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**Towards informed decision making: Contributions of
SACMEQ Policy Research to the improvement of
primary education in Kenya.**

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Abbreviations

ABE	Adult Basic Education
ACE	Adult and Continuing Education
ASAL	Arid and Semi-Arid Lands
DBS	Direct Budgetary Support
EFA	Education for All
ERS	Economic Recovery Strategy
ESR	Education Sector Review
FPE	Free Primary Education
GOK	Government of Kenya
INSET	In-service Training
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
KESSP	Kenya Education Sector Support Strategy
KIE	Kenya Institute of Education
KNEC	Kenya National Examinations Council
KRTs	Key Resource Teachers
MDGs	Millennium Development Goals
MOEST	Ministry of Education, Science and Technology
NFE	Non-Formal Education
NFS	Non-Formal Schools
NGO	Non Governmental Organization
PRSP	Poverty Reduction Strategy Paper
PTR	Pupil-Teacher Ratios
QAS	Quality Assurance and Standards
SACMEQ	Southern African Consortium for Monitoring Education Quality
SbTD	School based Teacher Development
SEP	School Empowerment Programme
SPRED	Strengthening Primary Education
SWAP	Sector Wide Approach
UPE	Universal Primary Education

Towards informed decision making: Contributions of SACMEQ Policy Research to the improvement of primary education in Kenya.

Abstract

Within the framework of the Sector Wide Approach (SWAP), the education sector underwent a review process that resulted in a revised education policy and an accompanying sector strategy and investment plan. The Ministry of Education, Science and Technology spearheaded the process in a participatory manner involving a good representation of stakeholders including other government departments, the academia as well as civil society organizations. A major strength in this process was the use of research findings and documentation on previous work done including sector reviews, previous policy documents and available data. Among these were the recent Sessional Paper No.1 of 2005, the report of the National Education Conference held in 2003, and the Education Sector Strategic Plan, 2003. The two SACMEQ policy research studies (SACMEQ I, 1998 and SACMEQ II, 2000) proved to be useful resources in informing the review process. There was a clear demonstration of how policy research could be used in informing a policy review process in a focused manner, with clear strategies proposed to address the challenges. Clearly, the importance of research in policy review and development was recognized and the need for subsequent policy research studies was expressed to help gauge progress in the key areas of improvement.

The paper demonstrates how the policy concerns in the two SACMEQ policy research studies have been addressed in the Kenya Education Sector Support Strategy within the framework of Free Primary Education.

Background information

Despite the substantial allocation of resources over the years, the education sector continued to face numerous challenges and the effectiveness of the system has had to undergo increased scrutiny. Recent policy initiatives have focused on the attainment of Education for All (EFA), and key concerns have centered around access, retention, equity, quality and relevance as well as internal and external efficiency within the system.

Over the last two years, reforms in the education sector have been undertaken in order to address the overall goals of the national Economic Recovery Strategy Paper (ERS), as well as international development commitments, including the Millennium Development Goals (MDGs), Education for All (EFA) and deliver the policies as set in the latest Sessional Paper No 1 of 2005 on policy framework for education, training and research.

The Government pronouncement of Free Primary Education in 2003 necessitated the Ministry to undertake a more comprehensive Sector-Wide Approach (SWAp) to program development to ensure the delivery of educational services to the learner in the most effective and efficient manner. Since June 2004, the MOES&T has worked with a wide range of stakeholders in the education sector to develop a Kenya Education Sector Support Program (KESSP) within the SWAp framework for the next five years.

Since 2003, the policy and program development process deviated from the historical trends of setting up commissions or taskforces that have consumed substantial amounts of resources to formulate policies. The process was backed up by stakeholder involvement and the use of research studies, sector reviews and plans that were undertaken since 2003. These included:

- Sessional Paper No. 1 of 2005 – A Policy Framework for Education, Training, and Research, January 2005 (awaiting approval by cabinet).
- National Conference on Education and Training Report, March 2004;
- Draft report of the 2nd SACMEQ Policy Research, 2004;

- Education Sector Review Development, September 2003;
- Education Sector Strategic Plan, November 2003;
- Ministry of Education SACMEQ Policy Research Report No.6, 2001

In Kenya, the first education policy research project, widely known as SACMEQ I, was undertaken in 1998 to provide an assessment of the conditions of schooling and the quality of education provided by the primary education system. The second policy research project, SACMEQ II, was undertaken in 2000. The two projects gathered overlapping data at different time points, and SACMEQ I provided a valuable baseline for SACMEQ II.

The manner in which the policy review process in Kenya addressed policy issues emanating from the SACMEQ research has been demonstrated in this paper. Some of the policy concerns raised in the SACMEQ reports have been highlighted as well as how these have been addressed in the education policy review as indicated in the policy framework on Education, Training and Research (Sessional Paper No.1 of 2005) and the Kenya Education Sector Support Program (KESSP).

Addressing to policy concerns

Access and Equity

SACMEQ Policy concern no.1: What were the personal characteristics (in terms of age and gender) and home background characteristics (in terms of parent education, regularity of meals, home language) of Grade 6 pupils that might have implications for monitoring equity, and/or that might impact upon teaching and learning?

Gender distribution of Standard 6 pupils

SACMEQ Findings: An analysis of SACMEQ I and II data reinforced the fact that gender disparity is a real issue particularly in the North Eastern and Coast Provinces despite the fact that there was a near gender parity in other provinces. These results conformed to the Ministry of Education statistics at primary education level as demonstrated in Figure 1.

[\[Place Figure 1 about here\]](#)

Significant differences between SACMEQ I and II can be noted in North Eastern and Eastern Provinces, while in the other provinces there were no major differences. The percentage of Standard 6 female students was lowest in North Eastern Province and highest in Nairobi and Eastern Provinces in 1998 and 2000 respectively. Apart from the Coast Province, the percentage of Standard 6 female students in the other provinces was about 50 percent.

Analysis

Eliminating gender gaps and gender inequality means bringing the disadvantaged sex up to par with the favoured. It ensures that both sexes leave the school system with an education that provides life skills and permits them to pursue higher levels of education or vocational training according to their capabilities and is free from gender stereotyping.

Most importantly, they should be equipped with skills and attitudes that will help them to pursue their potential regardless of their sex.

Gender disparities in education have been an issue of concern for over a long time, and although considerable progress has been made in this regard, a lot still remains to be done in narrowing gender gaps in certain parts of the country. Pinning down areas of gender disparities requires analysis at Provincial, District, and Zonal levels as national level analysis hides the disparities. For example, the 2003 MOE statistics revealed that the Gross Enrolment Rates for Eastern Province was 112.4 for boys and 111.3 for girls, indicating gender parity at Provincial level. However, from a closer scrutiny of gross enrolment rates at District level gender disparities as presented in Figure 2 were revealed.

[\[Place Figure 2 about here\]](#)

Government policy on gender and education

The Ministry of Education Science and Technology (MOEST) developed a Gender and Education Policy to provide a framework for planning and implementation of gender responsive education sector programmes. In the draft Policy gender equality has been recognized as central to the achievement of EFA. Key gender concerns in education highlighted in the policy included disparities in enrolment, retention, and transition rates, negative socio-cultural practices and attitudes which inhibit girls access, learning environments that are not conducive to girls, stereotyping in learning materials and in class teaching and drop out of girls due to pregnancy and early marriages (MOEST, 2003).

Strategies proposed in the policy to address gender concerns in education include making the learning environment conducive to both boys and girls, promoting gender sensitive curricula, strengthening the capacity of both parents and education personnel at all levels to address gender issues, and making monitoring and evaluation systems more sensitive to gender issues.

Other policy and legal interventions that target girls in particular include:

- Engendering the curriculum, teaching and learning materials
- Development of a national gender education policy
- Establishment of the National and MOEST task Forces on Gender as well as the Gender Desk at the MOEST and all other government ministries
- Strengthening legal instruments to check gender violence and child abuse.
- Affirmative action in allocation of bursaries to girls, admission points in universities and appointment of qualified female education managers at schools and administrative levels.
- Balancing gender during intake of teacher trainees and in deployment to schools
- Affirmative policy on admission of girls to post-secondary institutions
- Re-admission of girls who become pregnant while in school
- Bursary allocation to schools at secondary level has been enhanced and girls score higher points and receive an additional 5% bursary allocation in every constituency

Parents Education

SACMEQ findings

Separate questions were asked of the mothers and fathers about their educational levels. The results were summed and divided by 2. A score of '1' indicated that neither parent had received any school education and a score of 6 indicated that both parents had completed senior secondary and some proportion had attained tertiary education. The average was 7.5 and 7.4 in 1998 and 2000 respectively. The North Eastern Province had parents with the lowest level of education. Again, the problem of this average is that it can mask large differences between mothers and fathers.

A cross-tabulation between the levels of fathers' and mothers' education has been presented in Table 1. The table depicts the percentages of mothers with certain levels of education and the percentage of fathers with different levels. The findings revealed that 72 percent of fathers with no schooling were married to mothers with no schooling, 20 percent were married to wives with some primary education, and 5 percent were married to wives who had completed primary school. The general trend was that men preferred to

marry women of either the same level of education or one or two levels below them. It could also mean that wives preferred husband at the same level of education or one or two levels above them.

[\[Place Table 1 about here\]](#)

Home assistance with homework

Although it is well known that education should be a joint effort from home (parents/communities) and the school (teachers/management), greater focus tends to center around the school. One important aspect of the home is how much the parents or other adults around the home interacts with pupils at home in order to show an interest in their schoolwork or to help them with schoolwork. This is part of the intellectual milieu of the home. Pupils were asked questions about their interaction with their parents or someone else in the home.

[\[Place table 2 about here\]](#)

In Table information has been presented about parental behaviours such as ensuring that the homework is done, helping with homework, and looking at the work once it had been done. Except for Nairobi, more than 50 percent of the pupils had parents who did not ensure that the homework had been done. Relatively few parents helped with the homework but 33 percent actually looked at the work once it had been completed. The low parental involvement in pupils' schoolwork is likely to lead to low learning achievements.

Teachers and Parents Meetings

The number of parents meeting the children's teachers annually is an indication of the levels of parental involvement in the school management and teaching/learning processes. In Table 3, the percentage of pupils whose teachers met with their parents has been given. It can be seen that only about 50 percent of the pupils had teachers who met with their parents. This indicates that about 50 percent of pupils' parents did not hold

meetings with teachers despite their importance in enhancing the teaching learning process.

[Place Table 3 about here]

Clearly, there is need to address the issue of parental support to pupils in forums such as teachers/parents meetings. These findings could be linked to parents' level of education as highlighted above.

Analysis

Parents' education levels have a bearing on their children's education. In most cases, children whose parents have attained some education are likely to benefit from greater parental support in education than those whose parents do not have education. Lack of education on the part of the mothers may also affect girls' education as the mothers may not have the capacity to encourage and support their daughters through their educational process. The impact of the adult education programme implemented by the Department of Adult Education should be manifested through enhanced parental support to their children's education. However, there appears to be a disconnect between the adult education programs and their involvement and support to their children's education.

It is estimated that currently 40 percent of women are illiterate compared with about 30 percent of men (GOK, 2005). Adult Basic Education (ABE) programmes provide education to the disadvantaged communities and people living in difficult circumstances using non-formal approaches to education. Despite the official Government commitment to ABE programmes and recognition of their importance in national development, there is a low public image based on negative attitudes, prejudices and stigmatization towards

ABE programmes. This has made it difficult for the programmes to attract adequate funding from the Government and the donor community.

Low quality in ABE has contributed to lack of appreciation and recognition of the programmes, and in turn, this has resulted in negative attitudes and low participation rates. Furthermore, ABE programmes do not address learners with special needs and those in disadvantaged areas including ASAL, low potential and slum areas.

Government policy on adult education

In the Sessional Paper No.1 of 2005, the Government recognized the important role played by Adult and Continuing Education (ACE) as a vehicle for transformation and empowerment of the individual and society. The ACE and Non-Formal Education (NFE) programmes are consciously designed to meet the specific learning needs of children, youth and adults. The link between adult education and primary schooling is recognized toward the advancement of Education for All (EFA). Adult education is especially a powerful support for the Free Primary Education (FPE) initiative since literate parents will send their children to school and give stronger support to their learning. The education of adults has also been acknowledged as critical in contributing to the country's development.

According to the Kenya Education Sector Support Programme, access to Adult Basic Education (ABE) programmes will be expanded particularly for women and people living in disadvantaged areas including ASALs, low potential and slum areas. Due to socio-economic and cultural barriers, more women than men have had no access to education.

As manifested in government policy documents, the Government recognizes the importance of ABE programmes in unlocking and maximizing the potential of human resource for individual, community and national development and ABE is therefore seen as a prerequisite to sustained retention of children in school as well as poverty alleviation. Current policy documents clearly state that the Government is committed to the provision of education to all its citizens by 2015 irrespective of age, gender, geographical or any

other consideration. It is further recognized that the Millennium Development Goals (MDGs) will remain unachievable until adequate basic education programs are in place to cater for adults and youth who can not access education in the formal school system due to their age, economic, regional or socio-cultural reasons.

The report on the national conference on education and training recommended that the Ministry of Education should urgently review and enact the existing draft document on Adult and Continuing Education policy guidelines with a view to creating a sense of ownership (GOK, 2003). Among the recommendations from the forum was that relevant Ministries offering adult and continuing education including the local authorities should have budget lines to develop an efficient and effective ACE sub-sector and support the implementation of adult and continuing education; It was further recommended that civil society organizations should integrate adult education in their community driven programme implementation.

Internal efficiency and Quality

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

SACMEQ Findings

Absenteeism and Grade Repetition

Absenteeism is known to lead to eventual dropouts and low retention and completion rates. Pupils' performance is greatly affected by absenteeism. The pupil were asked how many days they had been absent in the month before the SACMEQ data collection. As can be seen from Table 4, pupils were absent for an average of two days in a month for both SACMEQ I and II. Over a year this can be a substantial number of days. Nairobi had the lowest levels of absenteeism while Western and Rift Valley had the highest. The

number of days absent ranged from 2 to 3 days in a month in Western and Rift Valley Provinces as indicated by the Sampling Error bars. Significance differences between SACMEQ I and II are noted in Nairobi and Eastern Provinces.

[Place Table 4 about here]

While government policy does not allow for repetition, pupils have persistently repeated for various reasons. The SACMEQ findings revealed that the national average for grade repetition was 69 percent in 1998 and 64 percent in 2000. The North Eastern Province had the least percentage of Standard 6 pupils repeating while Nyanza and Western Provinces had the highest. The low repetition rates in North Eastern Province could be attributed to the fact that pupils in that province are older and their main concern is to complete primary education. In Nairobi however the situation was different. Whereas Nairobi had the youngest children, the repetition rates were low. This could be explained by the fact that those issues that cause pupils to repeat in other provinces are not true for the majority of pupils in Nairobi. For example, children do not often miss school because of school fees and are therefore not sent home; there are no frequent interruptions to school attendance, the health status of the pupils is better compared to that of pupils in the rural areas, and the learner achievement is higher.

Frequency of Homework

Pupils were asked how often they received homework. The possible responses were: I did not get homework; once or twice per month; once or twice per week; and most days of the week. The national average of Standard 6 pupils receiving homework on most days of the week was 57.6 percent during SACMEQ I (in any subject), 64.6 and 68.6 for reading and Mathematics homework respectively during SACMEQ II as presented in Table 5.

[Place Table 5 about here]

There were variations between provinces which indicated that Nairobi Province had the highest percentage of pupils who received homework on most days of the week for both SACMEQ I and II while Western, North Eastern and Coast Provinces had the lowest. A reference to the reading and mathematics test scores gives an indication that provinces with low percentages of pupils receiving homework achieved lower scores than those with high percentages of pupils receiving homework.

Analysis

The repetition rates at Standard 6 level appear to conform to trends in repetition rates as portrayed through the Ministry of Education (MoEST) statistics (Figure 3). According to the MoEST data, Nairobi had the lowest repetition rates while Western had the highest. There is a notable difference between the repetition rates at the national level for primary education and the repetition rate at Standard 6. While the repetition rate at Standard 6 is about 60 percent, at the national primary education level it is 12 percent. This could be explained by the fact that repetition rates are known to be highest at upper primary level (Standard 6-8) while at lower primary they are reasonably low.

[Place Figure 3 about here]

Homework is perceived as a key determinant of proper use of time for pupils after school. With homework, pupils have to take books home and dedicate time for school work at home. It is expected that persistent homework will contribute towards developing a culture of studying at home, in most cases without supervision, and that this should help improve learner achievements.

With the declaration of free and compulsory primary education, repetition rates are bound to increase if the Uganda and Malawi experience is something to go by. With larger pupil:teacher ratios coupled with poor learning conditions and inadequate teaching and learning facilities and materials, the quality of learning is likely to decrease leading to

low learner achievement. The limited capacity at secondary school level may further aggravate the situation. With the introduction of free and compulsory primary education, quality assurance remains a major challenge.

Material resources

SACMEQ Policy Concern 3: Did Grade 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 18: Have material resources (for example, classroom teaching materials and school facilities) been allocated in an equitable fashion among regions and among schools within regions?

SACMEQ findings

From the findings of the SACMEQ studies it could be seen that there was a deficiency in provision of textbooks for both reading and mathematics, and notable variations among provinces. The Western and North Eastern Provinces had the least percentage of children owning textbooks while Nairobi had the highest percentage although close to 50 percent of the children still lacked textbooks. Overall, approximately 75 percent of the Standard 6 children in Kenya on average did not have textbooks of their own. This situation, coupled with the overall lack of basic supplies, raised concerns as to how teachers were actually managing the learning process in the classroom.

[\[Place Table 7 about here\]](#)

Equity in material resource allocation

The adequacy and condition of physical facilities, infrastructure, as well as other material resources in a school are critical especially in ensuring that all children are provided with

equal opportunity to quality education at primary level. Children spend most of their time in school and therefore the school environment should be learner friendly. If children have to spend all their days in schools where toilet facilities are either missing or not in good condition, for example, this may discourage them from attending school. Other facilities such as classrooms, furniture, and even conditions of teachers' houses, are crucial and deserve attention. If teachers' basic needs are not satisfactorily met, this will impact negatively on learners' achievement levels.

A question was asked to assess the equity of material resource allocation among provinces and schools within regions. The results of the analysis have been presented in Table 8 (SACMEQ II).

The variation *among provinces* was high for classroom furniture index by reading teacher classrooms (26.4 percent) mathematics teacher classrooms furniture index (21.9 percent) and particularly for school resources (41.5 percent). For other resources the inequity was reasonable or indeed very low. The most extreme variations among schools *within* provinces was recorded under the material resources; classroom furniture index in Central province for reading teacher (124.5 percent) and mathematics teacher (127.4 percent); toilets per pupil in Rift Valley (274 percent); and classroom space per pupil in Coast (171.9 percent), Central (147.5 percent) and Western (147.4 percent).

Policy response

The upsurge in enrolments following the declaration of Free Primary Education (FPE) added to the pressure on demands for textbooks and other instructional materials as well as infrastructure. The immediate challenge on FPE was the provision of adequate teaching and learning materials to the primary school pupils and those in Non-Formal Schools (NFS), overstretched facilities; overcrowding in schools especially those in urban slums; high Pupil-Teacher Ratios (PTRs) in densely populated areas; high cost of special equipment for children with special needs; diminished community support as a result of misconstrued role vis-à-vis that of the Government under the FPE initiative;

gender and regional disparities and increased number of orphans in and out of school as a result of HIV/AIDS.

Among the strategies outlined in KESSP to address issues related to textbooks were the following:

- Enhancing quality of education through provision of textbooks and other instructional materials;
- Enhancing equity by ensuring that all children in public primary schools have textbooks irrespective of their geographical location or parent's economic ability;
- Providing textbooks for both pupils and teachers as key tools for attainment of quality education;
- Ensuring sustainability of textbooks in schools;
- Ensuring improvement of pupil-textbook ratio.

According to the investment strategy in KESSP, each enrolled pupil in public primary schools will receive, through account I Kshs 430 per year for instructional materials. This will go towards the purchase of new textbooks to achieve the ratios of 1:2 and 1:3; replacing and replenishing lost and worn out textbooks, providing for standard 4 and 8 textbooks to cater for the new curriculum, providing one textbook for every subject to every child by the end of year 2010 and providing exercise books, pencils, dusters, chalk, registers, charts and wall maps. The funds are planned to be disbursed twice a year.

School facilities

***General Policy Concern 10:** 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 Grade 6 classrooms?*

Adequacy of sitting and writing places

Availability of adequate, usable and comfortable sitting and writing places is important during the learning process. The dearth of these facilities hinder effective learning particularly if classes are overcrowded, have rough and/or muddy floors. Information on percentages and sampling errors for pupils having sitting and writing places has been provided in Table 8.

[Place Table 8 about here]

In SACMEQ I and II, there were noticeable regional disparities with Nyanza, Coast and Nairobi having 100 percent sitting and writing places compared to North Eastern only 59.3 percent of the pupils had adequate writing places in 1998. The significant improvement in sitting places recorded in year 2000 in North Eastern (98.4 per cent) and 97.0 per cent of writing places – could be attributed to Government and Donor support to schools in Arid and Semi arid Lands (ASAL) areas. At the National level the percentages of pupils having sitting places was 99 percent both in 1998 and 2000, while the percentage of pupils having writing places increased from 86.6 percent to 95.8 percent in the respective years.

From the two sample surveys (SACMEQ I, 1998 and SACMEQ II, 2000) it could be seen that most primary schools were poorly resourced and needed major inputs for improved provision of quality education at primary level and that the resources were inequitably distributed. The studies revealed that both in 1998 and 2000, most primary schools had dilapidated physical infrastructure, lacked textbooks that constituted major inputs for quality learning and achievement, most teachers had not undertaken in-service courses on a frequent basis, inspection services were insufficient and the school environment, in some localities, was unattractive for quality learning. As the Government continues to allocate more resources to education, the issues of quality and relevancy need to be continuously addressed.

Policy Response

Improved primary school infrastructure has been a priority issue among schools and communities and parents have been responsible and have made substantial investments in school infrastructure with support from civil society organizations. However, infrastructure has remained inadequate, particularly in poor districts, and existing infrastructures are generally in poor condition, due to lack of investment capital, poor construction standards and inadequate maintenance. With the significant increase in primary school enrolment following the introduction of Free Primary Education (FPE) in 2003, additional pressure has been exerted on existing school infrastructure, leading to overcrowding un-conducive learning environment. There is limited number of primary schools serving populations in isolated rural areas, low-income areas and urban slums with large primary school enrolments.

Providing educational opportunities to all Kenyan children is central to Government's plan for Economic Recovery Strategy (ERS) and Poverty Reduction Strategy Paper (PRSP), which states that Government's highest priority in the medium and long term will be to ensure affordable and equitable access to education through several strategies including "collaborating with private sector, NGO's and development partners to provide additional educational facilities". Previous reports and commissions, such the Sessional Paper No 6 of 1988 and the Koech Report (1999) placed emphasis on the provision of school infrastructure.

In the KESSP, government strategy involves working in partnership with communities, parents, other government departments and development partners to improve the school learning environment and accessibility. In particular, the Ministry will construct and renovate physical facilities and equipment in public learning institutions in disadvantaged areas, particularly in ASALs, urban slums and pockets of poverty. This programme will address the infrastructure backlogs and will be targeted to the priority areas.

In addition to the Government's poverty reduction strategy is the achievement of the Millennium Development Goals (MDGs). The programmes under KESSP, especially the primary school infrastructure programme, will make a major contribution towards achieving UPE, which is the second goal under the MDGs. In addition, the infrastructure programme has potential to contribute towards other goals and in particular ensuring environmental sustainability by ensuring proper environmental assessment of the programme and increasing coverage of improved water supplies and sanitation. The interventions will ensure gender sensitivity and children with special needs particularly in relation to health, hygiene promotion, and sanitation infrastructure.

In line with the above policy and strategies, the Ministry of Education, Science and Technology (MOES&T) has developed two primary school infrastructure programmes, which aim to improve access to primary education in Kenya over the next five years. The proposed investment programmes consists of the following components:

- School improvement grants component
- New primary school construction component
- Management and capacity building component
- Monitoring and evaluation component

Teachers' professional development and support

SACMEQ Policy Concern 7: What were the professional characteristics of Grade 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 11: What professional support (in terms of education resource centres, inspections, advisory visits, and school head inputs) was given to Grade 6 teachers?

Teachers' use of education resource centers

Teachers are required to visit teachers' resource centers for skills enhancement, developing teaching/learning resources and for references. According to the analysis presented in Table 9, 61.8 percent of pupils had reading teachers who had used resources at education resource centers in their provinces while 64.1 percent on the pupils had mathematics teachers who had used the resources at the centers. It is worth noting that both North Eastern and Central provinces had the lowest number of pupils whose teachers in both reading and mathematics indicated that the resource centers were not available. It is also ironical that in Nairobi province where all the teachers indicated availability of education resource centers, 47 percent and 39.8 percent of pupils had both reading and mathematics teachers who had not visited education resource centers, respectively.

[\[Place Table 9 about here\]](#)

Teachers' in-service training courses completed

In-service training for serving trained teachers is important for skills' improvement and the acquisition of new knowledge for tackling emerging issues in education. In the Kenyan context, curriculum review and rationalization are a continuous process aimed at enhancing the relevance of education content and quality. Currently, there is no benchmark for the number of in-service courses a teacher should undergo within a given period. The MoEST only coordinates and facilitates in-service training and other teacher developments that are relevant to basic professional development through the In-service Teacher Training (INSET) Unit. School-based Teacher Development (SbTD) programme that was developed in 1999 is the main in-service programme that the Ministry is implementing. The Ministry plans to coordinate and harmonize other in-service training courses that have been offered *ad hoc*, with a view to ensuring relevance to teachers' training needs. The programme borrowed heavily from SACMEQ I policy findings among other reviews and studies.

During SACMEQ II, the teachers were asked to report the number of in-service courses they had attended in the past three school years from the base year of 2000 (year of study). From Figure 4.7 it can be concluded that the average pupil in 1998 had teachers who had attended 3.5 courses between 1993 and 1998.

During the year 2000, an average pupil had reading and mathematics teachers who had attended 3.6 and 3.5 courses respectively. The average pupil from Nyanza and Western Provinces were taught by reading teachers who had attended 6.8 and 6.1 in-service courses respectively, while the lowest mean of 1.7 in-service courses was recorded in the Central Province. On the other hand, an average pupil in Nairobi and North Eastern provinces had mathematics teachers who had attended 7 and 0.9 in-service courses respectively. The evident disparities indicate major variations in the number of in-service courses offered in various provinces. The disparities recorded in this analysis reflects the ad hoc manner in which these courses had been offered, an issue that has prompted the Ministry to establish an INSET unit to coordinate the provision of the in-service courses.

Western, Nairobi and Coast Provinces recorded the highest level of in-service courses in 2000. This can be attributed to the fact that various NGOs are involved in teacher training in the respective provinces. Some of these include the International Christian Support Fund in Western Province and the Aga Khan Foundation programme on professional development centres in Nairobi and Mombasa.

Policy response

The KESSP recognizes that the success of FPE initiative and achievement of EFA will largely depend on having a well-trained, well-educated and well-disciplined teacher force, and that pre-service training alone cannot prepare teachers for the lifelong teaching and learning challenges, which lie ahead in this rapidly changing society. The rapid growth in new information technologies and emerging issues puts new demands on

teachers. These factors call for a dynamic, responsive and well-coordinated system of in-service training.

In the current policies the MOES&T will endeavour to provide an environment that will enable teachers to continue learning and develop professionally through in-service training to be co-ordinated by the INSET unit. The development of in-service education and training is an important step and is based on the recommendations of a number of policy documents. Some of policies include:

- Learner centred teaching and learning through the development of regular focused in-service courses for teachers and thus improve school quality.
- Development of a teacher-friendly monitoring and supervision system, raising teacher morale and motivation and improving school climate and participatory management in order to improve quality of education.
- Development of training programmes to cover all cadres of key staff including quality development and assurance staff.

A diagnosis of the INSET unit reveals the three key issues currently facing it. They include financing, institutional legitimacy and operational focus. The primary education INSET unit is presently heavily dependent on external partner funding. Its key programmes include School based Teacher Development (SbTD) and School Empowerment Programme (SEP), all heavily supported externally. As donors move towards Direct Budgetary Support (DBS) through the Sector Wide Approach (SWAp), a decision has been made to have the INSET unit secure its own vote line in the Ministry budget to facilitate proper institutionalization within the Ministry teacher development services.

The INSET unit has not been involved in all INSET programmes in the Ministry but has selectively implemented specific, usually development partner supported programmes. Consequently, the INSET unit has suffered from relative insulation partly because of its funding and reporting arrangements but also because the unit is not particularly well-linked to other divisions and directorates doing similar work.

The unit has tended to have a stronger operational focus primarily concerned with the implementation of large-scale national programmes. Its relative newness and insulation means it has not yet developed a sufficiently strong strategic focus. The coordinating role of the unit will have to be spelt out and systems established for improved performance in the provision of INSET.

Starting 2000 the Government launched the School based Teacher Development (SbTD) programme within the auspices of the Strengthening Primary Education (SPRED) programme. The programme is being implemented in four phases with support from the British Department for International Development (DfID) and the World Bank. SACMEQ I and II surveys have been used as baseline information for measuring the impact of the recent teacher development initiatives on learning outcomes.

With the recognition of the fact that pre-service teacher trainees and practicing teachers require appropriate opportunities to acquire a repertoire of teaching strategies to ensure effectiveness, the government plans for continuous staff development measures to ensure greater opportunities for teachers and head teachers in organizing school-based teacher training and learning. Staff development would also benefit from devolution of training to individual schools with enhanced participation of field education officers, inspectors and advisors/teacher advisory center tutors.

The MOES&T INSET unit has designed and developed programmes:

- School based Teacher Development (SbTD) aimed at strengthening primary subject specialists in Mathematics, English and about 50,000 Key Resources Teachers (KRTs) using distance learning involving 3 teachers in every primary school in the country. A programme for additional subject specialists in guidance and counselling and Kiswahili targeting 35,000 teachers was launched in January 2005.
- School Empowerment Programme (SEP) focusing on strengthening management and leadership capacity and pedagogic effectiveness by using print and electronic media and local face to face support meetings. Targeted 18,000 head teachers and 50,000

graduate Key Resource Teachers (KRTs) from first cycle of SbTD. Essentially supporting teachers to meet better the challenges of Free Primary Education (FPE) and to ground further the development of the school based INSET system. The SEP INSET programme intend to reach all primary school teachers in the country and was launched in March 2005.

- Strengthening mathematicss and science in primary schools. This programme aims at providing in-service training to lecturers in primary teacher colleges and primary school teachers (science KRTs). Further, it will focus on improving the science kit in primary schools and will build on the SbTD programme in order to strengthen skills in use of the science kit provided under FPE.

Pupils' Learning Achievements

SACMEQ Policy Concern 20: What were the reading and mathematics achievement levels of important sub-groups of Grade 6 pupils and their teachers (for example, pupils and teachers of different genders, socio-economic levels, and locations)?

Reading and mathematics test scores of pupils

The interpretation of the mean scores presented in the tables below is based on the pooled SACMEQ II reading and mathematics test scores that were transformed to a mean of 500 and a standard deviation of 100. The variance around the average performance of pupils in the sample provides a first indication of the extent of inequality in learning outcomes. The results of the analysis on performance in reading and mathematics have been presented in Figure 5.

[Place Figure5 about here]

The results indicate that there was a minimal improvement in pupil's reading performance from a mean score of 543.3 during SACMEQ I to 546.5 during SACMEQ II. In SACMEQ II survey the leading provinces in terms of mean scores in reading were

Nairobi (624.3), Eastern (568.4), Coast (538.1) and Central (556.7), while North Eastern and Western had the lowest scores (527). On average, the mean score in mathematics (563.2 ± 4.63) was higher than in reading. Western and North Eastern provinces had the lowest mean scores in mathematics as well, with mean scores of 539.1 and 548.9 respectively.

Reading and mathematics test scores for teachers

The results indicated in Figure 6 show that the teacher performance in both reading and mathematics was 793.7 and 967.7 respectively. The highest teacher performance in reading was recorded for Central province while the lowest was North Eastern. North Eastern teachers of Standard 6 also had the lowest performance in mathematics with 929.7 as compared to the highest in Eastern province with 1034.6 mean score. The analysis reflects a positive correlation between the teacher and pupil performance as indicated in the results from the various provinces.

[\[Place Figure 6 about here\]](#)

Performance by Gender

The reading performance for both boys and girls was within the same range for both SACMEQ II and I surveys with test scores of 539.18 to 541.01. The mean score for boys was 544.5 ± 5.41 in 1998 improving slightly to 546.4 ± 5.41 in the year 2000 while for girls it was 542.2 ± 4.64 increasing to 546.5 ± 5.41 . Both boys and girls performed well in reading and the range of scores was about the same. On the contrary, for mathematics the performance of the girls was lower than that of the boys with boys having a mean score of 574.2 as compared with 552.4 for girls in SACMEQ II. The poorer performance of girls in mathematics calls for more intervention to address the resulting imbalance in learning achievement.

[\[Place Figure 7 about here\]](#)

Analysis of Mastery levels in Provinces

A task was undertaken to define specific skills for each test item, identifying groups of items with similar difficulties, and then naming the “theme” (or competency level) linked to each group. This resulted in the identification of eight levels of competence for each test for both learners and teachers. In general, it was expected that learners would be in the range of Level 1 to 6 and the teachers would be mostly at Levels 7 and 8.

For Kenya as a whole, 31 percent and 25.3 percent of the pupils were at the interpretive reading level, while only four percent and five percent were at the critical reading level for SACMEQ I and II respectively. It is only at Level 3 that pupils can be said to be able to read and hence it was disquieting to note that even in 2000, there were 5.6 percent of pupils who could be said to be illiterate. There was a similar trend in both surveys, where the lowest percentages were observed at levels one, two and eight, while the highest percentages were at levels four and five. The percentages began to decline at level six. The gap between the higher levels and lower levels widened between SACMEQ II and I. If the gap continues to become wider this could result in a more heterogeneous population in terms of literacy, a state of affairs to be deplored. This situation should be carefully monitored.

The results of the analysis indicate that the highest percentages were observed at levels three and four, implying that most of the Standard 6 pupils were at basic numeracy and beginning numeracy levels. About 18 percent were at competent numeracy level while only 10 percent were mathematically skilled.

[Place Figure 8 about here]

Policy Response

A diagnosis of the system has indicated that the education system in Kenya lacks a national learning achievement assessment system that is pertinent in establishing the levels of learning achievement at various levels. Consequently, the examinations at the end of the primary and secondary school cycle (Kenya Certificate of Primary Education (KCPE) and Kenya Certificate of Secondary Education (KCSE)) constitute the main assessments nationally. This system is, however, deficient of inbuilt mechanisms that should be used in implementing collective measures before the final year of the school cycle. However, as a proxy for measuring learning achievement in the school system, analysis of performance in KCPE and KCSE indicate that, to a large extent, performance levels are low over the years, particularly in mathematics and sciences. This is manifested in the low transition rates to secondary school level and to university level.

Issues and constraints that relate to the provision of quality education in primary schools include:

- Inadequate appraisal of school level instructional supervision.
- Lack a national system for monitoring formative learner achievement at all levels of primary education cycle.
- Poor performance in national examinations. The analysis of KCPE 2003 results shows that out of 74 districts that presented candidates, 35 of them did not attain the expected mean standard score of 250.0 out of 500 marks.
- Inability by the Directorate of Quality Assurance and Standards (QAS) to organize sufficient subject-based in-service courses to address short-comings relating to methodology, revised curriculum, generic and assessment skills.
- Lack of a national system of teacher INSET accreditation, quality assurance and credit transfer. Consequently, the many and varied in-service courses offered by development partners are often fragmented, uncoordinated, insufficient and vary in quality.
- There are no on-going programmes related to action research, accreditation of INSETS, item banking, and curriculum and examinations for ABE and NFE

There are a number of initiatives by the Ministry related to addressing the challenges with respect to quality. Some of the initiatives include:

- The Government in collaboration with development partners is undertaking in-servicing in pedagogical skills through SbTD project.
- Government conducts quality monitoring and teacher support visits only for seriously needy schools due to limited resources.
- Efforts have been made to start a system of monitoring student learning achievement at lower primary level (Std 1–4). Other initiatives to address monitoring of learner achievements have been undertaken under SACMEQ and FEMSA.
- An on-going pilot programme on mobile schools and accelerated learning by Government and development partners in North Eastern Province.

Among the strategies to be undertaken towards improving learners outcomes include the need to:

- Conduct subject – based content mastery improvement and pedagogical skills upgrading.
- Monitor school visits and determine the existing discrepancies in instruction methodology.
- Undertake continuing research to determine the quality of education being offered.
- Establish a formalized system of in-servicing teachers and certification.
- Monitor learner achievement at every level, student achievement monitoring system has been developed as an on-going undertaking.
- Study on the existing systems for monitoring learner achievement through a study with a view to harmonizing them to establishing and operationalizing a national assessment system.
- Acquire both a broadcasting channel and equipment for KIE.
- Establish and operationalize an item bank system and provide cost effective printing equipment for KNEC.
- Develop and produce curriculum support materials not currently being published by commercial printers.

- Carry out a study on the viability and sustainability of various alternative teaching approaches with a view to piloting some of the recommendations.
- Carry out consultancy to determine viability and sustainability at national level in using alternative learning approaches to increase access and participation in quality education.

Conclusion

The challenges of free primary education are enormous. The two SACMEQ policy research studies took place before free primary education came in place, and the sector was still experiencing challenges then. However, while the challenges prior to FPE hinged more on access and equity, it is expected that post FPE challenges will centre around quality issues. It is no wonder that the current education strategy has given a special focus on quality assurance within the framework of free primary education, and it is expected that implementing the strategies will be a greater challenge and requires enhanced capacity at all levels. Apparently, the education sector has received overwhelming support from development partners. Moreover, the effectiveness in the use of resources injected into the sector can best be gauged through learner outcomes. That is the bottom line.

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Figure 1 : Percentage of Standard 6 Female Students, SACMEQ I & II and MOE 1998 & 2000

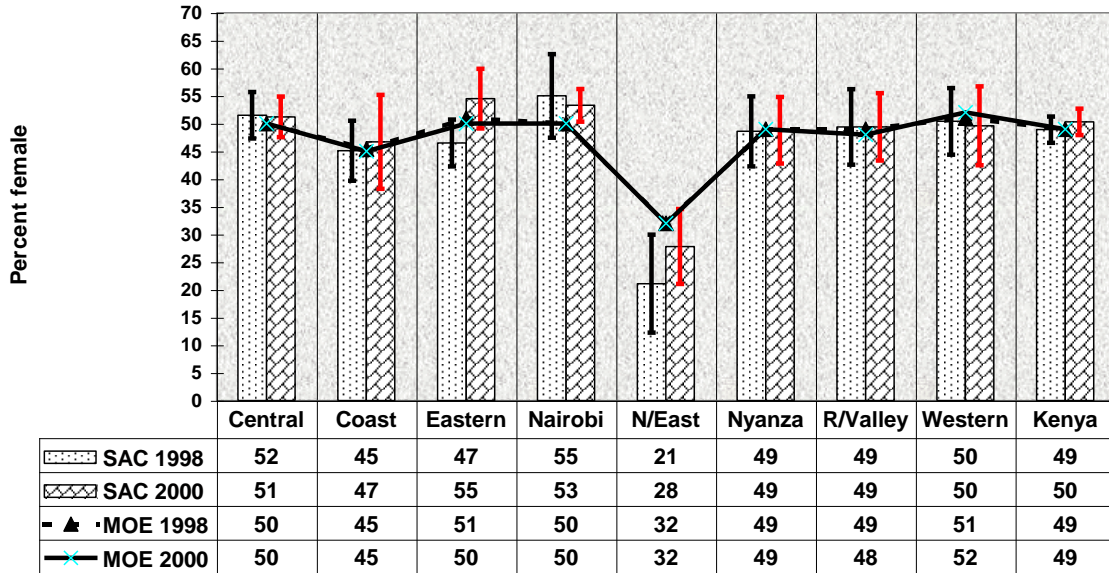


Figure 2: MOE data on Gross enrolment rates by Sex, Eastern Province, 2003

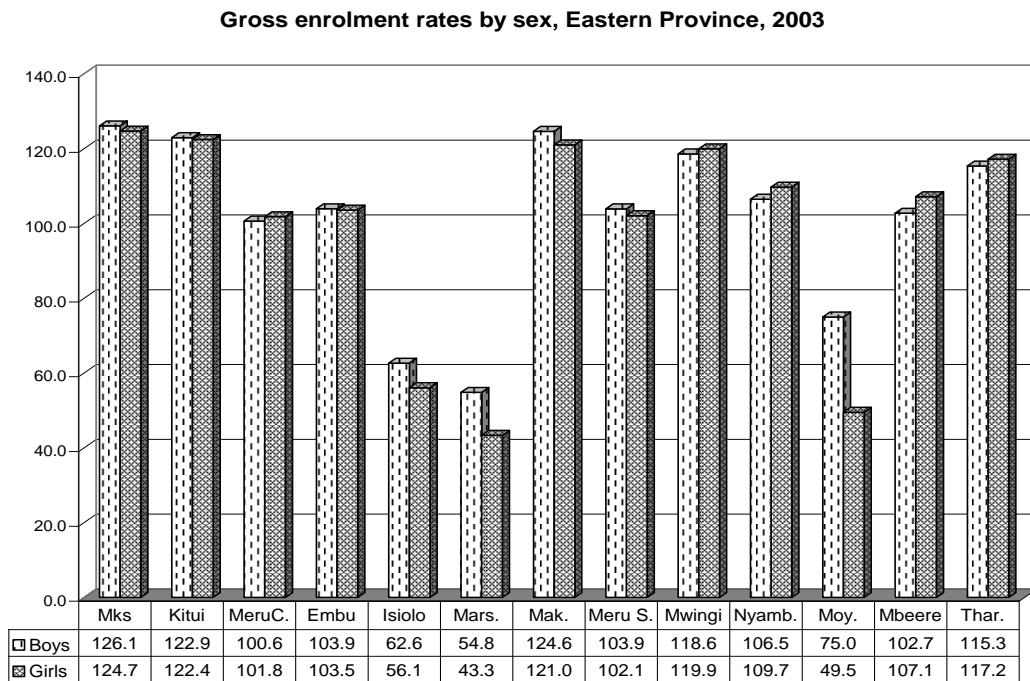


Table 1: Cross-tabulation of father's and mother's level of education

	Mother's education							
		no school	some primary	all primary	some secondary	all secondary	some post-sec and plus	All mothers
Father's education	no school	72	20	5	3	0	0	100
	some primary	18	54	20	5	1	1	100
	all primary	8	24	51	9	7	2	100
	some secondary	5	20	27	30	14	5	100
	all secondary	1	9	19	24	40	7	100
	some post-sec and plus	3	10	10	11	23	44	100
	all fathers	11	21	22	14	18	13	100

Table 2: Home assistance 'most of the time' with school work

Region	SACMEQ I *				SACMEQ II *							
	Ensure homework done		Help with the homework		Look at school work done		Ensure homework done		Help with the homework		Look at school work done	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Central	44.3	5.09	23.5	2.67	33.9	4.00	47.8	4.43	29.4	2.85	40.1	3.63
Coast	35.8	5.22	16.2	3.06	35.4	4.98	38.8	5.54	18.4	4.28	34.2	5.11
Eastern	31.6	3.40	21.5	2.34	29.6	3.81	35.5	5.56	23.5	4.02	31.3	4.44
Nairobi	69.1	3.40	27.7	2.44	48.2	3.56	66.9	3.68	38.1	3.16	56.1	3.68
North Eastern	24.5	4.61	15.5	2.01	29.8	4.42	32.8	6.68	17.3	3.86	32.2	6.70
Nyanza	35.0	6.01	17.4	3.28	32.6	3.90	17.6	3.82	14.5	3.05	26.7	4.76
Rift Valley	29.0	5.23	15.1	3.01	33.9	4.40	33.8	3.99	22.7	3.46	38.4	3.98
Western	32.2	4.24	22.7	3.07	32.8	4.40	29.6	3.21	23.1	2.97	34.1	3.29
Kenya	35.1	2.08	19.6	1.23	33.1	1.70	34.5	1.81	22.8	1.40	35.1	1.71

Note: The asterisk means that it is not possible to make a direct comparison between SACMEQ I and SACMEQ II variables, due to differences in the phrasing of the questions.

Table 3: Percentages and sampling errors of parents meeting teachers each year (SACMEQ II)

Region	Parents meet reading teacher		Parents meet mathematics teacher	
	%	SE	%	SE
Central	44.7	6.59	42.4	6.79
Coast	45.2	5.39	44.5	7.03
Eastern	63.3	5.71	57.9	5.87
Nairobi	68.6	5.18	68.9	5.69
North Eastern	22.9	5.56	27.4	5.56
Nyanza	47.2	4.95	48.9	4.99
Rift Valley	43.7	6.40	36.9	5.68
Western	52.8	4.54	53.3	4.73
<i>Kenya</i>	49.7	2.47	47.3	2.46

Table 4: Percentages, mean, and sampling errors for days absent and repetition (SACMEQ I and II)

Region	SACMEQ I				SACMEQ II			
	Days absent		Repetition		Days absent		Repetition	
	Mean	SE	Mean	SE	%	SE	%	SE
Central	1.9	0.21	68.5	3.61	1.5	0.22	63.3	3.80
Coast	2.3	0.45	65.4	3.61	1.9	0.33	54.1	5.48
Eastern	2.2	0.20	72.2	3.77	1.6	0.22	68.5	4.67
Nairobi	0.9	0.12	32.3	3.96	1.4	0.21	35.3	3.46
N/Eastern	1.5	0.28	21.1	2.96	1.6	0.23	24.2	4.51
Nyanza	1.7	0.17	74.9	2.92	2.0	0.25	67.7	3.45
Rift Valley	2.1	0.21	65.7	5.16	2.5	0.26	64.0	4.10
Western	2.5	0.37	73.3	3.21	2.3	0.21	68.3	3.79
	2.0	0.10	68.8	1.68	2.0	0.10	64.1	1.67

Figure 3: MOE Primary School Repetition Rates by Province, 1998 and 2000

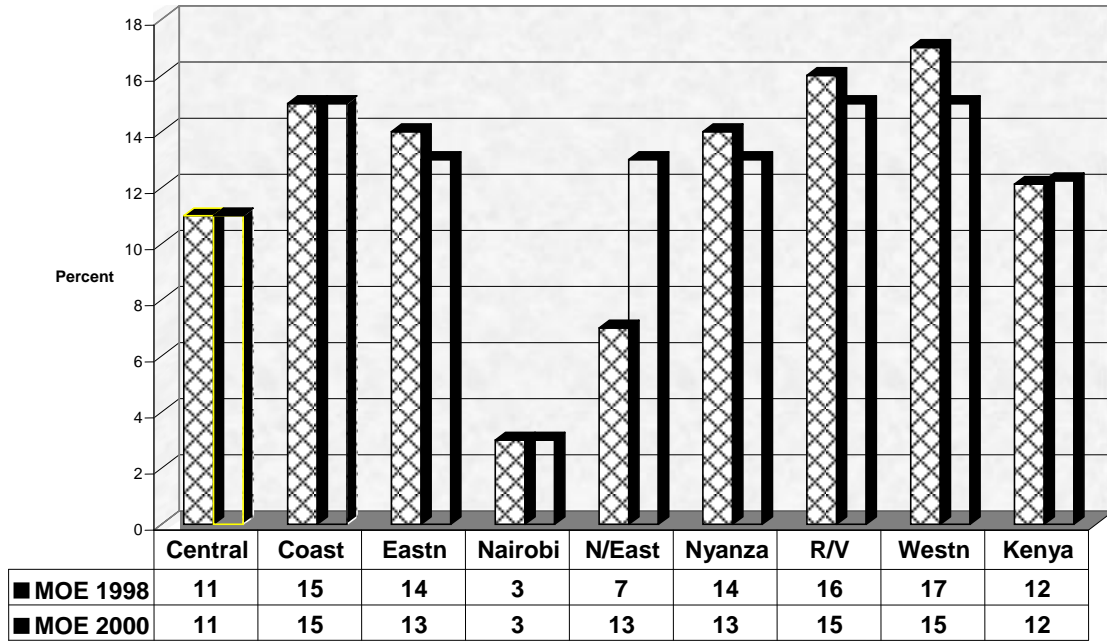


Table 5: Percentages and sampling errors for the frequency of homework given on most days (SACMEQ I and SACMEQ II)

Region	SACMEQ I		SACMEQ II			
	Homework on any subject		Reading homework		Mathematics homework	
	%	SE	%	SE	%	SE
Central	77.9	3.49	65.4	5.42	70.7	5.22
Coast	56.6	5.93	56.9	8.10	55.6	9.07
Eastern	60.0	5.59	74.1	6.22	82.7	4.81
Nairobi	89.0	2.65	72.8	4.66	87.5	2.73
North Eastern	50.8	10.60	60.0	12.29	82.8	7.48
Nyanza	51.9	5.75	64.3	7.39	68.7	6.30
Rift Valley	52.1	7.03	61.1	3.31	61.2	3.19
Western	40.9	3.77	59.7	4.27	61.0	4.51
<i>Kenya</i>	57.6	2.38	64.6	2.24	68.6	2.03

Table 6: Percentages and sampling errors for pupils having own reading textbook (SACMEQ I and SACMEQ II)

Region	SACMEQ I		SACMEQ II			
	Own reading textbook		Own reading textbook		Own mathematics textbook	
	%	SE	%	SE	%	SE
Central	23.9	4.33	25.2	5.44	23.4	5.50
Coast	23.8	5.44	23.6	6.19	18.3	5.20
Eastern	21.0	5.51	35.0	8.25	32.4	8.40
Nairobi	57.1	5.92	43.7	6.05	44.1	6.49
North Eastern	22.5	4.48	15.1	6.76	7.5	3.53
Nyanza	26.3	5.12	29.8	8.13	22.8	6.77
Rift Valley	27.2	5.63	24.5	5.00	21.2	4.72
Western	15.4	4.29	16.6	3.48	15.0	3.11
<i>Kenya</i>	24.3	2.14	26.8	2.63	23.4	2.48

Table 7: Percentages and sampling errors for pupils having sitting and writing places (SACMEQ I and SACMEQ II)

Province	SACMEQ I				SACMEQ II			
	% having sitting place		% having writing place		% having sitting place		% having writing place	
	%	SE	%	SE	%	SE	%	SE
Central	99.2	0.48	79.1	5.85	98.6	0.74	94.9	1.92
Coast	100.0	0.00	91.4	3.18	99.6	0.28	94.4	4.18
Eastern	98.7	0.60	82.5	4.41	100.0	0.00	98.6	0.81
Nairobi	100.0	0.00	84.6	7.75	100.0	0.00	98.4	0.67
North Eastern	86.2	11.33	59.3	12.99	98.4	0.73	97.0	1.33
Nyanza	100.0	0.00	89.5	2.72	100.0	0.00	92.9	2.87
Rift Valley	99.7	0.21	91.0	1.93	97.8	0.69	95.1	1.40
Western	99.6	0.37	90.1	2.48	99.8	0.23	98.7	1.15
<i>Kenya</i>	99.4	0.17	86.6	1.52	99.2	0.21	95.8	0.77

Table 8: Equity of material resource allocation as assessed by (a) variation among schools within regions, and (b) variation among provinces (SACMEQ II)

Material resources	Variation among schools within provinces								Variation among provinces (rho x 100)
	1	2	3	4	5	6	7	8	
Classroom furniture index by reading teacher	84.0	124.5	81.6	32.7	65.1	87.4	97.0	84.9	26.4
Classroom furniture index by mathematics teacher	88.2	127.4	70.7	31.6	58.7	89.3	94.6	74.3	31.9
Toilets per pupil	14.1	107.2	56.5	27.5	274.6	32.3	32.9	48.1	17.7
Classroom library by reading teacher	91.8	98.1	103.1	106.6	101.1	105.0	96.1	103.4	0.0
Classroom library by mathematics teacher	88.8	101.7	103.9	99.1	106.1	84.5	97.2	106.6	3.5
Classroom space per pupil	171.9	147.5	24.7	35.8	66.5	147.4	28.1	36.1	0.0
Reading teacher housing quality	87.5	91.5	87.4	95.0	93.3	106.9	104.9	109.1	4.0
Mathematics teacher housing quality	97.5	91.3	100.3	101.8	92.1	105.5	101.4	106.0	0.0
School resources index	92.5	98.2	68.4	52.3	91.4	74.1	88.8	49.2	41.5

Note: 1=Coast, 2= Central, 3= Eastern, 4= Nairobi, 5= Rift Valley, 6= Western, 7= Nyanza, 8= North Eastern

Table 9: Percentages and sampling errors for the availability of education resource centres for teachers (SACMEQ II)

Province	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	17.9	8.44	34.8	9.83	47.3	10.56	17.1	8.08	31.3	9.12	51.7	10.11
Coast	7.0	6.99	27.5	10.26	65.5	11.30	6.9	6.89	24.1	8.71	69.1	9.85
Eastern	12.2	7.03	32.9	10.55	54.9	10.96	11.1	6.41	27.4	9.23	61.5	9.87
Nairobi	0.0	0,00	47.0	12.67	53.0	12.67	0.0	0,00	39.8	10.50	60.2	10.50
North Eastern	17.4	11.93	25.9	11.55	56.6	14.16	17.4	11.93	37.1	12.91	45.5	14.06
Nyanza	1.8	1.82	7.7	5.35	90.5	5.52	0.0	0,00	25.8	10.19	74.2	10.19
Rift Valley	3.4	3.45	35.3	9.73	61.2	9.93	6.5	4.53	23.3	8.15	70.2	8.74
Western	6.8	4.84	40.9	10.25	52.3	10.55	6.8	4.84	33.2	9.56	60.0	9.99
Kenya	7.8	2.23	30.4	3.87	61.8	4.03	8.1	2.29	27.9	3.73	64.1	3.96

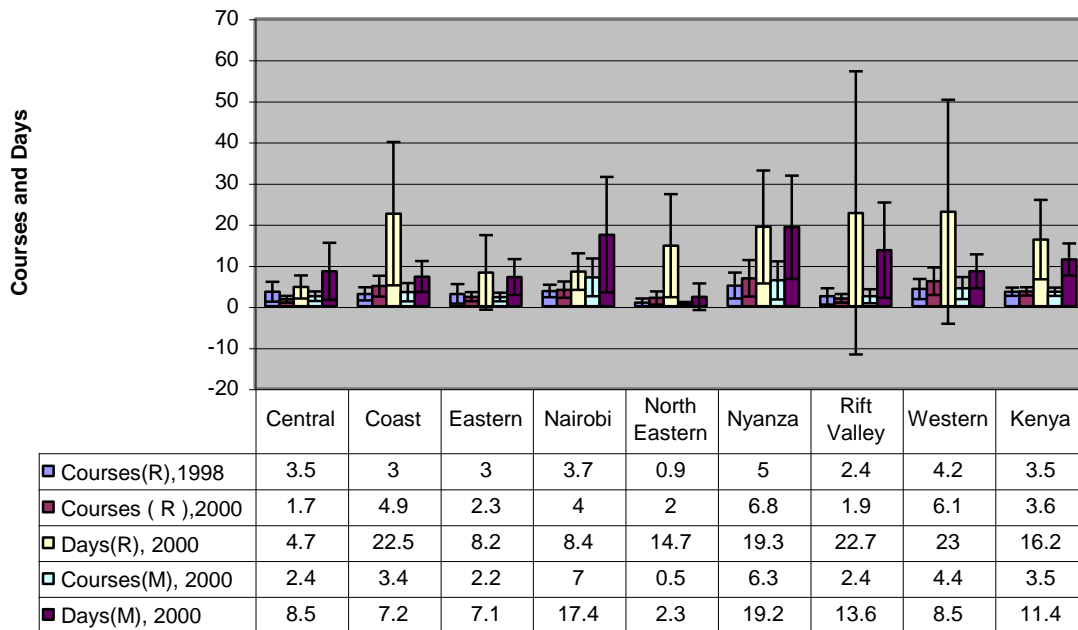


Figure 4: Means and sampling errors for teacher inservice courses and days attended in the last three years (SACMEQ I and SACMEQ II)

Figure 5: Pupil performance in Reading and Maths, 2000

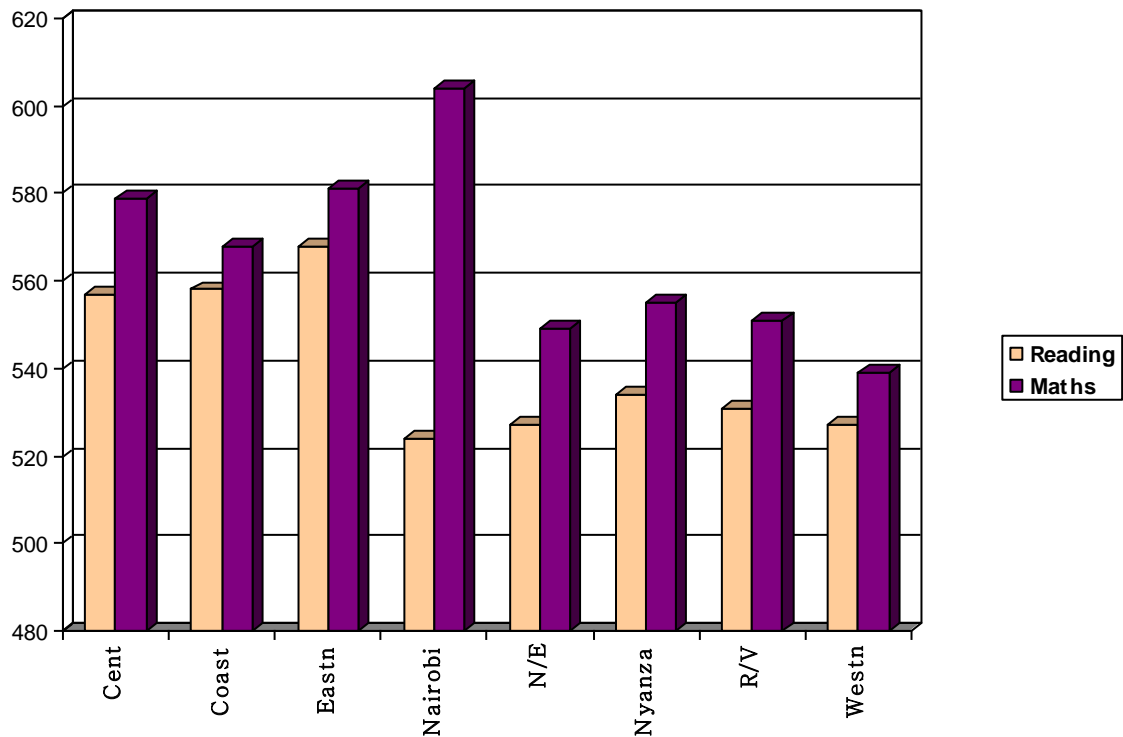


Figure 6: Teachers' performance in Reading & Maths, 2000

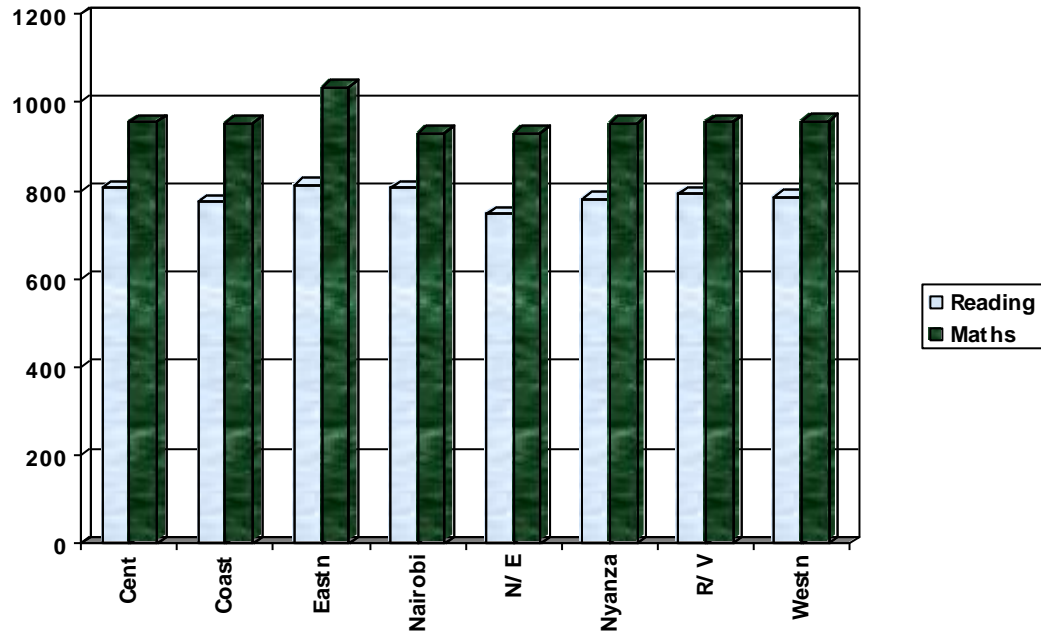


Figure 7: Pupil performance in Reading & Maths by Gender, 2000

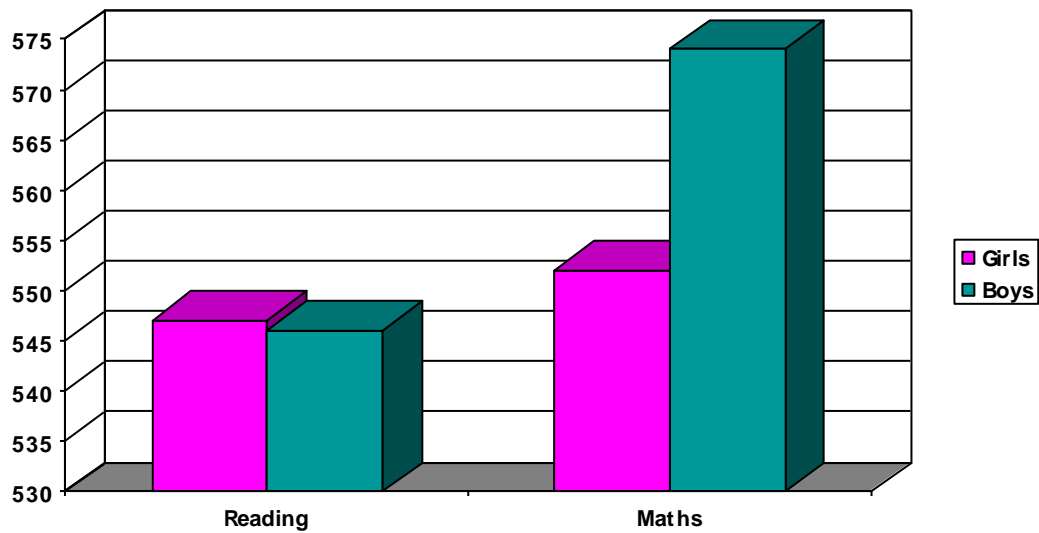
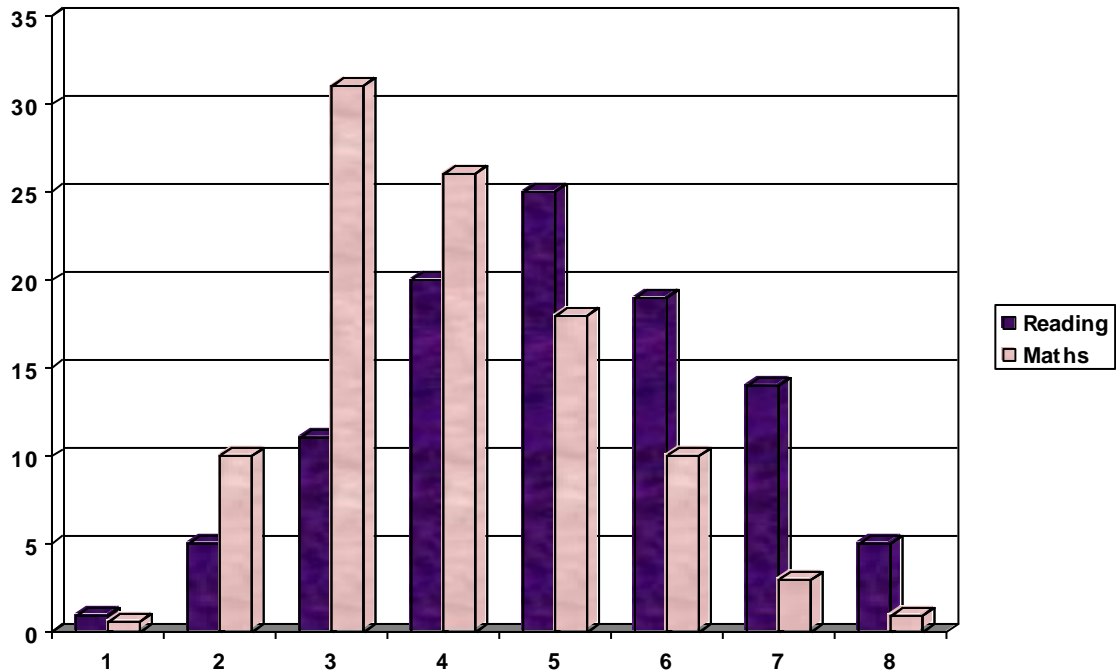


Figure 8: % of pupils reaching different competency levels in Reading & Maths, 2000



Eight levels of English Competencies

Level 1: Pre Reading. Skills - Matches words and pictures involving concrete concepts and everyday objects. Follows short simple written instructions.

Level 2: Emergent Reading. Skills - 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 on.

Level 3: Basic Reading. Skills - Interprets meaning (by matching words and phrases, completing a sentence, or matching adjacent words) in a short and simple text by reading on or reading back.

Level 4: Reading for Meaning. Skills - Reads on or reads back in order to link and interpret information located in various parts of the text.

Level 5: Interpretive Reading. Skills - Reads on and reads back 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 contextualizes meaning.

Level 6: Inferential Reading. Skills - Reads on and reads back through longer texts (narrative, document or expository) in order to combine information from various parts of the text so as to infer the writer’s purpose.

Level 7: Analytical Reading. Skills - Locates information in longer texts (narrative, document or expository) by reading on and reading back 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. Skills - Locates information in a longer texts (narrative, document or expository) by reading on and reading back 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).

Eight levels of Mathematics Competencies

Level 1: Pre Numeracy. Skills - Applies single step addition or subtraction operations. Recognizes simple shapes. Matches numbers and pictures. Counts in whole numbers.

Level 2: Emergent Numeracy. Skills - 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. Skills - 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. Skills - 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. Skills - 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 measurement 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. Skills - 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: Concrete Problem Solving. Skills - Extracts and converts (for example, with respect to measurement units) information from tables, charts, visual and symbolic presentations in order to identify, and then solves multi-step problems.

Level 8: Abstract Problem Solving. Skills - Identifies the nature of an unstated mathematical problem embedded within verbal or graphic information, and then translate this into symbolic, algebraic, or equation form in order to solve the problem.