1 as most important and 6 as the least important. Their responses are summarised in **Table 5.12.**

Table 5.12: Ratings of daily activities by school heads

School Head Activities that she or he considers important	SACMEQ IV					
	1	2	3	4	5	6
Community Contact	27.2	11.4	8.0	3.5	7.9	42.0
Monitor Pupil Progress	42.7	13.4	13.7	7.6	4.2	18.4
Administration	48.3	16.7	12.9	5.3	3.9	13.0
Staff discussions	43.3	25.1	6.3	8.6	6.5	10.3
Staff professional development	27.5	16.1	3.7	10.8	8.7	33.1
Sch. head professional development	30.8	12.2	3.9	3.9	7.0	42.1

Results in **Table 5.12** show that 48.3 percent of school heads rated administrative activities, as most important followed by staff discussion of pupils progress at 43.3 percent, and monitoring pupil progress at 42.7 percent. It is also observable that 42.1 percent of pupils had school heads who considered school head professional development to be the least important while 42.0 percent had school heads who considered community contact to be the least important. This shows that more focus for head teachers was on administration of teachers and on pupil's progress and performance.

5.9.3 School inspections

What were the frequencies of school inspections?

School heads oversee all activities in their schools, and are expected to play supervisory roles in their schools. According to the MoE policy, Directorate of Quality Assurance and Standards (DQAS) is responsible for quality assurance, and should make regular visits to schools within their jurisdiction. The policy guidelines indicate that every school should have a full assessment at least once every three years. DQAS officers are deployed at every level i.e., national (MoE headquarters), county, sub-county, and zonal levels.

The percentage of inspections conducted in schools in each region were analysed and results summarised in **Table 5.13.**

Table 5.13: School inspection by region (SACMEQ IV)

Region	Never		Before 2009		2009		2010		2011		2012		2013	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	9.6	6.81	1.1	1.13	3.5	3.60	0.0	0.00	27.3	11.20	27.3	10.94	31.3	10.97
Coast	0.0	0.00	6.0	4.64	10.4	6.06	0.0	0.00	10.0	8.07	36.3	13.68	37.3	11.07
Eastern	0.0	0.00	13.0	6.69	5.8	4.25	8.2	4.83	4.2	3.07	30.1	10.91	38.7	13.72
Nairobi	3.3	3.42	0.0	0.00	0.0	0.00	9.5	9.41	32.9	14.28	31.0	13.90	23.3	14.74
North Eastern	4.4	4.64	0.0	0.00	0.0	0.00	0.0	0.00	21.8	18.93	16.8	9.61	57.1	18.50
Nyanza	6.1	5.34	0.0	0.00	3.7	3.70	7.4	5.32	11.7	7.40	34.7	10.23	36.3	9.66
Rift Valley	2.6	1.84	7.5	4.40	1.7	1.69	4.5	2.95	16.6	6.19	37.7	7.74	29.5	7.26
Western	0.0	0.00	3.8	3.81	2.5	2.52	22.0	9.05	20.8	8.23	24.6	8.52	26.4	8.33
Kenya	**2.9**	**1.22**	**5.5**	**1.75**	**3.8**	**1.28**	**7.2**	**1.99**	**15.6**	**2.95**	**32.0**	**3.92**	**33.0**	**4.00**

Table 5.13 indicates that nationally, 33.0 percent of schools had been inspected in 2013, an increase from 32.0 percent in 2012. The lowest percentage (3.8%) of inspections was carried out in 2009. Within the period of 2009 to 2013, the highest percentage of assessments occurred in North Eastern in 2013 (57.1%), followed by Eastern region in 2013 (38.7%), and then Coast region in 2013 (37.3%).

Notably, in Central, Coast and North Eastern regions there were no inspections conducted in 2010. Of concern was a lack of inspections in North Eastern region for up to three consecutive years (Before 2009 to 2010). It is also worth noting that Head teachers in Nairobi reported that there were no inspections before 2009 and in 2009.

Policy Suggestion 5.7

There is need for the Directorate of Quality Assurance and Standards (DQAS) to strengthen and streamline school supervision and inspection through increased funding, capacity building and developing greater responsibility to DQAS officers at county level.

5.9.4: Community contribution to school activities

What were the contributions of the surrounding community to the schools?

The surrounding community is one of the most important stakeholders in a school. It contributes to school development and has their children attending the school. School heads gave the range of activities and facilities that the parents/community contributed to the school and the percentages of the contributions are summarized in **Table 5.14.**

Table 5.14: Parent/community contributions to the school (SACMEQ III and IV)

Type of contribution	SACMEQ III		SACMEQ IV	
	%	SE	%	SE
Building of school facilities	60.9	3.0	52.3	4.16
Maintenance of school facilities	47.8	4.0	47.3	4.19
Construction/maintenance and repair of furniture/equipment	42.9	3.9	41.9	3.91
The purchase of textbooks	11.9	2.8	12.3	2.43
The purchase of stationery	10.2	2.7	17.5	2.90
The purchase of other school supplies	12.9	2.9	18.9	2.94
Payment of examination fees	86.0	2.7	89.1	2.53
Payment of the salaries of additional teachers	55.9	4.0	69.7	4.15
Payment of a supplement to the salary of teachers	3.2	1.6	7.5	2.06
Payment of the salaries of non-teaching staff	16.3	3.0	27.9	3.87
Payment of a supplement to the salary of non-teaching staff	5.8	2.0	9.8	2.22
Extra-curricular activities	60.2	3.8	79.0	2.99
Assisting teachers in teaching without pay	11.0	2.5	15.5	2.87
Provision of school meals	24.5	3.3	36.7	4.00

The most common (89.1%) form of parental/ community support to schools was payment of exam fees, followed by assisting extra curriculum activities at 79.0 percent. In addition, most pupils (69.7%) were in schools where parents/communities assisted in contributing to payment of additional teacher salaries and building of school facilities (52.3%). The least contribution from parents/community was payment of supplement to the salaries of teaching and non-teaching staff (7.5% and 9.8% respectively). It is worth noting that the major contribution from the community is monetary to support construction and maintenance of facilities, extra curricula activities and examination fees as well as payment of additional teachers and support staff.

There was a major decline in parental/community contributions to the building of school

facilities from 60.9 percent in SACMEQ III to 52.3 percent in SACMEQ IV. This may point to the impact of contributions from Constituency Development Fund (CDF) and funds from MoE as well as contribution from NGOs.

Policy Suggestion 5.8

There is need for MoE to give clear direction on the roles of parents and community in the implementation of the policy on Free and Compulsory basic education.

5.10 Pupil behavioural problems

What were the main behavioural problems of pupils?

Pupils' behavioural problems raise issues of discipline which can be a challenge to the smooth running of a school. It is therefore, essential that school heads and other teachers are aware of the common behavioural problems of their pupils. This will facilitate appropriate intervention and management of pupils' behaviour since these may negatively affect learning environment. The summary of the head teachers' responses is presented in **Table 5.15.**

Table 5.15: Pupil behavioural problems

Pupil behaviour problems	Indicating "Never" occurs			
	SACMEQ III		SACMEQ IV	
	%	SE	%	SE
Arriving late at school	1.7	1.10	2.5	1.23
Absenteeism	4.1	1.50	3.0	1.32
Skipping classes	32.6	3.80	28.7	4.12
Dropping out of school	8.0	2.10	10.7	3.11
Classroom disturbance	23.8	3.50	17.9	3.53
Cheating	16.3	3.10	17.2	2.92
Use of abusive language	13.8	2.90	17.8	3.56
Vandalism	42.2	4.00	34.2	4.09
Theft	9.9	2.60	17.0	3.53
Intimidation	25.7	3.50	28.3	4.04
Intimidation of teachers/staff	66.9	3.80	54.1	4.18
Physical injury to staff by pupils	92.0	2.00	82.5	3.10
Sexual harassment of pupils by pupils	51.3	3.90	51.0	4.02
Sexual harassment of teachers by pupils	92.2	2.00	85.2	2.98
Drug abuse	55.7	4.00	59.0	3.95
Alcohol abuse	65.8	3.70	65.8	3.71
Fights	7.7	2.50	10.4	3.24
Pupil health problems	0.6	0.60	0.8	0.59

Table 5.15 shows that pupil health problem and classroom attendance (late arrival, absenteeism and skipping class) and delinquent activities (pupils' fights, theft and use of abusive language) are problems that most school heads deal with. There has been an apparent increase in the percentage of pupils in schools where school heads deal with cases of sexual harassment of teachers by pupils, physical injury to staff by pupils, and intimidation of teachers/staff by pupils. Lateness and absenteeism are the behaviours that seemed to pose the greatest challenge to head teachers.

Policy Suggestion 5.9

The Ministry of Education should set up a mechanism to help schools manage behavioural problems by establishing functional Guidance and Counselling services at the zonal level.

Policy Suggestion 5.10

Guidance & Counselling should be strengthened in the Pre-service and In-service training.

5.11 Teacher behavioural problems

What were the main behavioural problems of teachers?

In the same way that school heads must handle pupils' behavioural problems, they must also deal with the behavioural problems of teachers, which may include absenteeism, alcoholism and drug abuse. The school heads' responses to certain problems **'never'** occurring have been presented in **Table 5.16.**

Table 5.16: Frequency of behaviour problems by teachers

Behaviour problems of teachers	SACMEQ III		SACMEQ IV	
	%	SE	%	SE
Arriving late at school	6.8	2.1	11.3	2.56
Absenteeism	31.0	3.8	30.5	3.63
Skipping classes	37.0	3.9	35.7	4.15
Intimidation or bullying of pupils	71.0	3.7	69.3	3.79
Sexual harassment of teachers by teachers	92.9	2.0	92.4	2.03
Sexual harassment to pupils by teachers	88.0	2.7	88.7	2.39
Use of abusive language	52.6	4.0	55.1	4.21
Drug abuse	76.1	3.5	80.8	3.16
Alcohol abuse	68.6	3.8	67.8	4.21
Health problems	**15.1**	**3.0**	**13.2**	**2.61**

According to **Table 5.16,** there has been a general drop in proportion of pupils in schools with reported cases of teacher behaviour problems in SACMEQ IV compared to SACMEQ III. Some of these include late arrival, drug abuse, and use of abusive language. However, late arrival to school remains the biggest problem among teachers as reported by school heads. Of great concern is that only 30.5 percent and 35.7 percent of pupils were in schools where school heads reported that absenteeism and skipping classes respectively were never behavioural problems in their schools. A higher proportion of pupils (86.8%) were in schools where teachers were reported to have health problems.

Policy Suggestion 5.11

There is need for TSC to put in place effective support systems such as guidance and counselling, psycho-social support and referrals at all levels which will enable early identification of teachers' behavioural problems.

5.12 Conclusion

In summary, female head teachers accounted for only 18.1 percent of the sampled primary school head teachers which is an increase of 3.4 percentage points from SACMEQ III. The national mean age of school heads was 46.6 years as compared to 45.4 years in SACMEQ III. Regionally, Western and Central regions had older school heads while North Eastern had the youngest school heads with a mean age of 36.7 years. The same trend applied to the number of years of experience a school head had where the national and regional mean number of years of experience had risen slightly.

Majority of the school heads had attained the required minimum level of education. Nearly half (47.8%) of school heads had A-level qualification. With regards to the number of years of professional training, the mean number of years increased at the national and regional levels. Similarly, the mean number of years of teaching experience went up slightly at the national level.

Facilities and equipment in school generally increased in SACMEQ IV. There was a notable increase in the percentage of pupils in schools with electricity from 22.7 in SACMEQ III to 43.4 in SACMEQ IV. The percentage of pupils in schools with computers also increased from 11.4 in SACMEQ III to 19.7 in SACMEQ IV. Similarly, the proportion of pupils in schools with first aid kits increased from 33.9 to 51.1 in SACMEQ III and SACMEQ IV respectively. However, the number of pupils in schools without basic amenities like toilets/latrines is still high.

The frequency of school inspections increased considerably from 2009 to 2013. There was a significant reduction in the level of parental/community contributions to schools e.g. in the building of new facilities and maintenance of school infrastructure. Health and absenteeism cases were the most reported behavioural problems that school heads had to deal with, with a considerable high increase in delinquency. The major issues with regard to teacher behaviour were lateness, absenteeism and skipping of classes. A significantly high percentage of pupils were in schools where head teachers reported to be dealing more often with teachers' health problems.

CHAPTER 6

6.0 HIV AND AIDS KNOWLEDGE AND ATTITUDES OF PUPILS, TEACHERS AND HEAD TEACHERS

6.1 Introduction

The relationship between the HIV and AIDS pandemic and education participation and management has taken centre stage in the education sector, particularly in sub-Saharan Africa. Although the 2000 Dakar World Education Forum had set a target of achieving education for all by the year 2015, HIV and AIDS presented one of the biggest obstacles to achieving this goal. Greater effort needs to be made to ensure that this pandemic does not hinder the attainment of the Sustainable Development Goal (SDG) No. 4, which commits countries to ensuring inclusive and equitable quality education, and promote life long learning opportunities for all by 2030.

The findings from Kenya AIDS Indicator Survey in 2007 led to key changes in HIV policy and programming for HIV prevention, care, and treatment in Kenya. There were about 1.4 million people living with HIV and AIDS between the ages of 15 to 64 years in 2009 (Republic of Kenya, 2009b). It was estimated that there were about 1.2 million children who were orphans due to HIV and AIDS. KAIS showed that prevalence among adults aged 15-64 years in urban areas was 8.4 percent compared to 6.7 percent in the rural areas. The national HIV prevalence was estimated to be 5.6% among Kenyans aged 15-64 years in 2012, significantly lower than the HIV prevalence estimate in 2007, which was reported at 7.2% (Republic of Kenya, 2012c). The same report indicates that HIV prevalence in urban areas (6.5%) was higher than that of rural areas (5.1%) among adults and adolescents aged 15-64 years (Republic of Kenya, 2012c).

Both Kenya Demographic Health Survey (KDHS) and KAIS identify the key factors associated with the infection and transmission of HIV as: the number of sexual partners, inconsistent condom use, young age at first sex, and lack of male circumcision (KDHS, 2014; Republic of Kenya, 2009b). This has resulted in the adoption of new strategies such as involving people infected with HIV and AIDS to create awareness and educate the public on prevention, testing and counseling services and its management.

Kenya developed an education sector policy in response to the challenges of HIV and AIDS,

in 2004. This policy targets safety in schools by focusing on issues of sexual abuse, harassment, stigma and discrimination, violence, alcohol and drug abuse as these were some of the ways by which HIV was spreading amongst the youth (Republic of Kenya, 2004). The policy largely focused on HIV prevention, peer education, and training both at the teacher pre-service and in-service level, curriculum and co-curricular activities, and thus a measure of effective implementation of the policy was deemed in necessary. A study undertaken in 2012 by MoE to evaluate, the status of implementation of the Education Sector Policy on HIV and AIDS 2004, identified gaps in policy content dissemination and coordination of programmes. Further, the study established that behavior change to reduce new HIV infections especially among young people had not been realized (Republic of Kenya).

In this section, pupils are to be considered as the units of analysis – even though some variables in this chapter refer to teachers and school heads. Where a percentage for a variable that describes teachers is presented, this percentage should be interpreted as **"the stated percentage of pupils who were in schools with teachers having the particular HIV and AIDS characteristic".** Similarly, a percentage for a variable that describes school heads should be interpreted as **"the stated percentage of pupils who were in schools with school heads with the particular HIV and AIDS characteristic".** Where a mean for teachers or school heads is presented, then the mean should be interpreted as **"the average pupil in Kenya who had a teacher or school head with such and such characteristics".**

6.2 Pupils' Knowledge and Attitudes about HIV and AIDS

General Policy Concern 6.1:

(a) What were the pupil knowledge levels about HIV and AIDS?
(b) What were the pupil sources of information about HIV and AIDS?
(c) What were the pupil attitudes towards HIV and AIDS?

Pupil knowledge about HIV and AIDS

What were the pupils' knowledge levels about HIV and AIDS?

Table 6.1: Performance on the HIV and AIDS Knowledge Test of pupils and pupils reaching the minimum and desirable levels of knowledge about HIV and AIDS (SACMEQ III)

Region	HAKT score		Pupils reaching minimum level		Pupils reaching desirable level	
	Mean	SE	%	SE	%	SE
Central	540.1	10.06	54.6	4.65	10.7	2.48
Coast	501.9	13.50	33.8	5.66	5.3	3.14
Eastern	515.6	11.97	41.9	6.16	5.2	2.00
Nairobi	579.2	19.07	67.5	6.08	25.7	7.08
N. Eastern	543.0	34.10	52.3	11.33	23.8	9.80
Nyanza	509.8	8.38	40.1	4.19	5.1	1.45
Rift Valley	491.9	9.95	31.9	3.65	4.2	1.12
Western	480.6	12.70	26.3	5.90	5.1	1.49
Kenya	**509.0**	**4.43**	**39.2**	**1.96**	**6.8**	**0.76**

The level of knowledge about HIV and AIDS that a learner had was one of the main areas of interest in the study. The findings are presented in **Table 6.2.**

Table 6.2: Performance on the HIV and AIDS Knowledge Test of pupils and pupilsreaching the minimum and desirable levels of knowledge about HIV and AIDS (SACMEQ IV)

Region	HAKT score		Pupils reaching minimum level		Pupils reaching desirable level	
	Mean	SE	%	SE	%	SE
Central	538.7	10.34	53.3	5.33	10.7	2.96
Coast	509.5	13.33	35.5	6.77	7.2	3.27
Eastern	536.2	9.76	49.7	5.39	12.1	2.60
Nairobi	594.4	10.26	80.2	3.51	22.4	4.49
N. Eastern	559.4	21.69	58.2	8.80	23.0	6.40
Nyanza	528.3	11.49	45.7	6.16	9.3	2.53
Rift Valley	519.4	8.85	42.4	4.42	7.8	2.06
Western	507.1	10.29	35.0	4.48	7.0	3.01
Kenya	**526.3**	**4.22**	**45.1**	**2.16**	**9.7**	**1.07**

The national mean on the HIV and AIDS Knowledge Test in SACMEQ IV was 526.3, an increase from 509.0 in SACMEQ III. The percentage of pupils in Kenya who reached the minimum level of knowledge about HIV was 45.1 percent which was an increase from 39.2 percent in SACMEQ III. However, only 9.7 percent reached the desirable level in SACMEQ IV, an improvement from 6.8 percent in SACMEQ III.

At the regional level, Nairobi recorded the highest percentage of pupils who reached the minimum level (80.2%), followed by North Eastern with 58.2. The region with the lowest

percentage of pupils reaching the minimum level of knowledge was Western with 35.0. The highest percentage of pupils with the desirable level of knowledge was also in North Eastern and Nairobi at 23.0, and 22.4, respectively. Most of the other regions posted low percentages of pupils with desirable level of knowledge of HIV and AIDS with the lowest in Western at 7.0.

Policy Suggestion 6.1

The Ministry of Education in partnership with the Ministry of Health should put in place programmes focusing on regions with learners with low achievement levels especially in Western and Coast to increase knowledge on HIV and AIDS among pupils.

The study also sought to find out whether there was any gender difference with regard to the knowledge about HIV and AIDS. The results are presented in **Table 6.4.**

Table 6.3: Performance of pupils in HAKT by gender (SACMEQ III)

	Pupils											
	Transformed score				Reaching minimum level				Reaching desirable level			
	Boys		Girls		Boys		Girls		Boys		Girls	
Region	Mean	SE	Mean	SE	%	SE	%	SE	%	SE	%	SE
Central	539.20	11.91	541.00	10.02	53.4	6.16	55.9	5.24	10.4	2.70	11.0	2.63
Coast	508.20	13.47	494.10	15.06	35.9	5.72	31.3	7.19	6.4	4.20	4.0	2.15
Eastern	519.80	14.97	511.90	10.59	45.1	7.38	39.1	5.92	5.7	2.18	4.7	2.04
Nairobi	573.80	18.71	584.70	20.59	67.3	6.3	67.7	6.69	25.8	6.66	25.5	8.41
N. Eastern	564.80	37.88	480.60	28.89	57.2	13.05	38.5	9.63	28.1	11.05	11.3	7.32
Nyanza	516.80	8.09	502.00	9.97	45.6	4.07	34.0	4.96	5.3	1.81	4.8	1.8
Rift Valley	502.00	8.71	483.00	11.82	36.3	3.89	27.9	4.3	6.5	1.67	2.1	0.83
Western	479.20	13.26	482.30	13.83	26.8	6.52	25.8	5.84	5.2	1.63	4.9	1.61
Kenya	**513.60**	**4.46**	**504.30**	**5.04**	**41.9**	**2.16**	**36.5**	**2.19**	**7.6**	**0.90**	**5.9**	**0.78**

Table 6.4: Performance of pupils in HAKT by gender (SACMEQ IV)

	Pupils											
	Transformed score				Reaching minimum level				Reaching desirable level			
	Boys		Girls		Boys		Girls		Boys		Girls	
Region	Mean	SE	Mean	SE	%	SE	%	SE	%	SE	%	SE
Central	544.4	12.79	532.4	10.44	56.2	5.82	50.1	6.22	13.0	3.43	8.3	3.29
Coast	505.3	11.86	513.5	15.43	33.5	6.67	37.5	7.17	6.0	2.71	8.3	3.92
Eastern	548.8	10.82	522.2	13.18	53.1	5.22	46.0	6.53	15.6	3.43	8.3	2.46
Nairobi	596.7	11.18	591.8	10.59	82.9	5.35	77.2	3.28	19.7	5.19	25.5	5.18
N. Eastern	553.7	23.26	572.8	23.74	57.1	10.00	60.9	8.20	21.3	6.29	26.7	7.89
Nyanza	536.9	12.85	520.2	10.81	49.7	6.69	42.0	6.21	11.2	3.13	7.5	2.24
Rift Valley	524.5	10.19	514.8	8.88	44.1	4.91	40.8	4.44	8.5	2.55	7.1	1.79
Western	517.6	10.72	498.7	10.85	42.4	5.46	29.1	4.37	8.4	3.38	5.9	2.88
Kenya	**533.7**	**4.82**	**519.0**	**4.55**	**48.4**	**2.33**	**41.9**	**2.28**	**11.3**	**1.31**	**8.2**	**1.03**

The mean national score for boys was 533.7 and 519.0 for girls in SACMEQ IV compared to 513.6 and 504.3 for boys and girls, respectively in SACMEQ III. Regionally, Nairobi region recorded the highest mean score for both boys and girls at 596.7 and 591.8, respectively. The lowest level of awareness was recorded in Coast (505.3) for boys and Western (498.7) for girls. In terms of levels of knowledge about HIV and AIDS, 48.4 percent of boys and 41.9 percent of girls attained the minimum level. The national mean for boys reaching the desirable level was 11.3 percent compared to 8.2 percent for girls.

Nairobi had the highest percentage of pupils who reached the minimum level for both boys and girls at 82.9 and 77.2 respectively. This was followed closely by North Eastern at 57.1 percent 60.9 percent for boys and girls respectively. The lowest percentage of pupils at the minimum level was recorded in Coast with 33.5 for boys and Western with 29.1 for girls.

The highest percentage of pupils with desirable levels of knowledge was boys and girls in North Eastern at 21.3 and 26.7 respectively. The lowest percentage of boys with the desirable level of knowledge was recorded in Coast with 6.0 compared to 5.9 for girls in Western region.

The mean scores of pupils in the HAKT were also examined by socio-economic status (SES) subgroups; the results are presented in **Table 6.6.**

Table 6.5: Mean performance of pupils in HAKT by SES (SACMEQ III)

	Transformed scores				Reaching minimum level				Reaching desirable level			
	Low SES		High SES		Low SES		High SES		Low SES		High SES	
Region	Mean	SE	Mean	SE	%	SE	%	SE	%	SE	%	SE
Central	516.5	20.99	563.7	15.74	46.5	13.44	65.4	5.83	2.3	2.38	15.1	5.17
Coast	483.8	12.42	545.8	28.58	25.2	4.51	50.1	10.32	1.4	1.00	17.4	11.00
Eastern	506.0	9.95	554.6	29.24	37.0	5.76	59.5	12.29	3.8	1.82	11.4	5.04
Nairobi	511.3	39.99	593.6	20.31	41.6	34.08	72.9	6.15	0.0	0.00	29.9	8.05
N. Eastern	551.9	35.69	556.4	83.14	56.2	9.53	56.3	29.19	24.9	11.17	26.6	19.43
Nyanza	496.0	9.32	541.6	15.69	34.7	4.67	54.4	8.05	3.9	1.43	8.6	4.56
Rift Valley	465.5	13.57	531.7	11.89	19.1	4.04	48.0	5.57	0.7	0.53	10.6	3.53
Western	466.5	12.85	520.8	16.35	19.7	5.89	46.1	9.27	3.2	1.61	8.8	2.41
Kenya	**485.8**	**5.43**	**551.1**	**6.51**	**28.5**	**2.32**	**57.3**	**2.69**	**3.0**	**0.62**	**14.3**	**2.03**

Table 6.6: Mean performance of pupils in HAKT by SES (SACMEQ IV)

Region	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
Central	541.9	12.87	540.3	11.87	52.0	6.46	56.5	5.61	11.4	4.36	10.9	3.53
Coast	496.1	9.83	526.3	20.23	30.0	5.57	41.6	10.99	3.2	1.42	11.6	5.04
Eastern	537.8	13.41	546.1	8.40	49.5	6.59	53.5	6.19	12.2	4.72	12.5	2.25
Nairobi	582.0	10.18	602.9	12.08	72.6	6.64	83.6	3.67	19.0	5.44	26.4	5.88
N. Eastern	558.8	24.88	581.7	23.01	56.8	11.23	65.3	7.11	26.9	9.31	24.7	9.70
Nyanza	541.6	12.98	513.4	10.80	52.3	7.61	38.5	5.60	12.1	3.29	5.6	1.85
Rift Valley	513.6	9.87	525.2	10.57	40.8	4.60	44.2	5.24	6.2	2.10	9.9	2.70
Western	503.7	9.58	512.4	13.69	35.0	4.42	35.7	6.59	6.4	3.07	8.2	3.11
Kenya	**523.4**	**4.99**	**532.7**	**4.90**	**43.9**	**2.50**	**47.7**	**2.59**	**9.1**	**1.40**	**10.9**	**1.24**

Nationally, pupils from low SES background recorded a mean score of 523.4 compared to 532.7 for pupils from high SES. This was an increase from 485.8 for pupils from low SES and a decrease for high SES from 551.1 in SACMEQ III. Pupils in Nairobi had the highest mean score for both low SES (582.0) and high SES (602.9), while pupils in Coast had the lowest mean score for low SES (496.1) and Western for high SES (512.4).

The national percentage of pupils reaching the minimum level of knowledge among low SES pupils was 43.9 compared to 28.5 in SACMEQ III. For pupils in the high SES reaching the minimum level of knowledge, there was a decrease from 57.3 percent in SACMEQ III to 47.7 percent in SACMEQ IV. For those who attained the minimum level of knowledge among the low SES, the highest percentage of pupils was recorded in Nairobi at 72.6 and the lowest in Coast with 30.0. Nairobi had the highest percentage of pupils within the high SES bracket reaching the minimum level with 83.6, while Western at 35.7 had the lowest.

With regard to those reaching desirable levels, the national average for low SES pupils was 9.1 percent compared to 10.9 percent for high SES. At the regional level, the highest percentage of pupils who attained the desirable level of knowledge among the low SES group was North Eastern at 26.9 with the lowest percentage in Coast at 3.2. Among the pupils with high SES, Nairobi recorded the highest percentage of those who attained the desirable levels of knowledge at 26.4 percent with Nyanza recording the lowest percentage of pupils at 5.6 percentage.

The study also sought to establish the differences, if any, in the levels of knowledge between rural and urban pupils. The results are shown in **Table 6.8.**

Table 6.7: Performance of pupils in HAKT by location of schools (SACMEQ III)

Region	Transformed scores				Reaching minimum level				Reaching desirable level			
	Rural		Urban		Rural		Urban		Rural		Urban	
	Mean	SE	Mean	SE	%	SE	%	SE	%	SE	%	SE
Central	530.4	10.69	573.7	23.89	50.2	5.27	69.80	9.05	8.4	2.03	18.6	8.58
Coast	490.6	15.81	513.2	23.90	29.5	6.87	38.20	10.21	2.0	1.13	8.6	6.63
Eastern	494.1	8.95	573.7	22.75	30.8	4.57	71.90	11.39	2.0	0.91	13.7	6.05
Nairobi	-	-	579.2	19.07	0.0	0.00	67.50	6.08	-	-	25.7	7.08
N. Eastern	526.3	46.32	562.8	60.78	47.6	19.64	57.90	14.29	16.9	8.76	31.9	21.05
Nyanza	498.1	8.71	544.1	15.93	34.2	4.23	57.50	7.94	4.1	1.41	7.9	4.38
Rift Valley	475.3	12.24	523.6	12.31	27.2	4.21	40.80	6.74	1.9	0.65	8.5	2.94
Western	478.6	15.04	483.7	25.83	25.7	6.42	27.30	13.07	4.2	1.82	6.3	2.85
Kenya	**494.0**	**4.99**	**536.9**	**8.06**	**33.1**	**2.11**	**50.50**	**3.94**	**3.9**	**0.55**	**12.1**	**1.88**

Table 6.8: Performance of pupils in HAKT by location of schools (SACMEQ IV)

Region	Transformed scores				Reaching minimum level				Reaching desirable level			
	Rural		Urban		Rural		Urban		Rural		Urban	
	Mean	SE	Mean	SE	%	SE	%	SE	%	SE	%	SE
Central	527.4	14.33	551.8	14.54	44.9	6.66	63.1	7.44	8.3	4.54	13.6	3.64
Coast	484.6	7.23	562.0	25.10	22.7	3.88	62.6	11.15	1.9	0.84	18.3	7.68
Eastern	522.7	10.66	550.6	13.17	41.6	5.22	58.4	6.94	9.1	3.99	15.4	3.10
Nairobi	X	X	594.4	10.26	X	X	80.2	3.51	x	x	22.4	4.49
N. Eastern	563.0	45.50	558.1	26.09	58.0	18.09	58.3	10.75	23.3	8.81	22.8	8.38
Nyanza	528.7	12.26	523.3	27.35	45.8	6.54	44.0	18.23	9.4	2.63	8.2	10.98
Rift Valley	509.7	10.64	540.7	15.28	37.6	5.03	52.9	8.51	6.3	2.57	11.1	3.41
Western	493.8	10.31	537.9	20.17	27.7	4.06	51.9	8.26	6.0	3.86	9.3	4.54
Kenya	**512.6**	**4.90**	**551.1**	**6.57**	**37.6**	**2.40**	**58.7**	**3.32**	**7.2**	**1.33**	**14.4**	**1.70**

The national mean score for pupils in rural areas was 512.6 and 551.1 for urban areas. This was an increase from 494.0 for rural and 536.9 for urban in SACMEQ III. Regionally, the highest mean score for rural areas was recorded in North Eastern at 563.0, while the lowest score of 484.6 was recorded in Coast. In the urban areas, the highest mean score was recorded in Nairobi at 594.4 while the lowest mean score of 523.3 was in Nyanza.

The national percentage for rural pupils reaching minimum level of knowledge was 37.6 percent against 58.7 for urban pupils. The highest percentage of rural pupils who reached the minimum level was in North Eastern region at 58.0 followed by Nyanza at 45.8 while the lowest was in Coast at 22.7. In the urban areas the highest percentage of pupils with minimum levels of knowledge of HIV and AIDS was recorded in Nairobi at 80.2 with the lowest being registered in Nyanza at 44.0.

The percentage of pupils reaching desirable levels was 7.2 in rural areas and 14.4 in urban

areas. In the rural areas, North Eastern region had the highest percentage of pupils reaching the desirable levels (23.3%). The highest percentage of pupils reaching desirable levels in urban areas was also from North Eastern with 22.8, while Nyanza had the lowest at 8.2.

Policy Suggestion 6.2

The MoE should strengthen the mode of dissemination of HIV and AIDS related information in order to bridge the knowledge gap between pupils in urban and rural areas.

Pupils' access to HIV testing Centres

Were there HIV Testing Centres within walking distance from pupils' homes?

Pupils were required to indicate whether HIV Testing Centre was within walking distance from their homes. The findings are as shown in **Table 6.10.**

Table 6.9: Pupils who indicated that the HIV Testing Centre was within a walking distance (within nearby town for SACMEQ III)

	YES		NO		I Don't Know
Region	%	SE	%	SE	%
Central	53.9	9.32	43.9	9.34	2.2
Coast	35.9	7.13	52.7	7.67	11.3
Eastern	47.2	7.75	43.6	7.36	9.2
Nairobi	33.4	4.74	42.5	4.55	24.1
North Eastern	22.5	6.75	67.8	7.94	9.7
Nyanza	56.3	7.32	35.6	6.27	8.0
Rift Valley	38.6	6.05	51.5	7.04	9.9
Western	45.4	6.95	41.6	6.34	13.0
Kenya	**45.6**	**2.90**	**44.8**	**2.90**	**9.6**

Table 6.10: Pupils who indicated that the HIV Testing Centre was within a walking distance (within nearby town for SACMEQ IV)

	Yes		No		Don't Know	
Region	%	SE	%	SE	%	SE
Central	24.3	3.73	53.1	5.47	22.7	3.91
Coast	29.3	4.87	39.3	5.18	31.4	7.57
Eastern	29.3	7.19	51.1	8.22	19.6	5.91
Nairobi	14.5	3.12	64.5	4.48	21.0	3.21
North Eastern	40.2	4.52	44.8	6.82	14.9	3.79
Nyanza	27.1	4.18	62.2	4.89	10.6	1.68
Rift Valley	31.4	3.00	50.1	3.72	18.5	2.18
Western	33.7	4.03	50.2	4.04	16.0	2.30
Kenya	**29.5**	**1.84**	**51.6**	**2.19**	**19.0**	**1.65**

Nationally, 51.6 percent of pupils reported that a HIV Testing Centre was within a nearby town. This is an improvement from 45.6 percent in SACMEQ III; 29.5 percent indicated that HIV Testing Centre was not within a nearby town, while 19.0 percent indicated that they did not know how far it was. Regionally, North Eastern had the highest percentage of pupils who said that HIV Testing Centre was not within a nearby town at 40.2 percent. This was followed closely by Western at 33.7 percent then Rift Valley with 31.4 percent, while Nairobi region (14.5%) registered the lowest percentage of pupils who said that a HIV Testing Centre was not within a nearby town. Among the pupils who did not know existence of a HIV Testing Centre in a nearby town, Central region had the highest number at 22.7 percent while Nyanza region had the lowest (10.6%). Nyanza and Nairobi had the highest number of pupils who said that the nearest HIV Testing Centre was within a nearby town at 62.2 and 64.5 percent respectively whereas Coast region registered the lowest number at 39.3 percent.

These results show that about half (48.5%) of the pupils did not have HIV Testing Centre within the nearest town or were not aware of the existence of one. For those who said they did not know, especially in the case of Nairobi region, it could mean that pupils at this level may not have the knowledge of the existence of HIV Testing Centre or it could also point to an inability to judge walking distances. It may not also be clear if the Testing Centres were individual units on their own or if they were, in some cases within hospitals and health centres.

Policy Suggestion 6.3

There is a need for MoE, in liaison with KICD and TSC, to ensure effective implementation of Life Skills Education curriculum in schools to create awareness on HIV and AIDS and related facilities and services.

Pupils' sources of information about HIV and AIDS

What source of information about HIV and AIDS did pupils consider to be the best?

The source of information on HIV and AIDS was an aspect of investigation in this study. In this subsection the focus was on the pupils' most preferred sources of information. The findings are presented in **Table 6.12.**

Table 6.11: Pupils' views on the best source of information on HIV and AIDS (SACMEQ III)

	Radio		TV		Books	
Region	%	SE	%	SE	%	SE
Central	5.52	1.44	12.9	2.97	6.8	1.54
Coast	14.3	3.06	16.0	2.73	5.9	2.53
Eastern	15.9	3.61	14.5	2.6	11.1	2.64
Nairobi	8.1	1.66	21.8	2.58	6.4	1.68
North Eastern	12.1	4.69	11.3	4.49	8.7	2.24
Nyanza	7.3	1.31	14.6	2.43	3.6	1.41
Rift Valley	13.2	2.42	17.6	2.64	4.7	1.47
Western	22.2	4.09	15.9	2.45	5.6	1.28
Kenya	**12.6**	**1.12**	**15.7**	**1.08**	**6.1**	**0.70**
	Classroom lessons		Teachers		Doctors	
Region	%	SE	%	SE	%	SE
Central	8.0	3.58	14.7	3.30	9.1	2.81
Coast	3.5	1.09	4.9	1.73	9.5	1.65
Eastern	7.4	1.89	8.0	2.01	4.4	1.13
Nairobi	7.0	4.22	3.9	1.43	4.3	1.89
North Eastern	16.5	5.25	8.1	2.45	7.8	0.5
Nyanza	8.2	2.46	5.8	1.13	12.9	0.95
Rift Valley	3.7	0.80	10.2	2.44	4.7	1.65
Western	1.8	0.57	9.6	3.04	6.8	1.03
Kenya	**5.6**	**0.80**	**8.9**	**0.97**	**7.4**	**0.66**

Table 6.12: Pupils' views on the best source of information on HIV and AIDS (SACMEQ IV)

	Radio		TV		Books	
Region	%	SE	%	SE	%	SE
Central	86.5	21.70	100.0	0.00	100.0	0.00
Coast	83.9	3.09	93.7	6.23	100.0	0.00
Eastern	89.3	2.43	94.4	4.43	94.8	4.30
Nairobi	86.3	3.35	100.0	0.00	100.0	0.00
North Eastern	84.4	5.67	100.0	0.00	97.6	2.77
Nyanza	92.2	1.76	100.0	0.00	100.0	0.00
Rift Valley	89.2	1.90	96.6	3.40	100.0	0.00
Western	92.2	1.57	94.5	4.43	100.0	0.00
Kenya	**89.1**	**9.00**	**96.7**	**1.47**	**98.9**	**0.82**
Region	Classroom lessons		Teachers		Doctors	

		SE		SE		SE
Central	88.9	2.72	78.5	3.09	9.1	2.81
Coast	89.3	2.22	72.8	4.26	9.5	1.65
Eastern	92.8	2.48	85.7	4.31	4.4	1.13
Nairobi	95.4	1.55	83.8	3.77	4.3	1.89
North Eastern	86.9	6.53	82.9	5.12	7.8	0.5
Nyanza	93.8	1.59	81.9	2.74	12.9	0.95
Rift Valley	91.1	1.77	85.8	2.20	4.7	1.65
Western	91.9	2.65	80.9	2.98	6.8	1.03
Kenya	**91.5**	**0.90**	**82.3**	**1.37**	**7.4**	**0.66**

The most preferred source of information on HIV and AIDS for pupils was books and TV with 98.9 and 96.5 percent of pupils choosing these, respectively. Classroom lessons (91.5%), radio (89.1%), and teachers (82.3%) were the next preferred sources. The least preferred source of information were doctors (7.4%).

Of those who preferred TV as the best source of information, pupils from Nairobi, North Eastern, Nyanza and Central had the highest percentage at 100.0. Western and Nyanza regions showed the highest preference for radio both at 92.2 percent. Classroom lessons were most preferred in Nairobi at 95.4 percent and least preferred in North Eastern at 86.9 percent. Teachers were most preferred as sources of information in Eastern and Rift Valley regions at 85.7 and 85.8 percent respectively.

Although the most preferred sources of information on HIV and AIDS were books, classroom, and audio-visual (TV), there was great variation as regards comes to preferences given to specific sources of information within regions. These variations point to the fact that information about HIV and AIDS should be presented in a multi-modal manner, that is, in formats that enable learners to relate to using several sensory modalities.

Policy Suggestion 6.4

MoE and MoH need to diversify media of communication in order to improve effectiveness of disseminating information on HIV and AIDS.

Pupil HIV and AIDS classes

What percentage of pupils had attended classes or lessons on HIV and AIDS during the school year?

The MoE guidelines on timetabling require that Life Skills Education which has a specific syllabus should be taught as a stand-alone subject. HIV and AIDS is a major theme in Life

Skills Education, but it is also expected to be infused in other subjects.

The study required pupils to state whether they had attended HIV and AIDS classes during the school year. The response was either "No" if they had not attended, or "Yes" if they had attended. The results are presented in Table 6.14.

Table 6.13: Pupils who had attended HIV and AIDS lessons/classes (SACMEQ III)

	Attended		Not Attended	
Region	%	SE	%	SE
Central	98.2	0.72	1.8	0.72
Coast	78.2	8.39	21.8	8.39
Eastern	79.6	8.07	20.4	8.07
Nairobi	79.0	6.06	21.0	6.06
N. Eastern	70.0	7.43	30.0	7.43
Nyanza	81.8	6.4	18.2	6.4
Rift Valley	87.5	5.44	12.5	5.44
Western	83.0	6.44	17.0	6.44
Kenya	**84.9**	**2.48**	**15.1**	**2.48**

Table 6.14: Pupils who had attended HIV and AIDS lessons/classes (SACMEQ IV)

	No		Yes	
Region	%	SE	%	SE
Central	23.4	3.01	76.6	3.01
Coast	25.7	3.77	74.3	3.77
Eastern	10.5	2.91	89.5	2.91
Nairobi	17.3	3.86	82.7	3.86
North Eastern	13.4	3.62	86.6	3.62
Nyanza	21.9	3.21	78.1	3.21
Rift Valley	15.5	1.77	84.5	1.77
Western	21.0	3.13	79.0	3.13
Kenya	**17.9**	**1.33**	**82.1**	**1.33**

Nationally, 82.1 percent of pupils had attended HIV and AIDS classes while 17.9 percent reported they had not attended. At the regional level, Coast had the highest percentage of pupils who had not attended HIV and AIDS classes at 25.7 percent while majority of the pupils from Eastern (89.5%) had attended HIV and AIDS classes followed by North Eastern (86.6%).

Table 6.14 shows that the number of pupils who had attended HIV and AIDS classes in their schools year was high (82.1%). However, the most notable finding was that, for most of the pupils, their level of knowledge as described in **Table 6.2** was below the desirable levels. This might be an indicator that teaching of Life Skills does not promote the acquisition of the desired knowledge and behavioural change in the learners.

Policy Suggestion 6.5

There is a need for DQAS in liaison with TSC to strengthen structures and support mechanisms for monitoring the quality of teaching and learning of Life Skills and HIV and AIDS.

Pupil HIV and AIDS class-based activity

The study required the pupisl to identify their favourite HIV and AIDS class-based activity. The results are presented in **Table 6.16.**

Table 6.15: Pupils' ranking of the most preferred HIV and AIDS activity (SACMEQ III)

	Reading material		Teacher Lesson		Video/ Film	
Region	%	SE	%	SE	%	SE
Central	4.3	1.54	35.4	3.6	18.0	2.81
Coast	9.3	2.28	34.3	3.4	8.40	3.08
Eastern	6.7	2.03	45.1	4.9	9.60	3.01
Nairobi	7.2	1.76	34.4	5.0	22.0	1.05
N. Eastern	7.5	3.25	49.7	5.3	7.00	1.22
Nyanza	6.5	1.69	22.4	2.8	19.0	1.38
Rift Valley	5.3	1.05	32.8	3.2	26.0	1.78
Western	6.8	1.60	31.0	4.4	15.0	1.27
Kenya	**6.1**	**0.63**	**33.2**	**1.5**	**18.0**	**0.87**
	Ask questions		Talk by person HIV infected person		Group discussion	
Region	%	SE	%	SE	%	SE
Central	16.7	2.31	3.3	1.53	11.5	4.54
Coast	13.2	2.88	9.6	2.32	7.5	1.87
Eastern	13.4	1.99	5.6	2.10	8.6	3.19
Nairobi	13.1	2.07	10.0	2.93	6.0	2.25
N. Eastern	4.5	1.88	4.7	1.42	10.1	3.74
Nyanza	20.5	3.72	7.9	2.39	8.8	1.88
Rift Valley	9.9	2.41	5.6	1.26	7.1	1.10
Western	15.5	3.10	10.0	2.78	4.6	1.48
Kenya	**14.4**	**1.14**	**6.7**	**0.81**	**8.0**	**1.00**

Table 6.16: Pupils' ranking of the most preferred HIV and AIDS activity (SACMEQ IV

Region	Reading material		Teacher Lesson		Video/ Film		Radio		Ask questions	
	%	SE	%	SE	%	SE	%	SE	%	SE
Central	12.1	1.76	27.6	4.25	12.4	7.95	12.2	1.89	11.6	3.42
Coast	9.9	3.90	27.1	0.37	9.4	1.93	8.6	2.18	11.1	2.73
Eastern	6.4	4.29	34.3	2.28	14.0	0.26	9.5	0.53	11.7	0.84
Nairobi	12.4	0.00	26.9	0.00	13.0	0.00	4.6	0.00	14.4	0.00
N. Eastern	8.5	0.87	57.9	9.04	8.1	7.94	5.5	0.12	5.1	0.05
Nyanza	13.1	0.81	22.0	0.56	16.1	0.43	8.8	0.44	16.9	1.17

Region	Reading material		Teacher Lesson		Video/ Film		Radio		Ask questions	
	%	SE	%	SE	%	SE	%	SE	%	SE
Rift Valley	10.9	1.35	29.0	3.03	10.5	2.82	9.0	0.36	15.7	0.80
Western	6.7	0.13	29.6	0.70	13.7	3.35	8.0	1.46	12.3	2.77
Kenya	**9.7**	**0.34**	**29.2**	**1.71**	**12.8**	**1.15**	**9.0**	**0.19**	**13.6**	**0.17**
Region	Talk by person HIV infected person		Group discussion		Classes-Trip to Hospital		Classes-Completed Questionnaire		Classes-Classes-Given a Talk by NGO	
	%	SE	%	SE	%	**SE**	%	**SE**	%	**SE**
Central	5.6	1.74	5.9	5.65	7.3	1.83	2.4	1.48	2.9	0.18
Coast	8.3	0.56	6.1	2.02	8.1	1.44	2.9	1.97	8.6	5.44
Eastern	7.4	1.65	4.1	2.63	2.1	1.12	5.8	2.45	4.7	2.23
Nairobi	6.2	0.00	6.0	0.00	7.5	0.00	1.3	0.00	7.6	0.00
N. Eastern	2.7	2.64	4.9	0.91	4.3	0.10	2.2	0.49	0.9	0.17
Nyanza	6.2	0.50	6.5	0.51	5.3	0.20	0.9	0.28	4.3	0.12
Rift Valley	8.2	0.68	7.3	1.29	4.0	0.65	1.2	0.70	4.4	1.05
Western	8.4	0.03	8.5	3.00	5.6	1.42	2.9	0.06	4.3	0.09
Kenya	**7.3**	**0.71**	**6.5**	**0.70**	**4.8**	**0.16**	**2.6**	**0.31**	**4.6**	**0.99**

The most preferred HIV and AIDS class-based activity was "Teacher gave lesson" with 29.2 percent of the pupils selecting this option. This was followed by "Asked questions" (13.6%), watching a film or video (12.8%) and "Reading material" (9.7%). Filling questionnaires (2.6%), talk by NGO (4.6%) and trip to hospital (4.8%) were the least preferred class-based activities. In North Eastern region, the activity preferred by most pupils was "Teacher gave lesson" (57.9%).

Policy Suggestion 6.6

Teachers should make classroom lessons on HIV and AIDS interactive through approaches such as use of audiovisual materials and pupil participation.

Pupil attitudes towards HIV and AIDS

(a) **What percentage of pupils felt that a pupil infected with HIV should be allowed to attend school?**

This study sought to find out pupils' attitudes towards HIV and AIDS, specifically in regards to stigmatization and discrimination against people living with HIV and AIDS. Pupils were asked whether an HIV infected pupil should be allowed to continue attending school. Three options were provided for the pupils to respond: either "Yes" if they did not mind the infected pupil continuing, "No" if the infected pupil should not continue with school and "I am not sure" if they

were unsure. The results of the analysis are presented in **Table 6.18**

Table 6.17: Pupils' response on whether they would allow HIV and AIDS infected pupils to school (SACMEQ III)

Region	NO		YES		Not Sure	
	%	SE	%	SE	%	SE
Central	32.2	4.96	59.4	5.15	8.5	3.09
Coast	41.4	5.33	45.50	4.67	13.1	2.82
Eastern	40.0	4.61	49.1	4.88	10.9	2.41
Nairobi	17.0	3.64	70.9	5.82	12.2	2.88
North Eastern	45.0	6.80	45.30	7.24	9.7	2.32
Nyanza	34.9	3.47	56.9	3.85	8.2	1.37
Rift Valley	40.2	4.80	50.6	5.14	9.2	1.55
Western	46.6	5.21	44.20	5.88	9.2	2.47
Kenya	**38.1**	**1.91**	**52.3**	**2.06**	**9.6**	**0.85**

Table 6.18: Pupils' response on whether they would allow HIV and AIDS infected pupils to school (SACMEQ IV)

Region	NO		YES		Not Sure	
	%	SE	%	SE	%	SE
Central	21.9	2.96	66.5	4.20	11.6	2.58
Coast	21.5	2.75	61.8	4.25	16.8	4.80
Eastern	18.2	4.25	72.0	4.63	9.8	1.86
Nairobi	18.3	4.58	71.5	4.47	10.2	1.70
North Eastern	29.8	6.96	54.5	9.50	15.8	4.51
Nyanza	19.6	2.36	73.8	2.98	6.6	1.40
Rift Valley	28.7	2.63	60.4	3.35	11.0	1.27
Western	30.4	2.89	59.6	3.50	10.1	1.44
Kenya	**24.0**	**1.33**	**65.2**	**1.65**	**10.7**	**0.86**

Nationally, 65.2 percent of the pupils indicated that they would allow HIV infected pupils to attend school. This was an increase from 52.3 percent in SACMEQ III. Regionally, Nyanza (73.8%), Eastern (72.0%) and Nairobi (71.5%) had the highest percentage of pupils who reported that they would allow HIV infected pupils to attend class. The lowest proportion of pupils indicating that they would allow HIV infected pupils to attend school were in North Eastern region at 54.5 percent.

The results show that although North Eastern region had the second highest mean score in HAKT, it had the lowest percentage of pupils with a positive attitude towards those infected with HIV and AIDS while Nyanza, Nairobi, and Eastern had the highest percentage of pupils with positive attitude, respectively. In reference to Table 6.2 presenting results about the level of HIV and AIDS awareness, pupils from Western and Coast region lagged behind their

counterparts on most correct responses, while Nairobi and North Eastern outperformed the other regions. This suggests that there could be a relationship between knowledge level and the kind of attitudes developed towards people infected with HIV and AIDS.

(b) How would pupils behave towards their friends who were infected with HIV?

Pupils were also asked whether they would "Avoid or shun", "I am not sure" or have a "Positive attitude" towards a friend infected with HIV. The results are shown in Table 6.20.

Table 6.19: Pupils' attitude towards a friend infected with HIV and AIDS (SACMEQ III)

Region	Be more friendly		Same as before		Avoid him or her	
	%	SE	%	SE	%	SE
Central	36.2	6.04	31.0	3.47	20.2	1.79
Coast	16.9	3.40	30.2	3.63	26.3	4.37
Eastern	22.5	4.48	28.7	4.04	31.7	2.88
Nairobi	44.0	4.03	21.7	2.31	9.1	2.36
N. Eastern	20.2	2.61	35.2	6.68	30.2	2.48
Nyanza	24.2	3.15	26.6	2.77	25.1	2.26
Rift Valley	16.2	3.46	28.6	3.71	24.5	4.61
Western	19.2	2.30	21.8	2.72	27.2	2.84
Kenya	**23.2**	**1.65**	**27.5**	**1.42**	**25.0**	**1.53**

Table 6.20: Pupils' attitude towards a friend infected with HIV and AIDS (SACMEQ IV)

Region	More Friendly		Same		Avoid		Not Sure	
	%	SE	%	SE	%	SE	%	SE
Central	34.6	4.17	24.6	2.86	19.5	3.24	21.3	2.98
Coast	17.5	3.29	38.1	2.52	20.8	2.15	23.7	2.97
Eastern	29.2	4.09	31.1	3.65	24.0	1.86	15.7	1.86
Nairobi	48.3	6.20	21.9	2.21	9.3	2.75	20.5	2.75
North Eastern	26.5	14.48	33.5	5.57	24.9	4.65	15.1	4.65
Nyanza	26.1	3.47	29.2	2.85	28.8	1.80	15.9	1.80
Rift Valley	19.4	3.00	31.3	2.65	22.8	2.47	26.5	2.47
Western	22.3	2.63	29.7	3.81	23.2	3.38	24.9	3.38
Kenya	**24.9**	**1.51**	**30.5**	**1.28**	**23.0**	**1.11**	**21.6**	**1.11**

Nationally, 30.5 percent of pupils reported that they would continue to treat a friend infected by HIV and AIDS the same as before. This was followed by those who would be 'More friendly' to their friend at 24.9 percent and those who would "Avoid and shun" at 23.0 percent.

Regionally, the highest percentage of those who indicated they would "Avoid or Shun" was recorded in Nyanza (28.8%) while the lowest was registered in Nairobi at 9.3 percent. Rift Valley region recorded the highest percentage of pupils indicating that they were "Not Sure" at 26.5 percent while North Eastern region posted the least at 15.1 percent. Nairobi had the highest percentage of pupils with positive attitudes at 70.2. The trend in this data seems to support the assumption that pupils with high levels of knowledge of HIV and AIDS (see Table 6.2) are less likely to discriminate as is the case with Nairobi region.

Whereas it could be possible to associate the low percentage of positive attitude towards contact with a HIV infected friend among pupils in Western region with the lack of knowledge about HIV and AIDS, the finding from North Eastern region seem to contradict this hypothesis. Despite the fact that they were second to Nairobi in terms of levels of knowledge about HIV and AIDS (see Table 6.2), the region had one of the highest percentages of pupils who were likely to discriminate against an HIV infected friend.

Policy Suggestion 6.7

There is an urgent need for all stakeholders put in place measures to improve the attitude of pupils towards others who are infected with HIV and AIDS.

(c) Were pupils willing to take care of relatives who became ill with AIDS?

Pupils were also asked whether they would be willing to take care of a relative with HIV and AIDS. Their responses were either "No" if they were not willing to care for an ailing relative, "I am not sure" if they are unsure and "Yes" if they would be willing to take care of an ailing relative. The results are presented in **Table 6.22.**

Table 6.21: Pupils' attitude towards taking care of a HIV and AIDS relative (SACMEQ III)

	Would pupils take care of HIV and AIDS relative?				
	NO		YES		Not Sure
Region	%	SE	%	SE	%
Central	4.6	1.10	92.2	1.78	3.2
Coast	26.8	4.72	60.8	5.57	12.4
Eastern	13.7	2.56	77.4	4.12	8.9
Nairobi	11.3	2.64	79.5	3.65	9.1
North Eastern	29.9	4.97	62.7	6.01	7.4
Nyanza	24.6	3.36	68.3	3.39	7.1
Rift Valley	21.8	3.25	71.0	3.62	7.2
Western	28.0	4.16	60.9	4.82	11.1
Kenya	**19.5**	**1.32**	**72.6**	**1.56**	**7.9**

Table 6.22: Pupils' attitude towards taking care of a HIV and AIDS relative (SACMEQ IV)

	No		Yes		Not Sure	
Region	%	SE	%	SE	%	SE
Central	15.3	2.44	78.5	2.61	6.2	1.04
Coast	27.9	3.44	62.6	3.70	9.5	1.59
Eastern	21.6	4.16	76.0	4.57	2.4	1.02
Nairobi	8.7	1.93	86.5	2.12	4.8	1.36
North Eastern	32.0	9.69	67.7	11.26	4.3	2.83
Nyanza	27.8	2.92	67.7	2.87	4.5	0.88
Rift Valley	27.3	2.97	68.0	3.08	4.7	0.77
Western	29.6	3.91	65.0	4.08	5.4	1.29
Kenya	**25.1**	**1.42**	**69.9**	**1.55**	**5.0**	**0.44**

The national percentage of pupils not willing to care for an ailing relative was 25.1 percent while those pupils who were "Not Sure" were 5.0 percent and 69.9 percent represented those willing to take care of an ailing relative.

Regionally, North Eastern had the highest percentage of pupils not willing to take care of a relative (32.0%) and Nairobi posted the lowest percentage at 8.7. The highest percentage of pupils "Not Sure" was in Coast region at 9.5 while Eastern had the least at 2.4. Among those willing to take care of an ailing relative Nairobi region recorded the highest percentage at 86.5 while North Eastern and Coast had the least at 63.7 and 62.6 percent respectively.

The attitudes towards allowing HIV-infected pupils to continue in school, having contact with an HIV- infected friend, and caring for a relative with HIV and AIDS seem to have a complex relationship with levels of knowledge about HIV and AIDS. From the results reported in Table 6.2, North Eastern recorded the highest percentage of pupils reaching the desirable level of knowledge while at the same time they recorded the highest percentage of pupils with negative attitudes towards caring for ailing relatives. Western region recorded the lowest levels of reaching minimum knowledge while they recorded a significant percentage of pupils with positive attitudes towards caring for ailing relatives. At the same time, Nairobi had the highest percentage of pupils with the most positive attitude towards caring for an ailing relative and also their pupils posted a high level of knowledge and low levels of stigma.

(d) What percentage of pupils would be willing to allow a HIV infected teacher in school?

This subsection of the study required pupils to state whether they would be willing to allow a HIV infected teacher in school. They were supposed to respond with either "No" if they were not willing to allow a HIV infected teacher in school, "I am not sure" when unsure and "Yes" if

they were willing to allow a HIV infected teacher in school. The results are presented in **Table 6.24.**

Table 6.23: Pupils' attitude towards allowing a HIV and AIDS teacher in school (SACMEQ III)

	Allow HIV and AIDS infected teacher to school					
	NO		YES		Not Sure	
Region	%	SE	%	SE	%	SE
Central	37.8	5.45	55.0	5.31	7.2	1.87
Coast	42.1	4.88	45.0	4.39	13.0	3.15
Eastern	41.1	4.94	45.2	5.00	13.7	2.90
Nairobi	21.7	3.61	62.4	5.55	15.9	4.39
North Eastern	43.0	6.50	45.9	7.46	11.0	2.55
Nyanza	35.5	3.24	55.9	3.60	8.6	1.31
Rift Valley	42.7	4.44	47.2	4.53	10.0	1.69
Western	40.9	5.50	46.0	5.51	13.1	2.90
Kenya	**39.2**	**1.91**	**49.9**	**1.93**	**10.9**	**0.89**

Table 6.24: Pupils' attitude towards allowing a HIV and AIDS teacher in school (SACMEQ IV)

	Allow HIV and AIDS infected teacher to school					
	NO		YES		Not Sure	
Region	%	SE	%	SE	%	SE
Central	22.4	2.88	63.6	5.14	14.1	3.03
Coast	22.2	2.89	58.1	3.29	19.7	3.57
Eastern	24.2	2.99	67.3	4.52	8.5	1.85
Nairobi	21.6	5.39	65.7	6.16	12.8	2.81
North Eastern	27.6	5.83	48.7	4.72	23.7	6.16
Nyanza	20.3	1.87	72.2	2.55	7.5	1.46
Rift Valley	28.6	2.45	58.7	3.36	12.6	1.66
Western	28.4	3.13	59.1	4.11	12.6	1.83
Kenya	**25.0**	**1.12**	**62.7**	**1.61**	**12.3**	**0.92**

At the national level, 25.0 percent of the pupils were not willing to allow a HIV-infected teacher in school, 62.7 percent were willing while 12.3 percent were not sure. Regional comparisons show that Rift Valley and Western had the highest number of pupils not willing to allow a HIV-infected teacher in school at 28.6 percent and 28.4 percent, respectively, while Nyanza at 20.3 percent had the lowest percentage of pupils not willing to allow a HIV-infected teacher in school. It would seem that there is still a significant percentage of pupils (37.3%) who have not yet accepted people living with HIV and AIDS.

At the same time, Nyanza had the highest percentage of pupils willing to allow an HIV-infected teacher in school with 72.2. This was followed by Eastern and Nairobi Regions at 67.3 and 65.7 percent respectively whereas North Eastern (48.7 percent) had the lowest percentage of pupils with the same opinion. The highest percentage of pupils "Not sure" was

from North Eastern region at 23.7 and the lowest from Nyanza with 7.5.

6.3 Teachers' HIV and AIDS Knowledge and Attitudes

General Policy Concern 6.2:

(a) What were the teacher knowledge levels about HIV and AIDS?

(b) What were the teacher sources of information about HIV and AIDS?

(c) What were the teacher attitudes towards HIV and AIDS?

Teacher knowledge about HIV and AIDS

What were the teachers' knowledge levels about HIV and AIDS?

One of the aspects of the study was to establish the level of HIV and AIDS knowledge among teachers by region, gender, social economic status and school location.

One of the aspects the study focused on was teachers' knowledge about HIV and AIDS. The results are presented in **Table 6.26.**

Table 6.25: Teacher performance on the HAKT and teachers reaching the minimum and desirable levels of knowledge on HIV and AIDS (SACMEQ III)

	Transformed score		Reaching minimum level		Reaching desirable level
Region	Mean	SE	%	SE	%
Central	828.6	25.87	100.0	0.00	100.0
Coast	807.0	34.43	100.0	0.00	89.9
Eastern	787.4	20.16	100.0	0.00	96.6
Nairobi	821.2	24.53	100.0	0.00	100.0
N. Eastern	806.9	24.98	100.0	0.00	96.2
Nyanza	802.7	16.53	100.0	0.00	96.1
Rift Valley	761.8	14.80	100.0	0.00	89.9
Western	784.5	12.76	100.0	0.00	100.0
Kenya	**792.2**	**7.75**	**100.0**	**0.00**	**95.3**

Table 6.26: Teacher performance on the HAKT and teachers reaching the minimum and desirable levels of knowledge on HIV and AIDS (SACMEQ IV)

	Transformed score		Reaching minimum level		Reaching desirable level	
Region	Mean	SE	%	SE	%	SE
Central	808.0	14.86	100.0	0.00	100.0	0.00
Coast	806.9	22.73	100.0	0.00	96.1	3.89
Eastern	751.0	34.08	100.0	0.00	73.5	15.96
Nairobi	859.9	27.16	100.0	0.00	100.0	0.00

Region	Transformed score		Reaching minimum level		Reaching desirable level	
	Mean	SE	%	SE	%	SE
N. Eastern	754.2	91.25	88.4	11.99	73.5	17.02
Nyanza	782.7	24.95	100.0	0.00	79.9	9.53
Rift Valley	811.2	12.25	100.0	0.00	98.8	1.19
Western	792.8	20.79	100.0	0.00	93.7	4.57
Kenya	**791.2**	**10.51**	**99.8**	**0.16**	**89.1**	**4.11**

Nationally, the mean score among teachers on the HAKT was 791.2. This was a slight decrease from 792.2 in SACMEQ III. Regionally, the highest mean score was recorded in Nairobi with a mean of 859.9 and the lowest was Eastern with 751.0.

The national percentage of teachers reaching the minimum level was 99.8 percent, slightly lower than SACMEQ III which had 100.0 percent. With the exception of North Eastern (88.4%), all the other regions had all teachers reaching the minimum level. With regard to percentage of teachers achieving the desirable level, 89.1 percent attained this level nationally. In two regions, namely, Central and Nairobi, 100 of teachers reached the desirable levels of knowledge. The regions with the lowest percentage of teachers reaching desirable levels were Eastern and North Eastern both with 73.5 percent.

Teacher attitudes towards HIV and AIDS

What percentage of teachers felt that a pupil infected with HIV should be allowed to attend school?

Teachers' attitudes towards persons living with HIV and AIDS were another focus for the study. The findings of the data analysis are presented below.

Teachers were asked whether a HIV infected pupil should be allowed to continue attending school. Teachers were required to respond either "No" if the infected pupil should not continue with school, "I am not sure" if they were unsure and "Yes" if the infected pupil should continue. The results are shown in Table 6.28.

Table 6.27: Attitude of teachers towards a HIV infected pupil continuing in school (stigma) (SACMEQ III)

Region	NO		Not Sure		YES	
	%	SE	%	SE	%	SE
Central	0.0	0.00	1.9	1.91	98.1	1.91
Coast	0.0	0.00	0.0	0.00	100.0	0.00
Eastern	2.3	2.36	0.0	0.00	97.7	2.36

Region	NO		Not Sure		YES	
	%	SE	%	SE	%	SE
Nairobi	0.0	0.00	0.0	0.00	100.0	0.00
North Eastern	0.0	0.00	0.0	0.00	100.0	0.00
Nyanza	0.0	0.00	2.9	2.87	97.1	2.87
Rift Valley	0.0	0.00	0.0	0.00	100.0	0.00
Western	0.0	0.00	0.8	0.80	99.2	0.80
Kenya	**0.4**	**0.36**	**0.9**	**0.59**	**98.8**	**0.69**

Table 6.28: Attitude of teachers towards a HIV infected pupil continuing in school (stigma) (SACMEQ IV)

Region	NO		Not Sure		YES	
	%	SE	%	SE	%	SE
Central	0.0	0.00	0.0	0.00	100.0	0.00
Coast	2.0	2.00	0.0	0.00	98.0	2.00
Eastern	0.0	0.00	0.0	0.00	100.0	0.00
Nairobi	0.0	0.00	0.0	0.00	100.0	0.00
North Eastern	0.0	0.00	0.0	0.00	100.0	0.00
Nyanza	1.7	1.70	0.8	0.84	97.5	1.91
Rift Valley	0.0	0.00	0.0	0.00	100.0	0.00
Western	0.0	0.00	0.0	0.00	100.0	0.00
Kenya	**0.5**	**0.35**	**0.1**	**0.14**	**99.4**	**0.37**

Nationally, 0.5 percent of the teachers reported that they would not allow a HIV positive pupil to go to school. Those who were not sure comprised 0.1 percent while those who indicated that they would allow constituted 99.4 percent. Regionally, all teachers agreed that a pupil infected with HIV should be allowed to continue with school with only Coast (98.0%) and Nyanza (97.5%) having a slight difference from the national average.

Teacher access to HIV Testing Centres

Were there HIV Testing Centres within walking distance from teachers' homes?

Teachers were required to state whether a HIV Testing Centre was within a walking distance from their homes. The respondents were required to respond either "Yes" if the HIV Testing Centre was within a walking distance, "No" if it was beyond the walking distance and "I do not know" if they did not know how far the HIV Testing Centre was. The findings are shown in **Table 6.30**.

Table 6.29: Availability of a HIV Testing Centre within walking distance to teacher's home (SACMEQ III)

Region	Reading Teachers				Mathematics Teachers	
	NO/ Not Sure		YES		NO/ Not Sure	
	%	SE	%	SE	%	SE
Central	27.8	9.42	72.2	9.42	15.0	6.96
Coast	31.3	11.75	68.7	11.75	21.8	12.28
Eastern	39.5	10.43	60.5	10.43	20.0	8.74
Nairobi	1.3	1.35	98.7	1.35	6.2	5.11
N. Eastern	54.0	14.16	46.0	14.16	31.4	13.16
Nyanza	23.4	7.68	76.6	7.68	30.1	8.66
Rift Valley	31.8	8.25	68.2	8.25	31.9	8.03
Western	13.1	6.16	86.9	6.16	16.9	8.09
Kenya	**27.0**	**3.54**	**73.0**	**3.54**	**23.4**	**3.45**

Table 6.30: Availability of HIV Testing Centres within nearby town/trading centre (SACMEQ IV)

Region	NO		YES		Not Sure	
	%	SE	%	SE	%	SE
Central	0	0.00	100	0.00	0	0.00
Coast	6.8	5.08	77.5	13.81	15.6	13.89
Eastern	19.1	9.61	80.9	9.61	0	0.00
Nairobi	0	0.00	100	0.00	0	0.00
N. Eastern	0	0.00	100	0.00	0	0.00
Nyanza	0	0.00	100	0.00	0	0.0
Rift Valley	11.6	5.70	88.4	5.70	0	0.00
Western	2.7	2.76	97.3	2.76	0	0.00
Kenya	**7.4**	**2.33**	**91.0**	**2.75**	**1.6**	**1.58**

Nationally, 91.0 percent of the teachers reported that there were HIV Testing Centres within walking distance, with less than 10 percent of the teachers not having the facilities within a walking distance or not aware how far away these facilities were.

Central, Nairobi, North Eastern and Nyanza had all the sampled teachers indicating that they there were HIV Testing Centres within walking distance from their home. In Coast 77.5 percent of the teachers noted that there was a HIV Testing Centre within a walking distance while in Rift Valley and Eastern 88.4 and 80.9 percent respectively of the teachers reported to have these centres within walking distance.

These findings indicate that majority of teachers countrywide lived within walking distance of a HIV Testing Centre and therefore the majority had access to these services.

Policy Suggestion 6.8

The MoE in partnership with Ministry of Health should increase access and proximity to

the HIV Testing Centres especially in Rift Valley, Eastern and Coast regions.

Teacher HIV and AIDS tests

What percentage of teachers had taken HIV tests?

This study also sought to establish whether teachers had taken a HIV and AIDS test to check whether they were infected. The findings are presented in **Table 6.32.**

Table 6.31: Teachers who have had an HIV and AIDS test taken (SACMEQ III)

Region	Reading Teachers				Mathematics Teachers	
	NO/ Not Sure		YES		NO/ Not Sure	
	%	SE	%	SE	%	SE
Central	65.7	9.40	34.3	9.40	76.8	8.91
Coast	41.4	12.81	58.6	12.81	62.2	12.84
Eastern	61.5	10.04	38.5	10.04	42.4	10.22
Nairobi	35.2	9.57	64.8	9.57	43.7	12.42
N. Eastern	71.0	12.14	29.0	12.14	80.1	8.09
Nyanza	37.4	7.73	62.6	7.73	47.8	8.63
Rift Valley	70.9	6.62	29.1	6.62	80.6	6.10
Western	45.2	10.03	54.8	10.03	53.1	10.39
Kenya	**55.2**	**3.61**	**44.8**	**3.61**	**61.3**	**3.60**

Table 6.32: Teachers who have had an HIV and AIDS test taken (SACMEQ IV)

Region	Reading Teachers							
	NO		Yes, but didn't want to know the result		Yes, but I wasn't informed of the result		Yes, and I know the results	
	%	SE	%	SE	%	SE	%	SE
Central	10.7	8.29	0.0	0.00	0.0	0.00	89.3	8.29
Coast	29.6	12.76	0.0	0.00	0.0	0.00	70.4	12.76
Eastern	12.9	6.42	2.8	2.85	0.9	0.95	83.4	7.23
Nairobi	0.0	0.00	6.4	6.41	0.0	0.00	93.6	6.41
N. Eastern	4.2	3.89	0.0	0.00	0.0	0.00	95.8	3.89
Nyanza	0.0	0.00	0.0	0.00	0.0	0.00	100.0	0.00
Rift Valley	20.8	7.83	0.0	0.00	1.2	1.25	78.0	7.89
Western	9.6	7.07	0.0	0.00	0.0	0.00	90.4	7.07
Kenya	**12.7**	**2.89**	**0.7**	**0.58**	**0.4**	**0.32**	**86.1**	**2.95**

Nationally, 86.1 percent of the teachers had taken a HIV and AIDS test and had been given the results. At the regional level, 100.0 percent of teachers in Nyanza had taken a HIV and

AIDS test and had been informed of the results. This was followed by teachers in North Eastern and Nairobi at 95.8 and 93.6 percent respectively. This could mean that HIV and AIDS awareness campaigns on voluntary testing and counseling have been effective at the school level.

While majority of the teachers had taken the test, it is worth noting that Coast and Rift Valley had over 20.0 percent of the teachers who reported to have not taken a HIV and AIDS test (29.6 % and 20.8% respectively).

Teacher self-assessment of risk of being infected with HIV and AIDS

What did the teachers think was their general risk of being infected with HIV?

Teachers' self-assessment of their risk of contracting HIV was investigated by the study. The findings are presented in **Table 6.34.**

Table 6.33: Self risk assessment of being infected with HIV by teachers (SACMEQ III)

Region	Reading Teachers				Mathematics Teachers	
	No/ low/ medium risk		High/ very high risk		No/ low/ medium risk	
	%	SE	%	SE	%	SE
Central	53.2	10.98	46.8	10.98	44.5	10.10
Coast	70.3	11.40	29.7	11.40	37.4	13.25
Eastern	43.8	10.22	56.2	10.22	44.8	10.69
Nairobi	52.0	11.62	48.0	11.62	55.7	11.99
North Eastern	87.6	6.35	12.4	6.35	87.7	7.24
Nyanza	61.3	8.42	38.7	8.42	57.6	8.74
Rift Valley	36.9	7.54	63.1	7.54	43.3	8.18
Western	53.0	11.32	47.0	11.32	50.3	10.67
Kenya	**50.5**	**3.86**	**49.5**	**3.86**	**47.7**	**3.90**

Table 6.34: Self risk assessment of being infected with HIV by teachers (SACMEQ IV)

Region	No Risk		Low		Medium		High		Very High	
	%	SE	%	SE	%	SE	%	SE	%	SE
Central	6.9	4.91	33.7	12.04	16.9	9.55	26.6	11.07	16.0	7.94
Coast	14.7	8.13	44.5	12.47	15.6	6.81	9.4	5.54	15.8	6.79
Eastern	0.0	0.00	33.2	12.71	16.0	7.60	12.7	6.68	38.1	12.92
Nairobi	0.0	0.00	58.4	15.13	0.0	0.00	24.6	13.19	17.0	10.89
N. Eastern	12.2	8.12	35.4	18.41	30.1	20.44	1.0	1.05	21.4	15.65
Nyanza	0.0	0.00	32.5	10.16	22.9	8.75	8.8	4.97	35.8	10.01
Rift Valley	0.0	0.00	32.3	7.19	32.1	7.33	12.3	5.16	23.4	7.09
Western	7.8	5.60	31.1	9.19	20.0	7.66	20.3	7.57	20.8	8.68
Kenya	**3.7**	**1.32**	**34.6**	**4.15**	**21.7**	**3.26**	**14.2**	**2.65**	**25.8**	**3.89**

At the national level, 40.0 percent of the teachers perceived themselves to be at high or very high risk, while 60.0 percent of teachers perceived themselves to be at no, low or medium risk.

Of those considering themselves at high/very high risk, teachers from Eastern (50.8), Nyanza (44.6%), and Central (42.6%) recorded the highest proportions while teachers from North Eastern region had the lowest percentage at 22.3. None of teachers in Eastern, Nyanza, Rift Valley and Nairobi perceived themselves to be at no risk.

These results show that there has been a decline in the percentage of teachers considering themselves to be at high or very high risk of contracting HIV from 49.5 in SACMEQ III to 40.0 percentage in SACMEQ IV. This trend could be due to increased awareness on prevention and access to facilities and services. However, 40.0 percent is still a high percentage of teachers who perceive themselves to be at risk of contracting HIV.

Policy Suggestion 6.9

The MoE in partnership with MoH and TSC should enhance awareness creation among teachers as well as ensuring access to HIV and AIDS facilities and services.

Teacher sources of information about HIV and AIDS

What source of information about HIV and AIDS did teachers consider to be the best?

Teachers were asked to indicate their preferred HIV and AIDS awareness promotion activity. The results are as indicated in Table 6.36.

Table 6.35: Mathematics teachers' perception of the best HIV and AIDS activity (SACMEQ III)

Region	Lecture		Vedio/ film		Ask questions		Group discussion	
	%	SE	%	SE	%	SE	%	SE
Central	0.0	0.00	13.3	9.40	15.8	11.34	29.1	15.28
Coast	0.0	0.00	18.2	13.63	13.0	12.56	0.0	0.00
Eastern	6.7	4.91	25.6	11.78	6.3	12.21	4.2	4.29
Nairobi	18.2	11.38	23.7	10.74	2.3	10.78	17.0	9.25
N. Eastern	15.6	10.95	18.0	12.13	0.0	5.60	6.4	6.38
Nyanza	6.1	5.96	39.3	12.13	0.0	7.69	12.1	7.50
Rift Valley	12.3	6.55	23.5	8.63	7.3	9.55	0.0	0.00
Western	5.8	5.80	23.2	11.93	0.0	14.45	0.0	0.00
Kenya	**7.6**	**2.42**	**24.6**	**4.38**	**6.0**	**4.63**	**10.3**	**2.98**

Table 6.36: Mathematics teachers' perception of the best HIV and AIDS activity (SACMEQ IV)

Region	Reading material(s) / pamphlet(s) were distributed.		A course instructor gave a lecture.		We were given a list of contact addresses for further information and help.		We watched a video / film.		We listened to a radio and/or recorded programme.		We were able to ask questions.	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	11.2	10.98	5	5.20	0.0	0.00	5.7	4.86	3.9	4.14	0.0	0.00
Coast	10.1	10.25	17.1	9.98	0.0	0.00	0.0	0.0	0.0	0.00	0.0	0.00
Eastern	4.4	4.65	33.1	23.33	0.0	0.00	14.8	9.46	0.0	0.00	0.0	0.00
Nairobi	3.4	3.83	0.0	0.00	12.1	10.88	30.1	16.3	9.9	9.47	0.0	0.00
N. Eastern	4.9	6.67	0.0	0.00	0.0	0.00	21.3	25.6	0.0	0.00	0.0	0.00
Nyanza	1.5	1.54	6.4	6.44	6.6	6.62	35.6	14.5	0.0	0.00	5.1	5.25
Rift Valley	10.7	9.14	15.9	10.38	4.0	4.09	22.1	9.89	3.3	3.34	0.0	0.00
Western	3.6	3.70	16.3	11.59	0.0	0.00	12.1	8.56	5.0	5.05	4.8	4.84
Kenya	**6.4**	**2.80**	**15.9**	**6.63**	**2.4**	**1.51**	**17.8**	**4.34**	**2.2**	**1.18**	**1.7**	**1.19**

Region	A person living with HIV gave a talk.		We had a group discussion.		We had an organized trip to a hospital / care centre.		We completed a questionnaire.		We participated in role play.		We learned how to respond to sensitive questions from learners about HIV and AIDS.	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	33.9	16.91	17.7	16.07	12.1	11.77	0.0	0.00	0.0	0.00	0.0	0.00
Coast	15.7	10.94	8.5	8.74	0.0	0.00	0.0	0.00	0.0	0.00	6.2	6.59
Eastern	38.5	17.55	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	2.6	2.76
Nairobi	9.2	8.74	3.7	4.19	0.0	0.00	0.0	0.00	0.0	0.00	22.1	20.22
N. Eastern	0.0	0.00	67.7	30.85	0.0	0.00	6.2	8.43	0.0	0.00	0.0	0.00
Nyanza	1.5	1.54	0.0	0.00	15.2	12.11	0.0	0.00	3.0	3.12	16.1	10.69
Rift Valley	14.3	7.97	10.6	7.54	1.7	1.77	0.0	0.00	0.0	0.00	6.1	6.04
Western	34.4	13.01	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	7.1	7.05
Kenya	**22.3**	**4.86**	**6.1**	**2.88**	**4.6**	**2.79**	**0.1**	**0.08**	**0.5**	**0.55**	**7.0**	**2.78**

Region	We were given practical demonstrations – for example, condom usage.		Male/female condoms were made available at the meeting.		We received sensitive information on how to teach HIV and AIDS lessons.	
	%	SE	%	SE	%	SE
Central	3.8	4.07	0.0	0.00	6.8	7.01
Coast	0.0	0.00	0.0	0.00	42.4	21.62
Eastern	4.8	5.07	1.9	2.10	0.0	0.00
Nairobi	0.0	0.00	0.0	0.00	9.6	10.16
N. Eastern	0.0	0.00	0.0	0.00	0.0	0.00
Nyanza	0.0	0.00	0.0	0.00	9.1	8.89

Region	We were given practical demonstrations – for example, condom usage.		Male/female condoms were made available at the meeting.		We received sensitive information on how to teach HIV and AIDS lessons.	
	%	SE	%	SE	%	SE
Rift Valley	2.6	2.59	0.0	0.00	8.7	8.45
Western	9.5	9.18	0.0	0.00	7.3	7.27
Kenya	**3.4**	**1.90**	**0.4**	**0.41**	**9.4**	**3.84**

Table 6.36 shows that the most preferred HIV and AIDS learning activity for Mathematics teachers was a person living with HIV giving a talk at 22.3 percent followed by watching a film or video at 17.8 percent. This was followed by a course lecture an instructor gave at 15.9 percent. The least preferred activities included, filling questionnaires (0.1%), condoms made available at a meeting (0.4%), and participating in role play (0.5%).

The findings above indicate that Mathematics teachers preferred to have a talk from a person living with HIV/AIDS and a course lecture as well as audio-visual. The least preferred sources are where teachers have to seek for information by themselves through reading. The findings are different from those of pupils who actually preferred teachers as sources of information (see Table 6.16). Whereas teachers highly prioritize talks by HIV-infected persons, it was among the least preferred sources of information by pupils. These findings also could reflect the fact that most teachers had a positive attitude towards HIV-infected persons compared to the pupils who had registered a higher percentage of negative attitudes towards those infected (see Tables 6.20, 6.22 and 6.24).

Policy Suggestion 6.10

a) The TSC in collaboration the MoE should organize in-service training on HIV and AIDS for all teachers.
b) Schools should organize talks/lectures for teachers and pupils especially by people living with HIV and AIDS and professionals (Medical and counselling practitioners).

6.4 School Heads' Attitudes and School Policy on HIV and AIDS

General Policy Concern 6.3:

(a) What were the school head attitudes towards HIV and AIDS?

(b) What were the school policies regarding teachers with HIV and AIDS?

School head attitudes towards HIV and AIDS

(a) What percentage of school heads felt that a pupil infected with HIV should be allowed to attend school?

This study sought to find out school heads' attitudes towards HIV and AIDS with regard to the aspect of stigmatization and discrimination of persons living with HIV and AIDS. School heads were asked whether a HIV infected pupil should be allowed to proceed with school. School heads were required to respond either "No" if the infected pupil should not be allowed to continue with school, "I am not sure" if they were unsure or "Yes" if they should be allowed to continue. The findings of the data analysis are presented in **Table 6.38.**

Table 6.37: School heads' attitudes towards HIV infected pupils continuing in school (stigma) (SACMEQ III)

	Should a HIV positive pupil be allowed to attend school?			
	NO/ Not Sure		YES	
Region	%	SE	%	SE
Central	12.3	8.55	87.7	8.55
Coast	0.0	0.00	100.0	0.00
Eastern	0.0	0.00	100.0	0.00
Nairobi	0.0	0.00	100.0	0.00
N. Eastern	0.0	0.00	100.0	0.00
Nyanza	0.0	0.00	100.0	0.00
Rift Valley	0.0	0.00	100.0	0.00
Western	0.0	0.00	100.0	0.00
Kenya	**1.7**	**1.23**	**98.3**	**1.23**

Table 6.38: School heads' attitudes towards HIV infected pupils continuing in school (stigma) (SACMEQ IV)

Region	No		Yes		Not Sure	
	%	SE	%	SE	%	SE
Central	0.0	0.00	100.0	0.00	0.0	0.00
Coast	2.3	2.36	97.7	2.36	0.0	0.00
Eastern	0.0	0.00	100.0	0.00	0.0	0.00
Nairobi	0.0	0.00	100.0	0.00	0.0	0.00
North Eastern	0.0	0.00	100.0	0.00	0.0	0.00
Nyanza	0.0	0.00	99.1	0.94	0.9	0.94
Rift Valley	0.0	0.00	100.0	0.00	0.0	0.00
Western	0.0	0.00	100.0	0.00	0.0	0.00
Kenya	**0.2**	**0.24**	**99.6**	**0.29**	**0.2**	**0.16**

The results as presented in **Table 6.38** clearly show that although the majority of the school heads (99.6%), have a positive attitude towards pupils infected with HIV (i.e. they have no stigma), 24.0 percent of their pupils display high level of stigma towards their infected counterparts with 65.2 percent having positive attitudes. However 2.3 percent of the head teachers from Coast region felt that HIV and AIDS infected pupils should not be allowed to continue attending school.

(b) What percentage of school heads felt that a teacher infected with HIV should be allowed to continue teaching?

School heads were asked whether they would allow a HIV infected teacher to continue teaching in their school. The results are presented in Table 6.40.

Table 6.39: School head teachers' opinions on whether teachers with HIV and AIDS should be allowed to teach in schools (SACMEQ III)

	Should an HIV positive teacher be allowed to continue teaching?			
	NO/ Not Sure		YES	
Region	%	SE	%	SE
Central	12.3	8.55	87.7	8.55
Coast	0.0	0.00	100.0	0.00
Eastern	0.0	0.00	100.0	0.00
Nairobi	0.0	0.00	100.0	0.00
North Eastern	0.0	0.00	100.0	0.00
Nyanza	0.0	0.00	100.0	0.00
Rift Valley	0.0	0.00	100.0	0.00
Western	0.0	0.00	100.0	0.00
Kenya	**1.7**	**1.23**	**98.3**	**1.23**

Table 6.40: School head teachers' opinions on whether teachers with HIV and AIDS should be allowed to teach in schools (SACMEQ IV)

	Should an HIV positive teacher be allowed to continue teaching?			
	NO		YES	
Region	%	SE	%	SE
Central	0.0	0.00	100.0	0.00
Coast	2.3	2.36	97.7	2.36
Eastern	0.0	0.00	100.0	0.00
Nairobi	0.0	0.00	100.0	0.00
North Eastern	0.0	0.00	100.0	0.00
Nyanza	0.0	0.00	100.0	0.00
Rift Valley	0.0	0.00	100.0	0.00
Western	0.0	0.00	100.0	0.00
Kenya	**0.2**	**0.24**	**99.8**	**0.24**

Nationally, 99.8 percent of the school heads were willing to allow HIV infected teachers to continue teaching in their schools which is comparable to SACMEQ III at 98.3 percent. Only 0.2 percent school heads were not willing to allow HIV infected teachers to continue teaching in their schools. Regionally, in 7 out of 8 regions, all the sampled school heads said they would allow HIV-infected teachers to continue teaching in their schools with the exception of Coast region where 97.7 percent of the school heads would allow HIV infected teachers to continue teaching in their schools. The results show that school heads had a positive attitude toward staff members who were HIV positive.

School head access to HIV Testing Centres

Were there HIV Testing Centres within walking distance from school heads' homes?

School heads were required to state whether the nearest HIV Testing Centre was within walking distance from their homes. They were required to respond either "Yes" if the HIV Testing Centre was within walking distance, "No" if it was beyond the walking distance and "I do not know" if they did not know how far the HIV Testing Centre was. The findings are reported in **Table 6.42.**

Table 6.41: Availability of HIV Testing Centres within walking distance of School head teachers' homes (SACMEQ III)

	NO/ Not Sure		YES	
Region	%	SE	%	SE
Central	30.6	10.61	69.4	10.61
Coast	37.5	12.97	62.5	12.97
Eastern	46.4	11.01	53.6	11.01
Nairobi	5.7	5.74	94.3	5.74
North Eastern	56.3	15.35	43.7	15.35
Nyanza	21.8	7.32	78.2	7.32
Rift Valley	38.5	8.82	61.5	8.82
Western	20.8	8.05	79.2	8.05
Kenya	**31.7**	**3.84**	**68.3**	**3.84**

Table 6.42: Availability of HIV Testing Centres within nearby town/trading centre (SACMEQ IV)

Region	No		Yes		Not Sure	
	%	SE	%	SE	%	SE
Central	17.9	9.60	82.1	9.60	0.0	0.00
Coast	2.6	2.65	94.7	3.85	2.7	2.79
Eastern	22.9	8.67	77.1	8.67	0.0	0.00
Nairobi	0.0	0.00	100.0	0.00	0.0	0.00
N. Eastern	15.2	9.47	84.8	9.47	0.0	0.00

Region	No		Yes		Not Sure	
	%	SE	%	SE	%	SE
Nyanza	3.3	3.34	96.7	3.34	0.0	0.00
Rift Valley	14.5	5.36	85.5	5.36	0.0	0.00
Western	5.6	4.19	94.4	4.19	0.0	0.00
Kenya	**11.9**	**2.44**	**87.8**	**2.46**	**0.3**	**0.30**

Nationally, 87.8 percent of the school heads had HIV Testing Centres within their nearby towns, 11.9 percent did not have HIV Testing Centre within a nearby town while 0.3 percent were not sure.

Regionally, all head teachers in Nairobi reported that there were HIV Testing Centres within a nearby town. Eastern, Central and North Eastern regions had 22.9, 17.9 and 15.2 percent of head teachers respectively reporting that there was no HIV Testing Centre in a nearby town. A small percentage of school heads (2.7%) in Coast region reported that they didn't know of any nearby HIV Testing Centres.

School head training on HIV and AIDS

What percentage of school heads had attended in-service courses on HIV and AIDS?

School heads were required to indicate whether they had attended any in-service course on HIV and AIDS. The results as presented in Table 6.44.

***Table 6.43: School heads who have attended an in-service course on HIV and AIDS* (SACMEQ III)**

Region	NO		YES	
	%	SE	%	SE
Central	13.8	6.45	86.2	6.45
Coast	24.6	11.29	75.4	11.29
Eastern	8.8	6.10	91.2	6.10
Nairobi	13.5	9.21	86.5	9.21
North Eastern	34.4	15.12	65.6	15.12
Nyanza	15.4	6.12	84.6	6.12
Rift Valley	22.0	7.69	78.0	7.69
Western	4.8	4.81	95.2	4.81
Kenya	**15.2**	**2.89**	**84.8**	**2.89**

***Table 6.44: School heads who have attended an in-service course on HIV and AIDS* (SACMEQ IV)**

Region	NO		YES	
	%	SE	%	SE
Central	26.0	11.45	74.0	11.45
Coast	10.3	5.44	89.8	5.44

	NO		YES	
Region	%	SE	%	SE
Eastern	14.1	7.36	85.9	7.36
Nairobi	0.0	0.00	100.0	0.00
North Eastern	17.1	12.82	82.9	12.82
Nyanza	12.5	6.89	87.5	6.89
Rift Valley	27.8	7.37	72.2	7.37
Western	0.0	0.00	100.0	0.00
Kenya	**15.9**	**2.97**	**84.1**	**2.97**

Nationally, the proportion of the school head teachers who had attended in- service course on HIV and AIDS was 84.1 percent against 15.9 percent who had not, which was comparable to 84.8 percent and 15.2 percent respectively in SACMEQ III. Regionally, the highest percentage of the head teachers who had attended in-service course on HIV and AIDS was from Western and Nairobi both at 100.0 followed by Coast at 89.8. Rift Valley (27.8%) had the highest percentage of pupils whose school heads had not attended an in-service course followed by Central region at 26.0 percent.

It is worth noting that although Western had registered the highest percent of pupils (100.0%) with head teachers who had attended an in-service course on HIV and AIDS, pupils from this region had the lowest mean HAKT score in the country. This is similar to the findings in SACMEQ III.

The results indicate that there is quite a substantial number of head teachers (15.9%) who have not attended an in-service course on HIV and AIDS. However, nearly 100.0 percent do not stigmatize or discriminate against infected persons.

Policy Suggestion 6.11

The MoE should ensure comprehensive coverage of in-service courses on HIV and AIDS for school heads.

School head HIV and AIDS tests

What percentage of school heads had taken HIV tests?

This study also sought to establish whether school heads had taken a HIV and AIDS test to establish their status. The findings are presented in Table 6.46.

Table 6.45: School heads who have taken HIV and AIDS test (SACMEQ III)

Region	NO		YES	
	%	SE	%	SE
Central	78.4	8.99	21.6	8.99
Coast	84.9	9.07	15.1	9.07
Eastern	75.2	8.97	24.8	8.97
Nairobi	31.1	11.66	68.9	11.66
North Eastern	65.9	13.95	34.1	13.95
Nyanza	54.3	9.15	45.7	9.15
Rift Valley	70.0	8.62	30.0	8.62
Western	89.4	7.88	10.6	7.88
Kenya	**71.2**	**3.67**	**28.8**	**3.67**

Table 6.46: School heads who have taken HIV and AIDS test (SACMEQ IV)

Region	No		Yes, but didn't want to know the result		Yes, but I wasn't informed of the result		Yes, and I know the results	
	%	SE	%	SE	%	SE	%	SE
Central	13.0	8.74	0.0	0.00	5.7	5.72	81.3	9.94
Coast	8.7	5.08	0.0	0.00	3.6	3.67	87.7	6.22
Eastern	32.0	12.48	0.0	0.00	4.6	4.57	63.5	12.59
Nairobi	0.0	0.00	0.0	0.00	0.0	0.00	100.0	0.00
North Eastern	37.5	18.96	0.0	0.00	0.0	0.00	62.5	18.96
Nyanza	20.8	8.57	3.4	3.37	0.0	0.00	75.8	8.91
Rift Valley	23.7	6.91	0.0	0.00	0.0	0.00	76.3	6.91
Western	16.4	6.97	0.0	0.00	0.0	0.00	83.6	6.97
Kenya	**20.8**	**3.66**	**0.5**	**0.49**	**1.8**	**1.11**	**76.9**	**3.75**

Table 6.45 shows that 20.8 percent of the school heads had not taken a HIV and AIDS test while 79.2 percent had been tested. North Eastern region had the highest proportion of pupils with school heads who had not taken a HIV and AIDS test at 37.5, percent followed by Eastern region with 32.0 percent and Rift Valley with 23.7 percent. The highest percentage of pupils with school heads who had taken the test was in Nairobi and Coast regions at 100.0 and 91.3 percent respectively, followed by Central region at 87.0 percent and Western with 83.6 percent.

Policy Suggestion 6.12

School heads should be encouraged to take HIV and AIDS tests as role models for teachers and pupils.

School policy regarding teachers who have HIV and AIDS.

What was the school policy with regard to teachers who have long illness related to HIV

and AIDS?

Head teachers were required to state whether they had a school policy with regard to teachers who were ill from HIV and AIDS. The results are as presented in Table 6.48.

Table 6.47: School policy on HIV and AIDS ill teachers (SACMEQ III)

Region	Stay at Home		No Duties at All		No Teaching Duties		Try to Teach	
	%	SE	%	SE	%	SE	%	SE
Central	0.0	0.00	0.0	0.00	8.4	5.98	91.6	5.98
Coast	2.3	2.40	6.2	6.22	14.8	10.04	76.7	11.36
Eastern	0.0	0.00	0.0	0.00	12.2	6.84	87.8	6.84
Nairobi	0.0	0.00	0.0	0.00	4.7	4.76	95.3	4.76
N. Eastern	0.0	0.00	0.0	0.00	5.5	5.69	94.5	5.69
Nyanza	0.0	0.00	2.4	2.37	4.2	3.10	93.4	3.86
Rift Valley	5.0	3.50	0.0	0.00	9.5	4.97	85.6	5.90
Western	0.0	0.00	0.0	0.00	19.9	9.45	80.1	9.45
Kenya	**1.5**	**0.92**	**0.9**	**0.64**	**10.4**	**2.50**	**87.2**	**2.69**

Table 6.48: School policy on HIV and AIDS ill teachers (SACMEQ IV)

Region	Stay at home		Come to school but no duties		Come to school but for other duties		Come to school and teach	
	%	SE	%	SE	%	SE	%	SE
Central	5.5	5.48	0.0	0.00	27.7	11.07	66.8	11.61
Coast	11.6	8.57	0.0	0.00	25.4	14.80	63.1	14.47
Eastern	3.0	3.06	16.7	13.22	0.0	0.00	80.3	13.18
Nairobi	8.9	8.92	0.0	0.00	18.4	11.74	72.7	13.79
N. Eastern	0.0	0.00	4.4	4.73	8.8	6.78	86.8	8.48
Nyanza	1.6	1.59	3.2	3.21	15.8	7.54	79.5	8.11
Rift Valley	3.7	3.06	0.0	0.00	23.4	7.01	72.9	7.35
Western	8.0	5.64	3.8	3.78	3.8	3.79	84.5	7.36
Kenya	**4.9**	**1.71**	**4.3**	**2.85**	**15.0**	**3.02**	**75.7**	**4.05**

Nationally, 75.7 percent of the school heads were willing to allow an ailing teacher to come and teach whenever he/she could. This is a decline from 87.2 percent in SACMEQ III. It is also notable that 15.0 percent of school head would allow ailing teachers to come to school but allocate them other duties. The remaining 4.9 percent of the school heads indicated they would allow the ailing teachers to stay at home.

Regionally, North Eastern at (86.8%) had the highest percentage (86.8%) of pupils whose school heads were willing to allow ailing teachers to continue teaching, followed by Western at 84.5 percent, and Eastern region at 80.3 percent. Eastern region had the highest proportion (16.7%) of pupils whose school heads did not assign teaching duties to ailing teachers followed by North Eastern region (4.4%). It is interesting to note that teachers in North Eastern

region were more accommodating of teachers living with AIDS while most of the pupils in this region would not allow ailing pupils or teachers in their schools.

Policy Suggestion 6.13

There is need for MoE and TSC to give clear policy guideline with regard to the teaching duties of a teacher with HIV and AIDS and other illnesses.

School head self-assessment of risk of being infected with HIV and AIDS

What did the school heads think was their general risk of being infected with HIV?

School heads were requested to give their own assessment of the risk of being infected with HIV. Results are presented below in Table 6.50.

Table 6.49: Self risk assessment of school heads being infected with HIV (SACMEQ III)

Region	No/Low Risk/Medium		High/Very High Risk	
	%	SE	%	SE
Central	75.70	10.0	24.30	10.0
Coast	82.60	12.0	17.40	12.0
Eastern	57.30	10.9	42.70	10.9
Nairobi	60.40	13.8	39.60	13.8
North Eastern	88.00	11.5	12.00	11.5
Nyanza	59.60	8.8	40.40	8.8
Rift Valley	67.80	7.6	32.20	7.6
Western	52.80	11.3	47.20	11.3
Kenya	**64.70**	**3.8**	**35.30**	**3.8**

Table 6.50: Self risk assessment of school heads being infected with HIV (SACMEQ IV)

Region	No risk		Low		Medium		High		Very High	
	%	SE	%	SE	%	SE	%	SE	%	SE
Central	6.9	4.91	46.8	12.41	9.3	6.81	22.5	10.68	14.6	7.29
Coast	14.1	7.99	43.8	12.48	9.8	5.74	7.7	4.83	24.6	8.70
Eastern	0.0	0.00	24.6	9.06	14.5	6.80	16.4	12.86	44.5	12.91
Nairobi	15.2	10.54	43.2	15.69	0.0	0.00	24.6	13.19	17.0	10.89
North Eastern	17.1	10.00	55.1	18.86	5.4	5.77	16.7	14.94	5.6	5.98
Nyanza	4.6	4.52	30.1	9.71	18.9	8.10	11.8	5.75	34.6	9.74
Rift Valley	3.0	1.85	45.0	7.84	19.8	6.02	13.1	5.93	19.2	6.38
Western	5.0	4.94	34.8	9.49	19.1	7.32	20.3	7.57	20.8	8.68
Kenya	**5.2**	**1.53**	**37.8**	**4.00**	**15.6**	**2.76**	**15.3**	**3.45**	**26.2**	**3.81**

Table 6.50 shows that at the national level, 58.6 percent of the pupils had school heads who

perceived themselves as being at no, low or medium risk of contracting HIV, while 41.4 percent of the pupils had school heads who perceived themselves as being at a high or very high risk. At the regional level, the highest proportion of school heads who perceived themselves as being at no, low or medium risk was in Central and Coast regions with 62.9 and 67.7 percent respectively. School heads from Eastern and Nyanza with 60.9 and 46.4 percent respectively considered themselves to be at a high or very high risk. (41.1%) of the school heads perceiving themselves as being at high or very high risk of being infected with HIV is worth noting.

Policy Suggestion 6.14

The training on HIV and AIDS for head teachers needs to be strengthened especially concerning testing and mitigating risky behavior.

6.5 Conclusion

Pupils with the lowest levels of knowledge concerning HIV and AIDS were females from lower SES backgrounds in schools located in rural areas. Although nearly half of the pupils in this study had reached the minimum levels of HIV and AIDS knowledge, majority of them did not have desirable levels both at national and regional levels. All teachers had attained minimum levels of knowledge while an overwhelming majority displayed desirable levels of knowledge about HIV and AIDS.

A considerable proportion of the pupils had negative attitudes towards others infected with HIV and AIDS. On the other hand, majority of the teachers and school heads had a positive attitude towards infected persons. There exists a disconnect between teachers' and school heads' knowledge and attitudes concerning HIV and AIDS and pupils' attitude towards other pupils infected with HIV and AIDs.

Pupils preferred classroom lessons from their teachers, videos and films talks from people. The source of knowledge about HIV and AIDS, with the least preferred being trips to hospitals and questionnaires. It is interesting to note that teachers had the same preference with their pupils, in regard to sources of knowledge. Few teachers preferred seeking information through reading books and other materials. On the other hand, teachers preferred media such as video/films and talks by infected persons while trips to hospitals and answering questionnaires were the least preferred. It would be of interest to carry out a study to establish which of the most preferred sources are most frequently used in schools. This would explain whether both teachers and pupils are using their most preferred sources of information.

A considerable proportion of pupils, teachers and school heads had HIV and AIDS testing services within walking distance of their homes. This corroborates the finding that over 50 percent of teachers and school heads (70.27%) had been tested for HIV and AIDS. Risk perception among teachers varied from region to region though over a third of the teachers perceived themselves as being at very high risk of infection. Approximately half of the teachers perceived themselves as being at no, low or medium risk of infection. This is slightly lower than that of head teachers (64.7%). A greater emphasis should be placed on the training of teachers in HIV and AIDS especially concerning testing and mitigating risky behaviour.

CHAPTER 7

7.0 READING AND MATHEMATICS ACHIEVEMENT LEVELS OF PUPILS AND THEIR TEACHERS

7.1 Introduction

All education systems have multiple outcomes. Usually these outcomes include cognitive achievement (what do pupils know), affective achievement (attitudes such as whether pupils like going to school or like subjects such as Reading and Mathematics) and behavioural values (such as civic responsibility and values like respect and social work). It is common for educational authorities to be mostly interested in cognitive outcomes, but other outcomes need not be forgotten. This chapter reports on cognitive outcomes. It must be stressed that when presenting the cognitive data in this chapter, the aim is not to look at achievement as simply pass or fail in order to continue to the next standard in school, but rather to examine how well the education system has performed in terms of teaching basic literacy and numeracy skills to pupils by the end of Standard 6.

In previous chapters, information has been provided on input and process variables. These have included teaching quality (and teacher qualifications), the utilisation of curriculum and instructional materials, teacher motivation, the school and class setting, school management and institutional leadership, curriculum implementation and monitoring, inspection and advisory services, and home practices that affect achievement.

The analysis in this chapter is based on two policy concerns:

1) **What were the levels (according to the Rasch scores and descriptive levels of competence) and variations (among schools and regions) in the achievement levels of Standard 6 pupils and their teachers in Reading and Mathematics?**

2) **What was the Reading and Mathematics achievement levels of important sub-groups of Standard 6 pupils and their teachers (for example pupils and teachers of different gender, socio-economic levels and location)?**

7.2 Two Ways of Presenting Test Scores

The performance results of Standard 6 pupils are presented in two different way follows:

Means (traditional)

The first approach is the traditional method of reporting the mean scores of pupils and

teachers across Kenya nationally and for the eight regions. This approach provides an aggregated average measure of performance in the form of a number. While the approach follows a familiar pattern for the presentation of test scores, its main disadvantage is that it does not provide a clear description of the "meaning" of a particular level of performance.

Competency levels

The second approach is based upon a scaling technique known as the Rasch model. This makes it possible to align the ability levels of pupils and teachers with the difficulty levels of test items, and to make a probabilistic linkage between a person's ability and item difficulty. It is further possible to place the test items along a "difficulty" dimension and then group them into "clusters" that are linked to common groups of skills. The clusters of test items can then be examined and described in terms of the specific skills that pupils need to provide correct responses. Moreover, pupil and teacher performances can be aligned to one of the eight "competency levels" in Literacy and Numeracy. In order to measure cognitive outcomes, tests were administered to pupils in Reading and Mathematics.

It will be recalled that not only was it possible to have a total Rasch score but also that the test data were analysed in such a way that achievement at different levels of competency or skills could be identified and in turn the percentages of pupils reaching these levels calculated. The competency levels can also be regarded as instructional levels. For example, pupils who have mastered the skills in, say, Level 3 but not in Level 4 are in a position to begin to learn the knowledge and skills in Level 4. At the national level, this is important feedback for curriculum planners. At the school level, such information can be useful for teachers to improve classroom practice and teaching/learning, assuming that they receive such information in a timely manner.

Furthermore it was possible to establish minimum and desirable levels of mastery. These levels were computed using SACMEQ I data. In SACMEQ I, each country set country-specific minimum and desirable levels of mastery. As a result, the percentages of mastery were not directly comparable. So, for each of the minimum and desirable levels, an "average" mastery score was calculated for the seven countries. The appropriate Rasch calibrated score was then determined for these two "average" mastery levels. The Rasch model was also used to link the scores for SACMEQ II to the scores for SACMEQ III and place all the scores onto the same scale. This means that the "average" mastery scores could also be used in SACMEQ IV and the percentages of reaching each of these levels could be compared across SACMEQ III and SACMEQ IV.

At the same time, the achievement level of Standard 6 teachers in Reading and Mathematics was measured. It was possible to place the teachers' and pupils' achievement on the same scale and compare the results. The major reason for measuring the achievement of teachers is the belief that their mastery of the subject matter is critical in curriculum implementation. The average score of all pupils in all fourteen countries participating in SACMEQ IV was set at 500 and the standard deviation was 100. Teachers from the same countries were placed on the same scale as the pupils. The levels and variations in the competencies in Reading and Mathematics for both pupils and teachers are presented and discussed in this section. **Tables 7.1** and **Table 7.2** give a summary of the Reading and Mathematics levels that were used in assessing competencies in learners.

Table 7.1: Levels of Reading skills

	READING SKILL LEVELS
Level 1	Pre-Reading: Matches words and pictures involving concrete concepts and everyday objects, and follows short simple written instructions.
Level 2	Emergent Reading: Matches words and pictures involving prepositions and abstract concepts; uses cuing systems (by sounding out, using simple sentence structure, and familiar words) to interpret phrases by Reading forwards.
Level 3	Basic Reading: Interprets meaning (by matching words and phrases completing a sentence, matching adjacent words) in a short and simple text by reading forwards or backwards.
Level 4	Reading for meaning: Reads forwards and backwards in order to link and interpret information located in various parts of the text.
Level 5	Interpretive Reading: Reads forwards and backwards in order to combine and interpret information from various parts of the text in association with external information (based on recalled factual knowledge) that "completes" and contextualises meaning.
Level 6	Inferential Reading: Reads forwards and backwards through longer (narrative, document or expository) texts in order to combine information from various parts of the text so as to infer the writer's purpose.
Level 7	Analytical Reading: Locates information in longer (narrative, document or expository) texts by reading forwards and backwards in order to combine information from various parts of the text so as to infer the writer's personal beliefs (value systems, prejudices, and/or biases).
Level 8	Critical Reading: Locates information in longer (narrative, document or expository) texts by reading forwards and backwards in order to combine information from various parts of the text so as to infer and evaluate what the writer has assumed about both the topic and the characteristics of the reader - such as age, knowledge, and personal beliefs (value systems, prejudices, and/or biases).

Table 7.2: Levels of Mathematics skills

	MATHEMATICS SKILL LEVELS
Level 1	Pre-numeracy: Applies single step addition or subtraction operations. Recognises simple shapes. Matches numbers and pictures. Counts in whole numbers.
Level 2	Emergent numeracy: Applies a two-step addition or subtraction operation involving carrying, checking (through very basic estimation), or conversion of pictures to numbers. Estimates the length of familiar objects. Recognizes common two-dimensional shapes.
Level 3	Basic numeracy: Translates verbal information (presented in a sentence, simple graph or table using one arithmetic operation) in several repeated steps. Translates graphical information into fractions. Interprets place value of whole numbers up to thousands. Interprets simple common everyday units of measurement.
Level 4	Beginning numeracy: Translates verbal or graphic information into simple arithmetic problems. Uses multiple different arithmetic operations (in the correct order) on whole numbers, fractions, and/ or decimals.
Level 5	Competent numeracy: Translates verbal, graphic, or tabular information into an arithmetic form in order to solve a given problem. Solves multiple- operation problems (using the correct order of arithmetic operations) involving everyday units of measurements and/or whole and mixed numbers. Converts basic measurement units from one level of measurement to another (for example metres to centimetres).
Level 6	Mathematically skilled: Solves multiple operation problems (using the correct order of arithmetic operations) involving fractions, ratios, and decimals. Translates verbal and graphic representation information into symbolic, algebraic, and equation form in order to solve a given mathematical problem. Checks and estimates answers using external knowledge (not provided within the problem).
Level 7	Problem solving: Extracts and converts (for example, with respect to measurement units) information from tables, charts, visual and symbolic presentations in order to identify, and then solve multi-step problems.
Level 8	Abstract problem solving: Identifies the nature of an un-stated mathematical problem embedded within verbal or graphic information, and then translates this into algebraic or equation form in order to solve the problem.

7.3 Overall Pupil and Teacher Mean Scores and Competency Levels

General Policy Concern 7.1

What were the levels (according to Rasch scores and descriptive levels of competence) of Standard 6 pupils and their teachers?

The results for pupils and teachers are presented in the following sections of this chapter.

Pupil and teacher mean scores

What were the overall pupil and teacher mean scores in Reading and Mathematics?

Table 7.3: Means for the Reading and Mathematics test scores of pupils and teachers (SACMEQ III and SACMEQ IV)

SACMEQ III								
Region	Pupils				Teachers			
	Reading		Mathematics		Reading		Mathematics	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Central	574.3	15.11	574.4	11.75	798.0	8.28	894.2	23.60
Coast	553.8	13.41	569.8	12.21	790.5	10.81	910.7	37.03
Eastern	550.6	13.25	569.2	12.67	788.8	8.83	900.4	15.19
Nairobi	622.1	18.10	610.0	20.86	817.0	14.50	901.2	24.95
North Eastern	560.4	25.09	600.2	27.59	769.0	14.98	877.3	16.32
Nyanza	545.1	9.80	555.0	7.32	782.9	10.12	900.8	16.60
Rift Valley	527.5	10.95	549.2	8.07	789.9	8.07	909.9	13.37
Western	497.3	10.18	516.1	7.61	801.9	12.62	922.8	32.58
Kenya	**543.1**	**4.92**	**557.0**	**3.98**	**792.1**	**3.91**	**906.1**	**8.37**
SACMEQ IV								
	Pupils				Teachers			
	Reading		Mathematics		Reading		Mathematics	
Region	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Central	600.1	12.44	613.1	16.06	760.2	10.70	924.3	21.33
Coast	564.1	16.32	608.0	21.64	743.2	13.63	930.8	27.64
Eastern	585.9	13.55	612.6	11.82	742.9	11.33	928.2	24.03
Nairobi	657.9	15.06	689.6	22.14	769.8	19.60	920.7	25.92
North Eastern	589.5	19.86	676.1	36.10	769.7	23.84	945.5	26.00
Nyanza	573.2	11.40	614.5	12.98	718.9	31.26	928.1	20.25
Rift Valley	571.3	10.87	603.3	10.85	746.0	10.08	919.0	16.54
Western	557.5	11.16	573.1	10.44	762.5	11.30	935.7	20.02
Kenya	**577.6**	**5.14**	**608.1**	**5.32**	**744.9**	**7.30**	**927.2**	**8.39**

Table 7.3 indicates that the national mean score for Reading for pupils was 577.6, while that for teachers was 744.9. In Mathematics, the national mean score for pupils was 608.1 and 927.2 for teachers. From these results, it can be seen that teachers performed well above the pupils' mean scores especially in Mathematics, in both SACMEQ III and SACMEQ IV. Overall comparison between SACMEQ III and IV shows that there was an improvement in the performance of pupils and a drop for teachers in Reading in SACMEQ IV. The gap between pupils' and teachers' score is higher in Mathematics with a difference of 319.1 points.

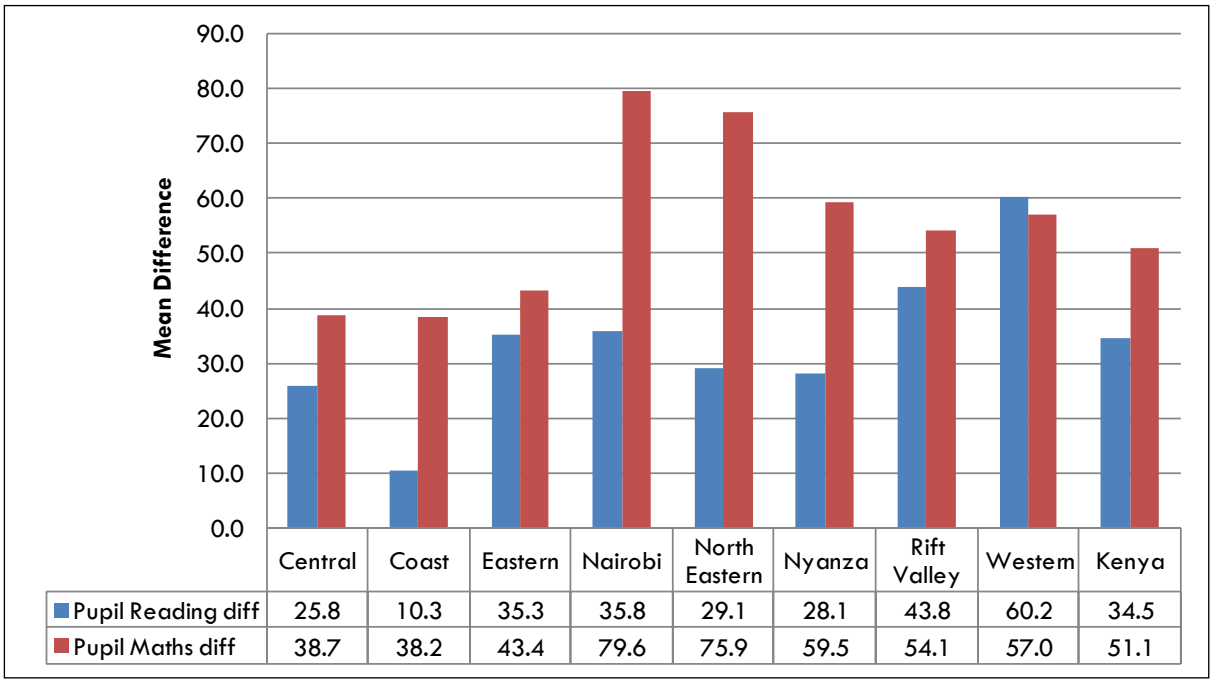
In general, pupils in Kenya performed at a higher level than the set mean of 500 for SACMEQ IV countries in both Reading and Mathematics. Regarding pupils' Reading test scores, Nairobi was highest with 657.9, followed by Central with 600.1. The lowest Reading test scores were recorded in Western with a mean score of 557.5. In Mathematics, Nairobi had the highest mean score of 689.6; a considerable improvement from 610.0 in SACMEQ III. North Eastern followed with a mean score of 676.1. It is notable that North Eastern came second to Nairobi in the NASMLA Class 3 Study (2010). The lowest mean performance in Mathematics for pupils was recorded in Western at 573.1.

Regarding teachers' Reading scores, Nairobi led with a mean score of 769.8 followed closely by North Eastern at 769.7. Eastern had the lowest Reading mean score at 742.9. For Mathematics teachers, North Eastern led with 945.5, followed by Western at 935.7 and Coast at 930.8. Rift Valley had the lowest mean score at 919.0.

Policy Suggestion 7.1

The MoE should scale up current interventions on reading such as the Tusome programme so as to cover all levels of primary education.

For comparison purposes, the mean differences for test scores in SACMEQ III and IV for both pupils and teachers in Reading and Mathematics per region are summarised in **Figures 7.1** and **7.2.**

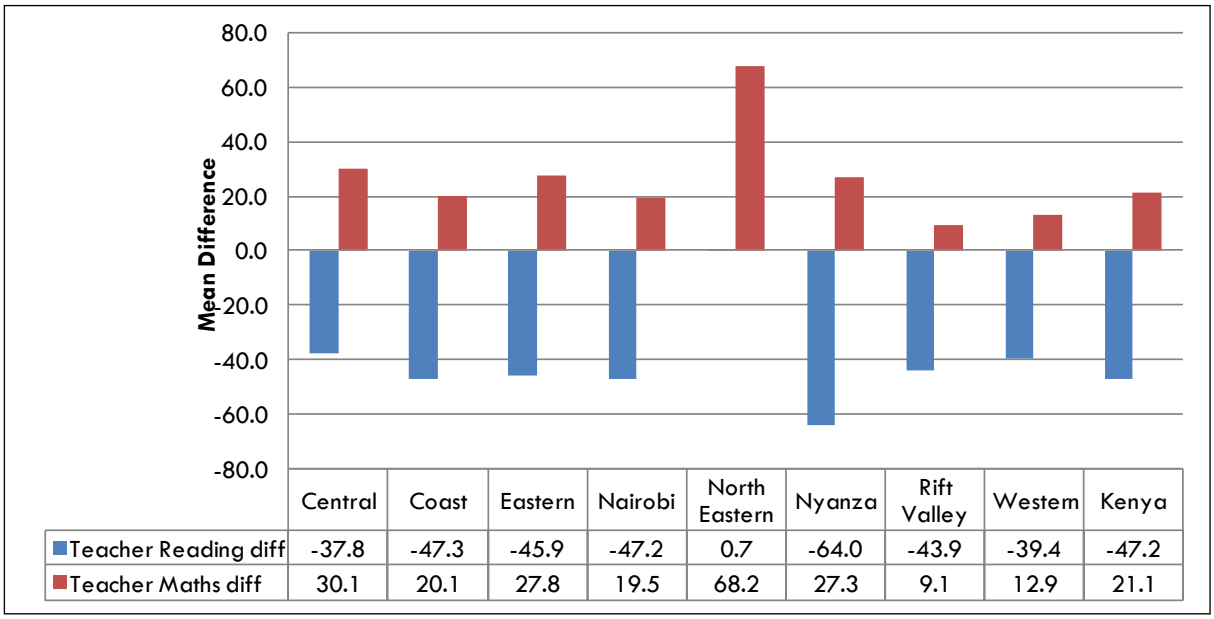


	Central	Coast	Eastern	Nairobi	North Eastern	Nyanza	Rift Valley	Western	Kenya
Pupil Reading diff	25.8	10.3	35.3	35.8	29.1	28.1	43.8	60.2	34.5
Pupil Maths diff	38.7	38.2	43.4	79.6	75.9	59.5	54.1	57.0	51.1

Figure 7.1: Differences in Reading and Mathematics test scores between SACMEQ III and SACMEQ IV for pupils from different regions

As shown in **Figure 7.1,** pupils recorded a significant improvement in both Reading and Mathematics performance in SACMEQ IV compared to SACMEQ III. Western had the highest positive change of 60.2 mean score points for Reading while Nairobi had the largest increase in Mathematics by 79.6 mean score points. Coast had the least increase in Reading (10.3) and Mathematics (38.2).

The overall mean difference between SACMEQ III and IV for Mathematics was 51.1 mean score points while that for Reading was 34.5.



	Central	Coast	Eastern	Nairobi	North Eastern	Nyanza	Rift Valley	Western	Kenya
Teacher Reading diff	-37.8	-47.3	-45.9	-47.2	0.7	-64.0	-43.9	-39.4	-47.2
Teacher Maths diff	30.1	20.1	27.8	19.5	68.2	27.3	9.1	12.9	21.1

Figure 7.2: Differences in Reading and Mathematics test scores between SACMEQ III and SACMEQ IV for teachers from different regions

Figure 7.2 shows that all regions recorded a decline in the performance of teachers in Reading except North Eastern which recorded a positive change of 0.7mean score points. Nyanza had the highest negative change at -64.0 mean score points. It is also observable that Mathematics recorded an increase in the performance of teachers at 21.1 mean score points. North Eastern had the highest positive change at 68.2 while Rift Valley had the least positive change a t 9.1 mean score points.

Pupil and teacher competency levels

What percentages of pupils and teachers were reaching different competency levels in Reading and Mathematics?

The percentages of pupils and teachers operating at various Reading and Mathematics competency levels in the SACMEQ III and SACMEQ IV studies are presented in Tables 7.4 to 7.7.

Table 7.4: Pupils reaching different Reading competency levels by region (SACMEQ III and SACMEQ IV)

SACMEQ III																
	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
Region	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	1.9	0.64	4.2	1.18	9.7	2.58	14.2	2.14	16.7	2.39	18.2	2.67	23.4	4.53	11.7	3.54
Coast	0.5	0.37	3.9	1.42	8.0	2.36	22.3	3.30	24.5	2.86	20.2	2.35	14.4	2.72	6.2	2.88
Eastern	1.8	1.08	3.6	1.00	9.1	2.05	20.9	3.39	23.0	2.95	22.6	3.40	12.7	2.37	6.2	3.25
Nairobi	0.2	0.20	2.0	1.10	2.8	0.79	11.0	2.58	15.2	2.90	19.6	2.85	25.8	2.53	23.3	6.63
North Eastern	4.9	1.89	5.6	1.63	9.9	2.01	16.6	3.94	15.1	1.73	19.5	2.58	14.8	3.60	13.6	6.38
Nyanza	2.4	0.83	3.7	0.92	9.6	1.86	19.5	2.27	25.3	1.80	21.6	2.24	14.3	2.53	3.6	1.43
Rift Valley	1.9	0.92	7.9	2.23	14.5	1.99	21.0	2.02	22.9	1.77	17.1	2.03	9.6	1.76	5.0	1.45
Western	5.5	1.35	10.4	1.81	19.7	2.06	22.6	2.07	20.4	1.84	12.6	2.10	7.6	2.36	1.3	0.83
Kenya	**2.3**	**0.38**	**5.7**	**0.71**	**11.8**	**0.85**	**19.6**	**0.99**	**21.8**	**0.87**	**18.7**	**1.00**	**13.7**	**1.08**	**6.4**	**0.93**
SACMEQ IV																
	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
Region	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	0.3	0.24	1.3	0.76	2.1	0.91	9.5	2.16	23.7	2.43	25.0	2.45	25.0	2.72	13.1	4.72
Coast	0.5	0.32	3.5	0.75	6.7	2.68	22.0	3.27	22.8	2.66	15.9	1.78	19.1	4.28	9.6	3.58
Eastern	0.2	0.17	1.7	0.59	2.6	0.99	11.1	2.91	26.7	2.02	24.6	2.92	23.9	3.48	9.2	5.00
Nairobi	0.0	0.00	0.6	0.58	0.0	0.00	4.1	1.33	10.6	2.99	13.7	2.63	41.8	2.91	29.3	7.15
North Eastern	0.7	0.59	3.8	2.26	5.0	1.67	12.7	4.18	12.1	4.27	21.7	2.05	34.0	7.50	10.0	3.18
Nyanza	0.4	0.30	1.1	0.59	4.7	1.32	15.9	3.32	25.4	2.97	20.4	2.66	26.9	4.64	5.3	1.51
Rift Valley	1.1	0.47	2.9	0.79	6.0	1.40	14.9	1.99	24.0	2.35	21.1	1.98	21.7	2.73	8.4	2.69
Western	0.4	0.22	2.9	1.02	8.7	1.73	17.6	2.61	27.2	2.22	18.6	2.45	18.9	2.72	5.8	2.39
Kenya	**0.6**	**0.15**	**2.3**	**0.32**	**5.0**	**0.63**	**14.5**	**1.13**	**24.3**	**0.98**	**21.0**	**1.00**	**23.4**	**1.39**	**9.0**	**1.41**

Table 7.5: Pupils reaching various Mathematics competency levels by region (SACMEQ III and SACMEQ IV)

SACMEQ III																
	Level1		Level2		Level3		Level4		Level5		Level6		Level7		Level8	
Region	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	0.4	0.25	8.4	2.00	24.7	3.34	26.4	2.03	19.3	2.53	14.6	2.68	4.1	1.66	2.0	0.94
Coast	0.4	0.35	4.2	1.12	26.4	4.10	34.7	4.88	19.2	2.47	10.4	1.96	2.4	1.34	2.4	1.96
Eastern	0.8	0.45	7.0	1.56	24.2	4.75	35.5	3.15	14.7	2.35	12.8	2.80	3.3	1.40	1.7	1.42
Nairobi	0.5	0.34	5.9	1.48	16.1	3.46	27.9	4.39	18.0	1.69	15.4	2.76	8.5	2.88	7.8	3.33
North Eastern	1.0	0.59	11.1	3.44	17.2	2.83	23.5	2.51	17.1	3.02	13.2	2.72	7.5	2.38	9.3	6.13
Nyanza	0.2	0.17	10.0	2.45	26.0	2.55	36.6	2.24	16.4	2.03	8.5	1.40	1.5	0.42	0.7	0.30
Rift Valley	0.5	0.24	10.8	2.39	29.7	2.98	33.0	2.09	14.8	1.86	8.7	1.52	2.1	0.64	0.5	0.22
Western	1.2	0.47	22.6	3.00	33.9	2.53	26.8	2.01	10.1	2.33	5.3	1.16	0.1	0.13	0.0	0.00
Kenya	**0.6**	**0.13**	**10.6**	**0.96**	**27.1**	**1.34**	**32.1**	**1.00**	**15.5**	**0.89**	**10.1**	**0.77**	**2.5**	**0.41**	**1.4**	**0.35**

SACMEQ IV																
	Level1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
Region	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	0.3	0.20	1.0	0.45	21.6	3.09	24.9	2.83	22.9	2.43	13.4	1.94	8.8	2.35	7.0	2.99
Coast	0.0	0.00	4.0	1.13	25.9	5.31	20.2	2.93	19.0	2.08	14.1	2.48	9.7	2.37	7.2	3.56
Eastern	0.2	0.17	1.3	0.51	18.5	3.76	22.8	2.85	26.0	2.30	16.2	2.44	11.4	2.56	3.6	1.86
Nairobi	0.0	0.00	0.4	0.37	5.6	2.11	9.5	3.21	28.5	4.77	22.0	3.13	17.5	2.93	16.7	5.62
North Eastern	0.2	0.24	3.4	1.50	11.8	5.07	14.4	2.57	15.7	5.26	17.9	4.55	16.5	3.34	20.0	10.12
Nyanza	0.0	0.00	4.1	1.24	16.3	2.76	22.4	2.38	25.9	1.97	16.8	2.54	9.6	2.37	4.9	2.02
Rift Valley	0.1	0.09	4.2	1.39	20.5	2.56	22.3	1.75	24.3	2.07	16.1	1.74	8.9	1.60	3.7	1.46
Western	0.5	0.28	5.2	1.22	30.9	3.54	24.5	1.76	19.2	1.65	13.2	2.37	4.4	1.02	2.0	1.13
Kenya	**0.2**	**0.06**	**3.3**	**0.50**	**21.0**	**1.39**	**22.2**	**0.94**	**23.4**	**0.91**	**15.5**	**0.90**	**9.3**	**0.85**	**5.1**	**0.85**

Table 7.6: Teachers reaching various Reading competency levels by region (SACMEQ III and SACMEQ IV)

SACMEQ III																
Region	Level1		Level2		Level3		Level4		Level5		Level6		Level7		Level8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	100.0	0.00
Coast	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	100.0	0.00
Eastern	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	1.0	1.06	99.0	1.06
Nairobi	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	3.2	3.30	0.0	0.00	96.8	3.30
North Eastern	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	1.9	1.97	98.1	1.97
Nyanza	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	11.8	5.81	88.2	5.81
Rift Valley	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	4.5	3.22	95.5	3.22
Western	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	6.3	5.20	93.7	5.20
Kenya	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.1	0.12	4.4	1.55	95.5	1.56
SACMEQ IV																
Region	Level1		Level2		Level3		Level4		Level5		Level6		Level7		Level8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	13.6	7.17	86.4	7.17
Coast	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	4.7	4.72	21.2	8.39	74.1	9.22
Eastern	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	23.4	8.99	76.6	8.99
Nairobi	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	100.0	0.00
North Eastern	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	8.0	6.86	0.0	0.00	92.0	6.86
Nyanza	6.3	6.14	0.0	0.00	0.0	0.00	0.0	0.00	0.3	0.32	0.0	0.00	25.4	9.38	68.0	10.23

Rift Valley	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	24.1	7.88	75.9	7.88
Western	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	13.2	6.17	86.8	6.17
Kenya	**1.2**	**1.20**	**0.0**	**0.00**	**0.0**	**0.00**	**0.0**	**0.00**	**0.1**	**0.06**	**0.7**	**0.52**	**20.2**	**3.35**	**77.9**	**3.50**

Table 7.7: Teachers reaching various Mathematics competency levels by region (SACMEQ III and SACMEQ IV)

SACMEQ III																
	Level1		Level2		Level3		Level4		Level5		Level6		Level7		Level8	
Region	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	28.3	11.40	71.7	11.40
Coast	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	6.3	6.39	0.0	0.00	93.7	6.39
Eastern	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	2.5	2.59	0.0	0.00	97.5	2.59
Nairobi	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	2.3	2.35	2.1	2.09	9.9	5.24	85.6	6.96
North Eastern	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	2.0	2.07	98.0	2.07
Nyanza	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	2.8	1.94	15.8	5.62	81.4	6.12
Rift Valley	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	10.2	3.97	89.8	3.97
Western	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	13.3	5.83	86.7	5.83
Kenya	**0.0**	**0.00**	**0.0**	**0.00**	**0.0**	**0.00**	**0.0**	**0.00**	**0.1**	**0.09**	**1.4**	**0.68**	**11.8**	**2.39**	**86.7**	**2.52**
SACMEQ IV																
Region	Level1		Level2		Level3		Level4		Level5		Level6		Level7		Level8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	6.6	6.55	93.4	6.55
Coast	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	8.1	4.82	91.9	4.82
Eastern	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	1.0	1.01	99.0	1.01
Nairobi	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	1.8	1.99	98.2	1.99
North Eastern	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	9.0	7.21	91.0	7.21

Nyanza	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	4.0	3.12	8.1	6.39	87.8	6.95
Rift Valley	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	3.7	3.73	7.3	5.42	88.9	6.38
Western	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	15.0	7.72	85.0	7.72
Kenya	**0.0**	**0.00**	**0.0**	**0.00**	**0.0**	**0.00**	**0.0**	**0.00**	**0.0**	**0.00**	**1.6**	**1.02**	**7.4**	**2.29**	**91.0**	**2.48**

Nationally, as shown in Table 7.4, most pupils in SACMEQ IV attained Level 4 (14.5%), Level 5 (24.3%), Level 6 (21.0%), Level 7 (23.4%) and Level 8 (9.0%) competencies in Reading. However, Nairobi had more pupils in Levels 7 (41.8%) and 8 (29.3%), while Western had more pupils at the lower Level 3 (8.7%) and Coast had more pupils at Level 4 (22.0%).

Table 7.5 indicates that nationally, in Mathematics, the highest percentage of pupils was operating at Level 5 with 23.4, followed by 22.2 at Level 4. This is an improvement as in SACMEQ III, majority of pupils were operating at Level 4 (32.1%) and Level 3 (27.1%). In SACMEQ IV, Level 1 had the lowest percentage of pupils (0.2%). Nairobi had the highest percentage of pupils at Level 7 (17.5%) while North Eastern had the highest percentage of pupils at Level 8 (20.0%).

Policy Suggestion 7.2

Teachers and educators should use appropriate teaching methods and facilities to ensure that pupils attain higher Reading and Mathematics competencies.

From Table 7.6, it is evident that, nationally, in Reading, majority of the teachers were concentrated at Levels 7 and 8 at 20.2% and 77.9% respectively. This is a slight drop from SACMEQ III where 95.5% of the teachers attained Level 8. Regionally, Nairobi had the highest percentage of teachers (100.0%) at Level 8. Nyanza had the highest percentage of teachers (25.4%) attaining at Level 7. It is worth noting that Nyanza was the only region with teachers operating at Level 1 of Reading at 6.3 percent.

Table 7.7 shows that in Mathematics, majority of teachers (91.0%) operated at Level 8. This is a slight improvement from the 86.7 percent who reached Level 8 in SACMEQ III. In Central, there was an improvement in the number of teachers attaining Level 8 from 71.7% in SACMEQ III to 93.4% in SACMEQ IV. Eastern had the highest percentage of teachers at Level 8 (99.0%). On the other hand, Western had a relatively low percentage of teachers at Level 8 (85.0%). Nyanza and Rift Valley were the only regions with teachers operating at Level 6 at 4.0% and 3.7% respectively.

Table 7.8: Pupils and teachers attaining acceptable Reading skills by region, Socio-Economic Status and Gender (SACMEQ III and SACMEQ IV)

Region	Pupils						Teachers					
	SACMEQ III		SACMEQ IV				SACMEQ III		SACMEQ IV			
			Low SES		High SES				Male		Female	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	84.3	4.00	96.5	2.17	96.2	2.14	100.0	0.00	100.0	0.00	100.0	0.00
Coast	87.5	3.44	88.7	3.29	90.3	3.51	100.0	0.00	100.0	0.00	100.0	0.00
Eastern	85.5	3.09	93.9	2.20	97.2	1.33	100.0	0.00	100.0	0.00	100.0	0.00
Nairobi	95.0	1.41	98.8	1.26	99.6	0.41	100.0	0.00	100.0	0.00	100.0	0.00
North Eastern	79.6	4.88	92.5	3.78	92.6	3.63	100.0	0.00	100.0	0.00	100.0	0.00
Nyanza	84.3	3.04	95.2	1.77	93.0	2.39	100.0	0.00	93.4	6.39	100.0	0.00
Rift Valley	75.7	4.21	88.1	3.20	90.8	2.64	100.0	0.00	100.0	0.00	100.0	0.00
Western	64.5	4.21	86.1	3.06	91.1	2.42	100.0	0.00	100.0	0.00	100.0	0.00
Kenya	**80.2**	**1.56**	**90.9**	**1.24**	**93.5**	**1.04**	**100.0**	**0.00**	**98.6**	**1.36**	**100.0**	**0.00**

Note: Acceptable is used here to mean pupils and teachers who have attained competency Level 4 and above.

Table 7.8 shows that in SACMEQ IV, nationally, pupils from low SES attaining acceptable Reading skills comprised 90.9 percent, while those from high SES comprised 93.5 percent. Regionally, Nairobi had the highest percentage of pupils from low SES and high SES attaining acceptable Reading skills at 98.8 percent and 99.6 percent respectively. In Central, 96.5 percent of pupils from low SES attained acceptable Reading skills while in Eastern, 97.2 percent of pupils from high SES attained acceptable Reading skills. The regions with the lowest percentage of pupils attaining acceptable Reading skills were Western (86.1%) for low SES, and Coast (90.3%) for high SES.

As regards teacher gender, nationally, more female teachers attained acceptable Reading skills than male teachers at 100.0% and 98.6% respectively. It is also notable that Nyanza had the lowest percentage of male teachers attaining acceptable Reading skills at 93.4% compared to the 100.0% in all the other regions.

7.4 Pupil Mean Scores and Competency Levels by Selected Sub-groups

General Policy Concern 7.2

What are the Reading and Mathematics achievement levels of selected sub-groups of Standard 6 pupils and their teachers?

Pupils mean scores by sub-groups

What were the pupil mean scores in Reading and Mathematics by gender, socio-economic background and school location?

Scores for different pupils across gender, socio-economic class and location of school (either rural or urban) were examined. The results of the data analysis are presented in Table 7.9.

Table 7.9: Means for the Reading and Mathematics test scores of pupils by sub-groups (SACMEQ III and SACMEQ IV)

SACMEQ III				
	Reading		Mathematics	
	Mean	SE	Mean	SE
Gender				
Boys	544.1	4.92	567.6	4.27
Girls	542.1	5.60	546.0	4.34
School Location				
Rural	525.6	5.58	544.5	4.28
Urban	575.6	8.49	580.0	7.52
Social Economic Level				
Low SES	517.8	5.20	540.9	4.26
High SES	600.2	7.79	595.8	7.57
SACMEQ IV				
	Reading		Mathematics	
	Mean	SE	Mean	SE
Gender				
Boys	580.3	5.66	618.6	5.6
Girls	574.9	5.02	597.7	5.5
School Location				
Rural	560.1	5.69	595.7	6.82
Urban	609.3	7.94	630.7	8.01
Social Economic Level				
Low SES	566.4	4.93	607.9	6.32
High SES	589.9	6.44	612.8	6.40

One of the aims of this study was to establish whether there were gender differences in Reading achievement among pupils. For SACMEQ IV, the national mean score for boys in Reading was 580.3 compared to 574.9 for girls (see Table 7.9). These results show that on average, boys performed slightly better than girls in SACMEQ IV. A similar trend was recorded in SACMEQ III. However, it is important to note that in SACMEQ IV, there was a

general improvement in Reading achievement for both boys and girls, with boys improving by 36.2 mean score points and girls by 32.8.

Table 7.9 shows that in SACMEQ IV, in Mathematics, the national mean score for boys was 618.6 compared to 597.7 for girls. This means that boys achieved 20.9 mean score points more than girls. It is notable that there is a marked improvement in the performance of both boys and girls in SACMEQ IV, with mean scores improving by 51.0 points for boys and 51.7 for girls. The difference in achievement between boys and girls was higher in Mathematics than in Reading.

Table 7.9 shows that nationally, pupils from urban schools had higher mean score in Reading than their counterparts in rural schools at 609.3 and 560.1respectively. The same trend was noted in SACMEQ III. However, it is notable that pupils from rural schools registered a better improvement than their counterparts from urban schools at 34.5 and 33.7 mean score points respectively. In Mathematics, at national level, the mean score of pupils from urban schools was higher than that of pupils from rural schools in both SACMEQ IV and III. Just like in Reading, pupils from rural schools registered better improvement in Mathematics than their counterparts from urban schools at 51.2 and 50.7 mean score points respectively.

Table 7.9 shows that in SACMEQ IV, pupils from high SES backgrounds attained a higher national mean score in Reading at 589.9 compared to those from low SES at 566.4. This is comparable to the findings of SACMEQ III. It is however notable thatpupils from low SES registered an improvement of 48.6 points while those from high SES background registered a decline of 10.3 points. It is observable that pupils from both low and high SES backgrounds had a higher mean score in Mathematics in SACMEQ IV than in SACMEQ III, with a mean difference of 67.0 for low SES and 17.0 for high SES.

Policy Suggestion 7.3

a) Teachers and other education stakeholders should adopt effective strategies to improve the performance of girls in Mathematics.
b) The Ministry of Education needs allocate adequate resources towards improved performance of pupils in rural and low SES areas.

Pupils Competency Levels By Selected Sub-Groups

What were the pupil competency levels in Reading and Mathematics by gender, socio-economic background and school location?

Table 7.10 presents pupil achievement of competency levels by gender, school location and socio-economic status.

Table 7.10: Pupils reaching various Reading competence levels by subgroups (SACMEQ III and SACMEQ IV)

SACMEQ III																
	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Pupil Gender																
Boys	2.3	0.40	6.3	0.70	11.0	0.90	19.9	1.17	21.8	1.06	17.6	1.18	14.0	1.19	7.1	1.12
Girls	2.3	0.62	5.2	0.93	12.6	1.08	19.3	1.27	21.8	1.17	19.8	1.35	13.4	1.26	5.6	0.89
School location																
Rural	2.8	0.53	7.0	1.00	14.2	1.13	22.3	1.18	21.8	1.07	17.3	1.30	11.5	1.35	3.1	0.56
Urban	1.3	0.41	3.4	0.56	7.4	1.02	14.5	1.74	21.8	1.53	21.2	1.31	17.9	1.73	12.4	2.39
Socio-Economic Status																
Low SES	3.1	0.75	7.1	1.11	13.5	1.34	24.5	1.67	25.2	1.56	14.6	1.48	9.8	1.40	2.0	0.44
High SES	0.9	0.29	2.1	0.53	5.6	0.98	10.1	1.28	17.8	1.51	22.8	1.69	24.1	1.71	16.5	2.58
SACMEQ IV																
	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Pupil Gender																
Boys	0.7	0.19	2.3	0.40	5.5	0.77	14.7	1.46	21.6	1.17	21.3	1.59	23.4	1.64	10.5	1.90
Girls	0.5	0.17	2.2	0.40	4.5	0.75	14.3	1.21	27.0	1.27	20.7	1.25	23.4	1.50	7.5	1.07
School location																
Rural	0.8	0.22	2.7	0.44	6.3	0.87	17.4	1.44	26.5	1.25	21.5	1.33	19.8	1.79	5.0	1.24
Urban	0.2	0.10	1.4	0.38	2.6	0.68	9.3	1.56	20.4	1.49	20.0	1.35	29.9	2.04	16.2	2.74
Socio economic status																
Low SES	0.7	0.24	2.2	0.45	6.2	0.87	16.4	1.24	26.2	1.44	21.0	1.32	20.6	1.70	6.7	0.99
High SES	0.4	0.17	2.3	0.38	3.8	0.70	12.2	1.41	21.9	1.42	21.4	1.64	26.5	1.80	11.5	2.07

From Table 7.10, it is observable that in SACMEQ IV, the largest difference in achievement between boys and girls in Reading was noted at Level 5 where girls performed better than boys by 5.4 percentage points. It is also notable that there was a higher percentage of boys attaining Level 8(10.5%) than girls (7.5%).

In terms of school location, the largest difference in achievement in Reading between pupils from rural schools and those from urban schools was noted at Level 8 at 11.2 percentage points where 16.2% of pupils from urban schools attained this level compared to 5.0% of pupils from rural schools attaining this level. A similar trend was reported in SACMEQ III.

As concerns SES, Table 7.10 shows that highest percentage of pupils from low SES backgrounds is attaining at Level 5 (26.2%), while the highest percentage of pupils from high SES background is attaining at Level 7 (26.5%). It is also notable that the largest difference in achievement in Reading between pupils from low and high SES backgrounds was observed at Level 7 at 5.9% points. Equally significant to note is that a higher percentage of pupils from high SES attained Level 8 competencies than their counterparts from low SES at 11.5% and 6.7% respectively.

Pupils competency levels by selected subgroups

What percentages of pupils attained specific competency levels in Mathematics by gender, socio-economic background and school location?

Table 7.11 presents pupil achievement of competency levels in Mathematics by gender, school location and socio-economic status.

Table 7.11: Pupils reaching various Mathematics competency levels by sub-groups (SACMEQ III and SACMEQ IV)

SACMEQ III																
	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Pupil Gender																
Boys	0.4	0.15	9.7	1.02	24.1	1.49	30.6	1.12	17.6	1.13	12.4	0.99	3.3	0.48	1.9	0.47
Girls	0.8	0.21	11.6	1.40	30.2	1.68	33.6	1.53	13.4	1.08	7.7	0.85	1.8	0.49	0.9	0.29
School location																
Rural	0.7	0.18	12.3	1.30	30.2	1.68	33.0	1.20	13.7	1.07	8.1	0.90	1.6	0.31	0.5	0.14
Urban	0.3	0.15	7.6	1.22	21.4	1.85	30.4	1.71	19.0	1.36	13.9	1.31	4.3	1.03	3.1	0.97
Socio economic status																
Low SES	0.6	0.22	13.4	1.79	29.1	1.75	35.1	1.94	12.1	1.05	8.0	1.03	1.2	0.31	0.5	0.22
High SES	0.1	0.11	5.5	0.87	19.0	2.01	27.9	1.86	21.6	1.58	15.9	1.38	6.3	1.22	3.6	1.07

SACMEQ IV																
	Level 1		Level 2		Level 3		Level 4		Level 5		Level 6		Level 7		Level 8	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Pupil Gender																
Boys	0.1	0.06	2.8	0.57	19.2	1.50	20.9	1.11	22.7	1.10	17.8	1.25	9.9	0.86	6.7	1.17
Girls	0.3	0.10	3.8	0.56	22.9	1.57	23.5	1.15	24.0	1.22	13.3	1.09	8.8	1.14	3.4	0.74
School location																
Rural	0.2	0.07	4.3	0.72	23.3	1.89	24.0	1.21	22.7	1.16	14.2	1.13	7.9	1.11	3.5	0.97
Urban	0.2	0.12	1.5	0.35	16.8	1.78	19.0	1.43	24.6	1.43	17.9	1.47	12.0	1.23	7.9	1.64
Socio economic status																
Low SES **(Bottom 25%)**	0.2	0.10	2.7	0.47	22.3	1.55	21.5	1.08	23.5	1.27	15.6	1.12	9.3	1.11	4.9	1.10
High SES **(Top 25%)**	0.1	0.06	3.5	0.65	18.5	1.68	22.3	1.26	23.7	1.13	16.7	1.27	9.7	1.11	5.4	1.10

Table 7.11 shows that in SACMEQ IV, there were gender differences in pupils reaching various competency levels in Mathematics. There were more girls than boys between Levels 1 and 5 with a major difference being registered in Level 3 where girls comprised 22.9% and boys 19.2%, a difference of 3.7 percentage points. On the other hand, there was a higher percentage of boys than girls at Levels 6 to 8, with a major difference at Level 6 where boys comprised 17.8% and girls 13.3%, a difference of 4.5 percentage points.

In terms of school location, Table 7.11 indicates that higher percentages of pupils from rural schools attained at Levels 2 to 4, compared to their counterparts from urban schools. The largest difference in achievement was recorded at Level 3 where pupils from rural schools comprised 23.3% compared to 16.8% of pupils from urban schools, a difference of 6.5 percentage points. It is worth noting that more pupils from urban schools are achieving at higher competency levels than their counterparts from rural schools. The largest difference is registered at Level 8 where pupils from urban schools comprised 7.9% compared to 3.5% of pupils from rural schools, a difference of 4.4 percentage points. A similar trend was observed in SACMEQ III.

Regarding SES, Table 7.11 shows that there was a higher percentage of pupils from low SES background (22.3%) attaining Level 3 competencies in Mathematics than their counterparts from high SES background, a difference of 3.8 percentage points. However, as noted about school location, higher percentages of pupils from high SES background attained Levels 4 to 8 Mathematics competencies than those from low SES background.

Table 7.12 presents percentages of pupils achieving acceptable Reading skills by gender, school location and socio-economic status.

Table 7.12: Pupils with acceptable Reading skills by subgroups (SACMEQ III and SACMEQ IV)

	SACMEC III		SACMEQ IV	
	%	SE	%	SE
Pupil Gender				
Boys	80.4	1.58	91.5	1.06
Girls	79.9	1.93	92.8	1.10
School location				
Rural	76.0	2.12	90.2	1.28
Urban	87.9	1.50	95.8	0.97
Socio economic status				
Low SES (Bottom 25%)	76.2	2.32	90.9	1.24
High SES (Top 25%)	91.4	1.31	93.5	1.04

Table 7.12 indicates that in SACMEQ IV, a higher percentage of girls attained acceptable Reading skills compared to boys at 92.8% and 91.5% respectively. This is in contrast to SACMEQ III where a higher percentage of boys had acceptable Reading skills. It is notable that the percentage of boys with acceptable Reading skills improved from 80.4 percent in SACMEQ III to 91.5 percent in SACMEQ IV, while girls improved from 79.9 percent in SACMEQ III to 92.8 percent in SACMEQ IV. This shows that boys registered better improvement than girls.

In terms of school location, Table 7.12 shows that the percentage of pupils from urban and rural schools with acceptable Reading skills improved by 7.9 and 14.2 percentage points respectively, from 87.9% and 76.0% in SACMEQ III, to 95.8% and 90.2% respectively in SACMEQ IV.

Regarding socio-economic background, Table 7.12 shows that there was an improvement in the percentage of pupils with acceptable Reading skills in both low and high SES groups. However, pupils from low SES background registered better improvement than those from high SES at 76.2% and 91.4% in SACMEQ III to 90.9% and 93.5% in SACMEQ IV respectively. While pupils from low SES improved by 14.7%, those from high SES improved by 2.1 percentage points. It also notable that the difference in achievement between pupils from low SES and those from high SES background had narrowed in SACMEQ IV (2.6%) compared to SACMEQ III (15.2%).

7.5 Conclusion

The findings show that boys continue to register higher mean scores in Mathematics compared to girls. They have also achieved slightly higher in Reading. Pupils from urban schools continue to record higher mean scores in achievement in Mathematics and Reading than those from rural schools. Pupils from high SES background continue to register higher mean scores in both Mathematics and Reading than their counterparts from low SES background. Further, pupils from high SES background continue to attain at higher levels (Level 5 to 8) while their counterparts from low SES continue to achieve more at lower levels (Level 1 to 4).

CHAPTER 8

8.0 RESULTS OF MULTILEVEL ANALYSIS

8.1 Introduction

This chapter presents multilevel analysis of the SACMEQ IV data. The aim of the analysis is to establish pupil-level and school-level variables influencing pupils' achievement in Reading and Mathematics.

Multilevel analysis was carried out using STATA version 14 (Stata Corp, 2009). In the first step, about 44 predictor variables for both Reading and Mathematics were selected using Multiple Linear Regression (MLR). Further analysis using the multilevel model was done at two levels, namely pupil and school. The results of the analysis are presented in the following four sections of this chapter.

8.2 Multilevel Analysis of Pupil Achievement in Reading

8.2.1 Pupil Level

At the pupil level, the results of the analyzed data revealed that pupils gender, age in months, average number of meals per day, class repetition, frequency of reading at home, pupils homework at home, absenteeism, pupils' work space at home, electricity as a lighting source at home, extra tuition, school resources and head teacher gender impacted upon pupil achievement levels. A detailed analysis of the pupil-level variables found to most influence pupil achievement in Reading is presented.

Table 8.1: Results of Multilevel Analysis of Reading at Pupil Level

Description	FULL MODEL					
					95% Confidence Interval	
	Coeff.	SE	Z	P-Value	Low	High
Pupil sex	-11.4	2.8	-4.1	0.00	-16.9	-5.9
Pupils' age in months	-0.6	0.1	-7.8	0.00	-0.7	-0.4
Number of meals per day	-7.3	2.7	-2.7	0.01	-12.6	-2.0
Repeated a grade	-21.8	3.1	-7.0	0.00	-28.0	-15.7
How often pupil reads while at home	5.6	1.4	4.1	0.00	2.9	8.3
How often teacher corrects pupil homework	6.4	2.0	3.2	0.00	2.5	10.3
Number of days absent	-1.5	0.7	-2.1	0.04	-2.8	-0.1
Pupil has a working space at home	27.3	3.9	7.1	0.00	19.7	34.9
Proportion of pupils who use electricity as a source of lighting at home	20.9	4.9	4.3	0.00	11.3	30.4
Constant						

Table 8.1 shows that pupil gender was found to influence pupil achievement in Reading. Girls performed better than boys by about 11 points.

Pupil age was found to influence learning outcomes in Reading. Pupils who are young performed better in Reading than their older counterparts. This is consistent with the findings of a study carried out by Maleche et al. (2011) which showed that the older the student was than the stipulated age, the poorer the performance in the Kenya Certificate of Primary Education examination.

Further, the number of meals per day had a bearing on pupil achievement in Reading. Pupils who have 2 or more meals a day performed better by 7 points than their counterparts who have fewer meals per day. It is likely that pupils who have 2 or more meals per day have greater concentration in class. It is also notable that pupils who have regular meals are likely to be less anxious about what they will eat.

Frequency of reading at home was also found to influence pupil achievement in Reading. Pupils who read more frequently at home performed better about 6 points than their counterparts who do not read or read less.

Checking of homework by teachers was found to influence learning outcomes in Reading. Pupils whose teachers often correct their homework performed better by 6 points in Reading than those whose homework is not corrected. By correcting homework, teachers provide continuous feedback which helps pupils identify and improve the areas where they are weak in Reading.

Pupil absenteeism had a bearing on pupil achievement in Reading. Pupils who have been absent from school performed worse by about 2 points in Reading than those who have not been absent. It is notable that absenteeism is likely to negatively affect performance as pupils lose learning opportunities, classroom interaction with teachers, and classroom activities.

Having working space at home influences learning outcomes. Pupils with working space at home perform better by 27 points that those who do not have.

The type of lighting has a bearing on achievement in Reading. Pupils with electricity as their source of light performed better in Reading by 21 points than pupils with an alternative source of light.

8.2.2 School level

Table 8.2 presents results of multilevel analysis of Reading at school level.

Table 8.2: Results of Multilevel Analysis of Reading at School Level

Description	FULL MODEL					
					95% Confidence Interval	
	Coeff	SE	Z	P-Value	Low	High
Average number of meals per day	20.7	9.3	2.2	0.03	2.5	38.8
Average repetition in school	-42.5	16.8	-2.5	0.01	-75.4	-9.7
Proportion of pupils attending extra tuition	24.9	9.2	2.7	0.01	6.9	42.8
Average number of pupils in school with a working space at home	50.6	19.2	2.6	0.01	12.9	88.2
School resources	2.5	0.6	4.0	0.00	1.3	3.7
Head teacher	22.9	9.1	2.5	0.01	5.1	40.7
Constant						

Pupils in schools where the average number of meals per day was higher performed better by about 21 points than their counterparts where the average number of meals was lower.

Pupils in schools where pupils had repeated at least once performed worse by about 43 points than those in schools where pupils had not repeated. This indicates that class repetition does not enhance learning outcomes.

Availability of adequate resources has a bearing on learning outcomes. Pupils in schools with adequate resources performed better in Reading by about 3 points than those without.

Remedial lessons have an influence on pupil achievement in Reading. Pupils in schools where more pupils attended extra tuition performed better by about 25 points than those in schools where pupils did not.

The gender of school heads was found to influence pupil achievement in Reading. Pupils in schools with female headteachers performed better in Reading by about 23 points than those in schools with male headteachers.

Availability of working space at home was found to influence school performance. Pupils in schools where pupils had a working space at home performed better in Reading by about 51points than pupils in schools with pupils reporting not to have working space at home.

8.3 Mathematics Multilevel Analysis

8.3.1 Pupil Level

The following variables at pupil level significantly affected achievement in Mathematics: Pupil age, pupil gender (female), pupil absent to care for siblings, pupil staying with another family, pupil stay by self and pupil looking after younger relatives. Analysis of Mathematics achievement at pupil level is presented.

Table 8.3: Results of Multilevel analysis of Mathematics Achievement at pupil level

Description	FULL MODEL					
					95% Confidence Interval	
	Coeff	SE	Z	P-Value	Low	High
Pupil gender	-26.7	2.91	-9.18	0.000	-32.4	-21.0
Pupils' age in months	-0.7	0.09	-7.72	0.000	-0.9	-0.5
Pupil speaks English while at home	-4.5	1.59	-2.83	0.005	-7.6	-1.4
Repeated a grade	-16.3	3.31	-4.92	0.000	-22.8	-9.8
How often pupil reads while at home	6.8	1.45	4.69	0.000	4.0	9.7
Number of days absent	-1.9	0.58	-3.34	0.001	-3.1	-0.8
Pupil has a working space at home	19.1	3.73	5.12	0.000	11.8	26.4
Pupil social economic status	-2.1	0.58	-3.56	0.000	-3.2	-0.9
Proportion of pupils who use electricity as a source of lighting at home	16.2	6.60	2.45	0.014	3.3	29.1
Constant						

Pupil gender was found to influence pupil achievement in Mathematics. Boys perform better in Mathematics by about 27 points than girls.

Pupil age was also found to influence pupil achievement in Mathematics. Younger pupils performed better in Mathematics by about 1 point than older ones.

Language spoken at home was also found to influence pupil achievement in Mathematics. Pupils who speak English at home perform better in Mathematics by about 5 points than their counterparts who did not.

Grade repetition had a bearing on pupil achievement in Mathematics. Pupils who repeated a grade performed worse by about 16 points than those who did not.

Frequency of reading at home also influences learner achievement. Pupils who read more

frequently at home perform better in Mathematics by 7 points than those who did not read frequently.

Pupil absenteeism also had a bearing on pupil achievement in Mathematics. Pupils who had been absent from class performed worse in Mathematics by 2 points than those who had not been absent.

Further, availability of working space at home was found to influence learner achievement in Mathematics. Pupils with a working space at home perform better in Mathematics by 19 points than those who did not have.

Pupil socio-economic status was found to influence pupil achievement in Mathematics. Pupils from high SES background performed better in Mathematics by 2 points than those from low SES background.

Source of lighting at home was found to influence pupil achievement in Mathematics. Pupils with electricity as their source of lighting at home perform better in Mathematics by 16 points than those who used other sources of lighting.

8.3.2 School Level

Table 8.4 presents results of multilevel analysis of Mathematics achievement at school level.

Table 8.4 Results of Multilevel analysis of Mathematics Achievement at School Level

Description	FULL MODEL					
					95% Confidence Interval	
	Coeff	SE	Z	P-Value	Low	High
Average repetition in school	-54.5	23.16	-2.35	0.019	-99.9	-9.1
Proportion of pupils attending extra tution	25.8	12.61	2.04	0.041	1.1	50.5
Average number of pupils in school with a working space at home	55.5	23.91	2.32	0.020	8.6	102.4
School resources	2.3	0.97	2.37	0.018	0.4	4.2
Head teacher	24.9	11.27	2.21	0.027	2.8	47.0
How often teacher meets parents	15.2	6.29	2.42	0.016	2.9	27.5
Frequency of written tests given to pupils	-7.5	3.55	-2.10	0.036	-14.4	-0.5
Teacher mathematics score	0.1	0.04	2.29	0.022	0.0	0.2
Constant	587.2	116.72	5.03	0.000	358.4	816.0

Class repetition was found to influence pupil achievement in Mathematics. Pupils in schools with less class repetition performed better in Mathematics by 55 points than those in schools with pupils who repeated more.

Remedial lessons were also found to influence pupil performance in Mathematics. Pupils in schools with a larger proportion of pupils who had extra tuition performed better in Mathematics by 26 points than those with a lower proportion of pupils attending extra tuition.

Working space at home was found to influence achievement in Mathematics. Pupils in schools where pupils had working space at home performed better in Mathematics by 56 points than those in schools where pupils had no working space at home.

Adequacy of resources at school had a bearing on pupil achievement in Mathematics. Pupils in schools with adequate resources perform better in Mathematics by 2 points than pupils in schools without adequate resources.

Further, headteacher gender was also found to influence learner achievement in Mathematics. Pupils in schools with female headteachers performed better in Mathematics by 25 points than those in schools with male headteachers.

Frequency of meetings between teachers and parents was also found to influence pupil achievement in Mathematics. Pupils in schools where teachers met parents frequently performed better in Mathematics by 15 points than pupils in schools where parents and teachers did not meet frequently.

It was also established that frequency of administering Mathematics tests negatively influenced pupil achievement. Pupils in schools where Mathematics tests were frequently administered performed worse in Mathematics by 8 points than those in schools where these tests were not frequently administered. This finding is akin to that of NASMLA Class 3 (2016).

8.4 Implications

The implications for policy and practice that emerge from these analyses are clear. For factors reported at the between-pupil and within-school level, advances can be made in pupil achievement by making changes in the learning conditions for some pupils within a school. Likewise, there are several variables where differences between schools might change in ways that would noticeably improve the average performance of the schools.

The implications of this study are many, some of which are new whereas others have already been stated in previous SACMEQ reports.

Based on the findings reported in this chapter, the following policy suggestions can be made.

Policy Suggestion 8.1

Schools should work closely with parents and communities to eliminate absenteeism and class repetition.

Policy Suggestion 8.2

Parents and guardians should encourage children to speak and listen to English outside school to give them the opportunity to practice and listen to spoken English.

Policy Suggestion 8.3

Guardians and parents should be involved more in activities that promote learning to build their confidence and capacity to supervise home work and monitor children's progress in school.

Policy Suggestion 8.4

Schools should allocate time (e.g one hour) for homework, in place of extra tuition, to give all children opportunity to do homework especially those from large families who may not have enough time and space at home.

Policy Suggestion 8.5

Parents and teachers should adhere to the MoE policy on class repetition and look for alternative ways of providing remedial teaching to children with learning difficulties especially at early grade level.

Policy Suggestion 8.6

MoE should ensure that schools adhere to the set standards with regard to classroom size, writing and sitting places.

Policy Suggestion 8.7

Within the FPE grants, schools should purchase library books, and develop the culture of reading, beyond the course books among learners.

Policy Suggestion 8.8

Teachers should ensure equal participation during Mathematics lessons for girls to have a positive attitude towards the subject.

Policy Suggestion 8.9

Schools should work closely with children's officers and the community to support orphans and pupils staying away from their families.

Policy Suggestion 8.10

The community and education stakeholders can reduce the burden of pupil care-givers by providing social services to the needy families.

Policy Suggestion 8.11

The Government and other stakeholders in education should ensure availability of adequate infrastructure in schools.

CHAPTER 9

9.0 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The chapter presents findings on the characteristics of pupils, their teachers, head teachers, physical infrastructure and learning environment of schools and levels of knowledge, attitudes and perceptions concerning HIV and AIDS. Conclusion from the findings and recommendations of the study are also highlighted.

9.1 Summary of Findings

SACMEQ IV data were collected in 2013 from 5,325 Standard 6 pupils in 224 primary schools in eight regions in Kenya[2].

The study established that there is near gender parity in enrolment of Standard 6 pupils at the national level, with higher percentages of girls in Nyanza, Rift Valley and Western regions but girls only constitute 29.6 percent of pupils in North Eastern regions. Although the average age of Standard pupils, (12.6%) is still above official age for that class, there has been marked decrease of overage pupils compared to SACMEQ III. Coast and North Eastern have consistently had the highest average age. This may be attributed partly to high levels of repetition rates as the study indicates that, nationally; 53.2 percent of Standard 6 pupils had repeated a class. Another important fact is that almost 40 percent of pupils in rural areas had to travel over 2 killometres to go to school, with 17 percent travelling over 4 kilometres, every day. The highest percentages travelling over 4 kilometres were noted in Coast, Nyanza and Rift Valley. The study also established that pupil absenteeism was still a concern with the national average number of days that pupils in Standard 6 were absent from school 1.5 days.

With regard to school characteristics, majority of the Standard 6 pupils shared Reading and Mathematics book, with 55.2 percent sharing Reading books of the pupils and 59.3 sharing a Mathematics books with 2 or more pupils. Further 4.8 and 4.6 percent did not have a Reading and Mathematics books, respectively. The study also established that, 63.0 percent of pupils received extra tuition, although this was a decline from 0.2 percent in the SACMEQ III.

The mean age of Standard 6 teachers was 36.7 years, while that of school heads was 46.6

[2]Although in the current dispensation Kenya is divided into 47 counties, the eight regions are used in SACMEQ IV.

years; a slight decrease from SACMEQ III. Majority of the teachers in Standard 6 were female, while only 18.1 percent of school heads were female. Regarding teachers and school heads, the study found out that while there was a decrease in the percentage of those with secondary education qualification, there was remarkable increase in teachers with post secondary and undergraduate academic qualifications. The average number of years of training for teachers and school heads were 2.5 and 2.6, meaning that more teachers had more than P1 training. Although majority of the teachers had teacher's aids, over 40 percent of teachers did not have a chair and a table. With regard to teacher support, 59.1 per cent of teachers did not have access to Teacher Resource Centres while 33.0 percent of the schools had been inspected.

Parents and caregivers were not involved in school activities and especially supervising and ensuring homework is done, engaging with teachers and providing the necessary space and facilities for doing homework. Parent and community support to schools was more focused on contribution to construction and maintenance of school facilities, payment of salaries of additional teachers, extra curricula activities and examination fees. With regard to examinations fees, it is important to note that the study was carried out before the abolition of examination fees charged to parents.

Over time, education infrastructure and facilities have improved as attested by the 43.4 percent of schools which had electricity in comparison to 22.7 percentages in SACMEQ III. However, there nearly 20 percent of the schools did not have a staffroom; about 30 percent did not have a school head office while about 40 percent did not have a store room. The pupil to toilet ratio remained high at 45.8:1, a slight improvement from 50.4 in SACMEQ III.

In SACMEQ IV, there was general improvement in both Reading and Mathematics compared to SACMEQ III, from a mean of 543.1 in Reading to 577.6, and 557.0 to 608.1 in Mathematics, well above the regional mean of 500 for the 14 countries. Teachers had higher means than the pupils, at 744.9 for Reading and 927.2 for Mathematics. Most pupils achieved at levels 5, 6 and 7 of Reading competency while achievement in Mathematics were at levels 4, 5 and 6. The biggest gap in achievement in Reading was between the rural and urban, and the Socio-Economic Status, with pupils in higher SES attaining a higher mean. The gap in Mathematics was more notable between the gender, with boys achieving a higher level and pupils in urban areas performing better than those in rural areas.

Regarding HIV/AIDS, the study revealed that there were differences in HIV and AIDS knowledge among pupils with regard to gender and socio-economic status, with boys

obtaining a higher mean than girls and those from higher SES achieving at a higher than those in lower SES. While majority of the pupils had access to information on HIV/AIDS, mainly through classroom teaching, there was still evidence of stigma, especially among pupils. Although over 50 percent of teachers and 70 percent of school heads reported to have tested for HIV, 40 percent of the teachers and 41.1 percent of school heads indicated that they had high or very high risk of contracting AIDS.

9.2 Conclusion and Recommendations

The SACMEQ IV Study has shown that there are still issues of access and especially gender inequality in North Eastern region, with girls constituting a very low percentage of those attending school. On the other hand there are regions such as Nyanza, Rift Valley and Western where the issue of boys needs to be addressed. The Study shows that there is consistent improvement in achievement by pupils, in both Reading and Mathematics. The gap between pupil and teachers achievement in Reading however is 167.3 marks, as the mean for teachers has reduced from 792.1 in SACMEQ III to 744.9 in SACMEQ IV. This decline was experienced in all regions, except North Eastern where there was an slight increase of 0.7 mean score points. Efforts to improve educational quality will require more resources, in particular, provision of textbooks for Reading and Mathematics. Majority of the pupils are sharing textbooks with more than two other pupils. The implementation of the FPE, especially in publicly-funded schools needs to be closely monitored for efficiency and effective utilisation of resources. This will ensure that the government goal of a 1:1 pupil/textbook ratio is attained. The study has also shown that there was an improvement in human resource in Kenyan schools, with more than 60 percent of teachers of Reading and Mathematics having post-secondary education. However, it was also noted that the percentage of teachers with lower academic qualifications than the official requirement, increased from about 6 percent in SACMEQ III to over 10 percent; with 6.8 percent of Standard 6 teachers having only primary level of education. With the increasing numbers of teachers who have first degree qualification, it may be important to review the policy on recruitment of teachers to teacher training colleges and consider teacher training at diploma and degree level.

Findings from this study and previous one have consistently indicated that pupils in schools with female headed teachers perform better. Yet, less than 20 percent of school heads are female, at the national level. It is only pupils in Nairobi, which have consistently achieved a higher mean than the national average for both Reading and Mathematics, where 40 percent of school heads are female. This calls for the need to reduce the gender gap among school heads. Moreover, there is a need to streamline and regularize in-service training, providing

teachers, improve provision of learning materials, and teacher support through access to resource centres and inspection. The rapid increase in enrolment in schools witnessed in the last decade may unfortunately come with increased behaviour problems and discipline issues among pupils and teachers. To this end there is need to provide teacher support through strengthened and professional guidance and counselling services for both pupils and teachers.

While the Government has done a lot to improve school infrastructure, there are areas that require urgent attention e.g. pupils' toilets, teachers' housing and classrooms, especially in marginalized areas. Special attention needs to be given to improving toilet facilities especially in regions such as Coast, Nairobi, Rift Valley, Nyanza and North Eastern which are well above the national mean. North Eastern has a ratio of 1 toilet for 99.7 pupils.

Given that a link was found between computer use and improved achievement, schools should be further encouraged to set up ICT facilities for teaching and learning.

The HIV and AIDS pandemic has had a negative impact on education in Kenya. One of the responses by the Ministry of Education has been the development of the policy on HIV and AIDS and the incorporation of HIV and AIDS education into the curriculum. This study presented the evaluation of the policy and the programme. Some of the policy suggestions with regard to the pandemic include improving teaching, using various modes of communication and especially audio-visual sources of information and counselling to reduce stigmatization and discrimination, particularly among pupils. Facilities and services should be brought closer to teachers and school head so in order to enhance prevention, treatment and care. Awareness among teachers and school heads can also be improved through more coordinated and regular in-service training.

The SACMEQ IV report should provide evidence and inform the implementation of NESP as the country works towards achievement of SDG 4. It should also spur further research in areas that were either not adequately addressed in the investigation or those that need further probing. Areas that were mentioned for this type of follow up investigation include class repetitions, incidences of over-age enrolment, the practice of extra tuition and the participation of the community in schools. Hopefully these studies will shed more light on the pertinent issues and lead to further policy suggestions.

Table 9.1: Descriptions of time and budget-frames

Time frame	**Interpretation**
Short	Under a year
Medium	1 – 2 years
Long	3 – 5 years
Cost	**Interpretation**
Low	Can be accommodated in existing budget
Moderate	Minimal additional funds allocation
High	Major capital expenditure

Table 9.2: Summary of policy suggestions

Policy suggestion	Relevant implementing organization	Time frame	Cost
a) Parenting and Community Involvement for Quality Education			
Policy Suggestion 3.3: The Ministry of Education, and particularly the Department of Adult Education, should carry out an evaluation of adult education programmes, especially for mothers, with a view to assessing its effectiveness and impact on pupils' education and learning outcomes.	MoE/ Adult Education Department	Medium	Moderate
Policy Suggestion 3.4: To support reading and learning, parents/ guardians should be encouraged to provide books at home for their children. They can be guided on what to buy as well as being advised on their importance.	Parents/Guardians	Long	Low
Policy Suggestion 4.10: School administrators should strengthen strategies on the involvement of parents in learning of pupils.	BoMs	Long	Low
Policy Suggestion 8.1: Schools should work closely with parents and communities to eliminate absenteeism and class repetition.	Parents/ BoMs	Long	Low
Policy Suggestion 8.2: Parents and guardians should encourage children to speak and listen to English outside school in order to give them the opportunity to practice and listen to spoken English.	Parents/ BoMs	Short	Low
Policy Suggestion 8.3: Guardians and parents should be involved more in activities that promote learning to build their confidence and capacity to supervise home work and monitor children's progress in school.	BoMs/Parents	Long	Low
Policy Suggestion 8.4: Schools should allocate time (e.g one hour) for homework, in place of extra tuition, to give all children opportunity to do homework especially those from large families who may not have enough time and space at home.	Parents/BoMs	Long	Low
Policy Suggestion 8.5: Parents and Head teachers should discourage class repetition but instead look for alternative ways of assisting low achievers.	Parents/ BoMs/ School heads	Long	Low
Policy Suggestion 8.9: Schools should work closely with Children's Officers and the community to support orphans and pupils staying away from their families.	Development partners/Community	Long	Moderate
Policy Suggestion 8.10: The community and education stakeholders should reduce the burden of pupil care-givers by providing social services to the needy families.	Community/Parents	Long	Low
b) Improving the Learning Environment			
Policy Suggestion 3.7: The emphasis on access to reading materials should move beyond the provision and maintenance of textbooks to pupils having the reading materials and using them. There should be a clear monitoring and evaluation process to determine the utilization of resources.	MoE/ BoMs	Long	Low
Policy Suggestion 3.8: The Ministry of Education	MoE/ BoMs	Long	Moderate

MoE and other stakeholders in education should strengthen the monitoring of FPE funds in the acquisition of stationery for learners.			
Policy Suggestion 4.3: The Government and stakeholders should construct affordable housing for teachers and amenities in marginalized and rural areas.	MoE /stakeholders	Long	High
Policy Suggestions 4.11: The government should monitor to ensure an equitable provision and development of teaching aids in schools in all regions.	MoE/TSC	Short	Moderate
Policy Suggestion 5.3 a) There is need for the Ministry of Education to allocate adequate funds for infrastructural development which have a direct impact on curriculum implementation. b) There is need for the Directorate of Quality Assurance and Standards to enhance the monitoring of implementation of infrastructural projects in schools.	MoE/ Development partners	Medium	High
Policy Suggestion 5.4: There is need for the Ministry of Education in collaboration with other relevant ministries to facilitate provision and supply of ICT facilities and equipment necessary for enhanced curriculum implementation.	MoE/ Development partners	Medium	High
Policy Suggestion 5.5: Education stakeholders should take urgent measures to construct enough toilets of good quality especially in the areas with the highest pupil to toilet ratio.	MoE /Development partners	Medium	High
Policy Suggestion 5.8: The Ministry of Education should set up a mechanism to help schools manage behavioural problems by establishing functional Guidance and Counselling services at the zonal level.	MoE	Short	Low
Policy Suggestion 8.6: MoE should ensure that schools adhere to the set standards with regard to classroom size, writing and sitting places.	MoE/Development partners	Long	High
Policy Suggestion 8.11: The Government and other stakeholders in education should ensure availability of adequate infrastructure in schools.	MoE/Development partners	Long	High
c) Addressing Gender Issues			
Policy Suggestion 3.2: There is need for action by all stakeholders to address gender disparities in enrolment particularly in the North Eastern region and other marginalized regions.	MoE/stakeholders	Long	Low
Policy Suggestion 4.2: The TSC should ensure that there is gender balance in deployment of Reading and Mathematics teachers in all the regions.	TSC	Long	High
Policy Suggestion 5.1: There is need for TSC to take affirmative action on the appointment of female head teachers especially in North Eastern region.	TSC	Long	High
Policy Suggestion 5.2: The Ministry of Education in collaboration with the TSC should base the appointment of school heads and other management positions in the Ministry on relevant higher	TSC/MoE	Long	High

qualifications.			
Policy Suggestion 8.8: Teachers should ensure equal participation during Mathematics lessons for girls to have a positive attitude towards the subject.	MoE	Medium	Low
d) Human Capacity Development			
Policy Suggestion 4.4: The Government should develop a professional development policy for teachers linked to the Schemes of Service for teachers and in line with Vision 2030.	TSC	Short	Low
Policy Suggestion 4.5: In-service training needs to be restructured, linking the functions of the Curriculum Support Staff to the KICD and DQAS with enhanced system that inform in-service training.	TSC/KESI	Long	Moderate
Policy Suggestion 4.7: The TSC should consider revising it downwards to a maximum of 35 periods per week to give teachers time for lesson preparation and marking.	TSC	Short	Low
Policy Suggestions 4.13: The government should establish functional Educational Resource Centres in all regions. There is also need to encourage (ERC) teachers to visit and use the resource centres. Teachers should be sensitized on the importance of ERC and how they can impact on the quality of education.	MoE	Medium	High
Policy Suggestion 5.6: Policy guidelines on school heads teaching workloads should be revised to ensure balance between management, teaching and supervisory roles.	TSC	Medium	Moderate
Policy Suggestion 5.7: There is need for the Directorate of Quality Assurance and Standards (DQAS) to strengthen and streamline school supervision and inspection through increased funding, capacity building and developing greater responsibility to DQAS officers at county level.	MoE/DQAS	Medium	Moderate
Policy Suggestion 5.9: Guidance & Counselling should be strengthened in the Pre-service and In-service training.	TSC	Medium	Moderate
Policy Suggestion 5.10: There is need for TSC to put in place effective support systems such as guidance and counselling, psycho-social support and referrals at all levels which will enable early identification of teachers' behavioural problems.	MoE/ TSC	Short	Low
e) Mitigating the Effects of HIV and AIDS in Schools			
Policy Suggestion 6.1: The Ministry of Education in partnership with the Ministry of Health should put in place programmes focusing on regions with learners with low achievement levels especially in Western and Coast to increase knowledge on HIV and AIDS among pupils.	MoE/MoH/Development partners	Medium	Moderate
Policy Suggestion 6.2: The MoE should strengthen the mode of dissemination of HIV and AIDS related information in order to bridge the knowledge gap between pupils in urban and rural areas.	MoE/MoH/Development partners	Medium	Moderate
Policy Suggestion 6.3: There is a need to ensure	MoE/KICD/DQAS	Medium	Moderate

effective implementation of Life Skills Education curriculum in schools to create awareness on HIV and AIDS and related facilities and services.			
Policy Suggestion 6.4: MoE and MoH need to diversify media of communication in order to improve effective of disseminating information on HIV and AIDS.	MoE/KICD	Medium	Moderate
Policy Suggestion 6.5: There is a need for DQAS in liaison with TSC to strengthen structures and support mechanisms for monitoring the quality of teaching and learning of HIV and AIDS.	MoE/DQAS	Medium	Moderate
Policy Suggestion 6.6: Schools should make classroom lessons on HIV and AIDS interactive through approaches such as use of audiovisual materials and pupil participation.	MoE/DQAS/KICD	Medium	Moderate
Policy Suggestion 6.7: There is an urgent need to improve the attitude of pupils towards others who are infected with HIV and AIDS.	MoE/MoH	Short	Low
Policy Suggestion 6.9: The MoE in partnership with MoH and TSC should enhance awareness creation among teachers as well as ensuring access to HIV and AIDS facilities and services.	MoE/TSC/KICD	Medium	Moderate
Policy Suggestion 6.10: a. The TSC in collaboration the MoE should organize in-service training in HIV and AIDS for all teachers. b. Schools should organize talks/lectures for teachers and pupils especially by people living with HIV and AIDS and professionals (Medical and counselling practitioners).	MoE/TSC/KICD/BoMs	Medium	Moderate
Policy Suggestion 6.11: The MoE should ensure comprehensive coverage of in-service courses on HIV and AIDS for school heads.	MoE/MoH	Short	Low
Policy Suggestion 6.12: School heads should be encouraged to take HIV and AIDS tests as role models for teachers and pupils.	TSC/MoH/KNUT	Short	Low
Policy Suggestion 6.13: There is need for MoE and TSC to give clear policy guideline with regard to the teaching duties of a teacher with HIV and AIDS and other illnesses.	KESI/MoH	Short	Moderate
Policy Suggestion 6.14: The training of HIV and AIDS for head teachers needs to be strengthened especially concerning testing and mitigating risky behaviours.	KESI/MoH	Short	Moderate
f) Improving Pupil Achievement			
Policy Suggestion 3.5: There is need to fully implement the National School Health Strategy Implementation Plan 2011-2015. A healthy school environment ensures access, retention, quality and equity in education	MoE/MoH	Long	Moderate
Policy Suggestion 4.9: a) The MoE should come up with clear guideline on pupil assessment. b) There is need to rationalize and monitor the time spent on assessments.	MoE/KNEC	Long	Moderate

Policy Suggestion 7.1: The MoE should scale up current interventions strategies such as Tusome and EGM to cover all levels of primary education.	MoE/CEMASTEA/ Development Partners	Long	Moderate
Policy Suggestions 7.2: Teachers and educators should use appropriate teaching methods and facilities to ensure that pupils attain higher Reading and Mathematics competencies.	MoE/TTCs/CEMASTEA	Medium	Moderate
Policy Suggestion 8.5: Parents and teachers should adhere to the MoE policy on class repetition and look for alternative ways of providing remedial teaching to pupils with learning difficulties especially at early grade level.	Parents BoMs/ School heads	Short	Low
Policy Suggestion 8.7: Within the FPE grants, schools should purchase library books and develop the culture of reading beyond the course books among learners.	BoMs/ School heads/ Development partners	Medium	Moderate
g) Further Research			
Policy Suggestion 3.1: There is need for the MoE and other stakeholders to carry out independent and focused action research on incidences of over-age pupil enrolment, and formulate appropriate interventions to mitigate the situation.	MoE/KNEC/NAC	Medium	Moderate
Policy Suggestion 3.6: Further research on increased class repetition rates should be carried out.	MoE/KNEC/NAC	Medium	Moderate
Policy Suggestion 6.8: The MoE in partnership with Ministry of Health should increase access and proximity to the HIV Testing Centres especially in Rift Valley, Eastern and Coast regions.	MoE/MoG	Medium	Moderate

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