ASSESSMENT FOR THE 21st CENTURY

**Impact of School Management factors on Academic
Achievement of Primary School Pupils in Kenya**

**Paper presented during the 36th IAEA Annual
Conference in Bangkok, Thailand
by**

Paul M. Wasanga, Ambia G. Noor and Mwai Nyaga
Kenya National Examinations Council
P O Box 73598-00200, Nairobi, Kenya
KNEC Email: ceo@knec.ac.ke

Abstract

Since the introduction of Free Primary Education in the year 2003 there has been a steady growth in enrolment in primary schools in Kenya. This in turn has raised concerns about the quality of education especially with respect to equity, access, relevance, and efficiency of primary education. This study sought to investigate school management factors that are likely to impact on achievement, pupil achievement in Numeracy and Literacy tests was used as an indicator of quality.

The study utilized a stratified random sample of 328 schools from 156 districts in Kenya's 8 provinces. The schools' head teachers were selected purposefully while pupils were sampled at random. Data was collected using questionnaires and an observation schedule and two standardized achievement tests. While the study outcome showed that the education system was moving in the right pace and direction toward the attainment of the Education for All (EFA) goals, some deficiencies in achievement test scores, learning facilities, and human resource factors were observed. From these findings, recommendations on ways of improve quality of primary education in Kenya were formulated.

1.0   **BACKGROUND**

Developed and developing countries alike understand that providing basic education for all children is essential not only to their own economic growth and social stability but to the functioning of nations. Over the past decade, a concentrated global effort has been made to increase the number of children in school. In 1990, the world conference in Jomtien Thailand, urged all nations of the world to adopt policies that would ensure universal basic education by year 2000.

Since Jomtien, considerable progress has been made in expanding the capacity of primary school systems in all regions of the world. Primary education in some developing countries has expanded to the extent that it reaches nearly all school-age children, and many of these countries have made significant efforts to overcome the gender gap in access to primary school.

In Kenya, the introduction of universal (free) primary education programme in public schools in January 2003 by the Government has raised total primary school enrolment from 5.99 million to about 8.5 million children which is a tremendous improvement so far (Economic Survey, 2009).While giving all children the opportunity to attend school is obviously an important priority, it is but the first step towards the goal of 'Education for All'. Once pupils find seats in a classroom, they need quality instruction; otherwise there will be little motivation to persist in school. Pupils need to be taught skills that are applicable to the life after school so that they develop problem-solving skills instead of memorizing information for the sake of passing examinations. In affirming the goal of universal basic education, participants in the Jomtien conference emphasized that reform efforts must focus on 'actual learning acquisition and outcomes rather than exclusively upon enrolment'. To this end, participants urged countries to set specific qualitative targets. Learning achievement, they suggested, should be improved to the point that 'an agreed percentage of an appropriate age cohort – for example, 80 per cent of 14-year-olds – attains or surpasses a defined level of necessary academic achievement.

In order to discuss seriously about education quality, it is important to be able to define it and measure it. Countries seeking to affirm the right of all children to a basic education need reliable means of describing the knowledge and skills that comprise such an education. They require the technical means and the organizational capacity to measure students' achievement against these standards and to evaluate how well school systems are carrying out their own responsibilities.

They need expertise in translating assessment data into new instructional and governing policies that will increase the quality of teaching and learning. Craig (2009) gives five major broad lessons on what kinds of knowledge and skills will best benefit students in the 21st Century. These include:

An education that will give a great advantage to the student for an opportunity to support a family or secure a middle-class lifestyle such as an essential post secondary education or technical training. The need for traditional knowledge and skills in school subjects like math, language arts, and science is not being "displaced" by a new set of skills; in fact, students who take more advanced math courses and master higher math skills, for example, will have a distinct advantage over their peers. Students better learn how to *apply* what they learn in those subjects to deal with real world challenges, rather than simply "reproduce" the information on tests for academic excellence.

Students who develop an even broader set of in-demand competencies—the ability to think critically about information, solve novel problems, communicate and collaborate, create new products and processes, and adapt to change— will be at an even greater advantage in work and life. Applied skills and competencies can best be taught in the context of the academic curriculum, not as a replacement for it or "add on" to it; in fact, cognitive research suggests that such competencies are highly dependent on deep content knowledge.

Satisfactory achievement of the basic learner achievement competencies/skills throughout the formative years of learning of a pupil in any education cycle will ensure excellence in a pupil's academic achievement with all the other variables being as expected. The major determinants of academic achievement include School Management Factors. Teachers must therefore create a classroom environment and organize activities in which students actively participate in their learning.

2.0   THE GROWING INTEREST IN ASSESSMENT

In an education system, instruction is incomplete without assessment. Assessment in an educational context will mean the process of observing learning; describing, collecting, recording scoring and interpreting information about a student's learning. Whether assessment is conducted using the formative assessment methods as an integral part of the instructional programme or summative (the end of the education cycle) for the award of a certificate, the primary purpose of any form of assessment is to measure learning attainment levels against predetermined competences. In Kenya, the influence of assessment on the teaching/learning process is tremendous. It is generally accepted that assessment has a direct impact on the teaching/learning process. In most cases, especially in regard to national assessment, teachers will teach what is likely to be examined and students will study what they think will appear in the examinations. This therefore raised concerns as to whether the pupils were acquiring the competencies required by the syllabus at the formative years of schooling.

In Kenya, there was an urgent need to carry out active research to provide a baseline against which changes in educational standards can be measured, to identify specific strengths and weaknesses in learner achievement so that curriculum and teaching interventions may be better targeted and to provide reliable and valid information for

policy making process. Subsequently there has been an increased demand not only for accountability but also for evidence of change and growth in the quality of the teaching and learning processes and one of the ways of satisfying this demand is to conduct assessments of the education system.

The Ministry of Education established the National Assessment Centre in 2006 which was housed at the Kenya National Examinations Council to harmonise all assessment initiatives and provide a comprehensive analysis of educational outcomes showing the levels of, and discrepancies in learning achievements, and the significance of these, on the process of education at the end of lower primary. The National Assessment is to assess the performance of the school system rather than the individual learners. The centre undertook a study in Class 3 which marks the end of lower primary in the Primary Education Cycle as the cohort for the first national assessment.

3.0   CONCEPTUAL FRAMEWORK OF THE STUDY
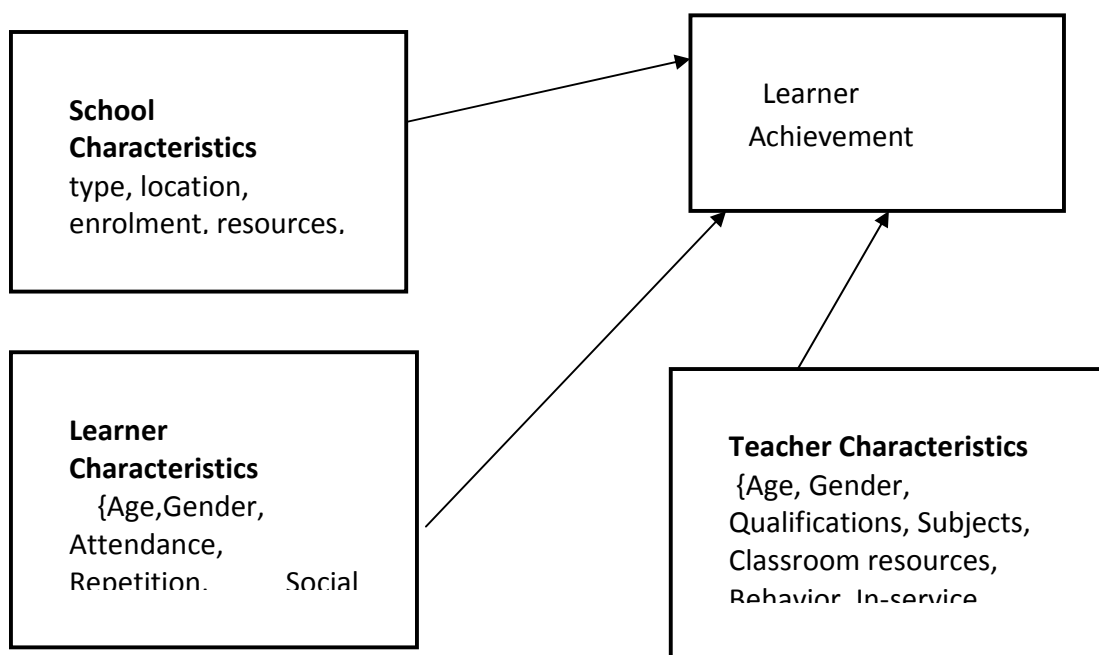
Five categories of variables were hypothesized to directly influence achievement at the school-level. These were *teacher characteristics* for example sex, education and professional qualifications, and *classroom environment* which are class size, teaching aids, textbooks and homework given. Others were *school head characteristics* namely sex, education level and experience, *school environment* that include school resources, type of school, pupils' behaviour problems and school homework policy, and *regional environment* that is the province where the school is located. Two categories of variables were hypothesized to directly influence achievement at the pupil-level - namely pupil individual characteristics for instance sex and age and home environment that include home possessions and number of siblings.

4.0   RESEARCH DESIGN

This study adopted a survey research design because it allows for data collection from a wide geographical coverage, and a large sample as required by this study. In addition, the survey design entails the study situations in their natural settings without manipulation of variables.

5.0   TARGET POPULATION

The target population of this study included the following:

> All pupils who had completed class 3 in primary schools.
> All class 3 Literacy and Numeracy teachers in primary schools.
> All head teachers of sampled schools.
> All class 3 parents.

6.0   SAMPLE SIZE AND SAMPLING PROCEDURES

6.1   Selection of Schools

At the time of the study there were 156 districts in Kenya's 8 provinces. It was from these districts that a total of 328 schools with more than 15 pupils were sampled using the Sample Design Manager- SAMDEM (Sylla, k. et al2003) which is a specialized soft ware system that enables generation of a range of sampling options, which satisfy the statistical accuracy. In addition, the software helped to address issues of variation in sample size when schools were selected with equal probability by employing the Probability Proportional to Size (PPS) Sampling**.**

6.2   Selection of Pupils within Schools

A stratified random sample of 25 pupils in each of the sampled schools was selected to participate in the study. The stratified sample was generated to ensure proportional representation of boys and girls. This was done using the Pupil Information Form and Class Registers that was compiled using the appropriate set of selection numbers in the sampling frame generated through the SAMDEM to identify the 25 pupils. A total of 7,931 pupils were sampled with boys and girls accounting for 52% and 48% respectively.

6.3   Sampling of Teachers and Head teachers

Two or three teachers of the mathematics and English teachers of class 3 were purposively sampled in each school culminating to a total of 513 teachers who participated in this study. In cases where the same teacher taught both subjects in the same class, the teacher was selected. All the 328 Head teachers of the sampled schools were selected by virtue of being in charge of the study schools.

7.0   METHODOLOGY AND INSTRUMENTS

7.1   Data Collection instruments

A team of researchers and education experts were constituted to construct the 6 research instruments which included the following:

7.1.1   Pupil Questionnaire

7.1.2   Teacher Questionnaire

7.1.3   Head teacher Questionnaire

7.1.4   School Observation Schedule

7.1.5   Literacy Test

7.1.6   Numeracy Test

The study also utilized several administrative documents to facilitate effective sampling and conducting of fieldwork. These included the Pupil Information Sheet, School Information Sheet, Data Collectors Manual and Guidelines for Report Writing. The development of the instruments was based on identified contextual factors relating to pupil learning, and which are known to influence achievement in literacy and numeracy competencies. These factors included crucial and manipulable variables such as time allocated to curriculum areas, syllabus content coverage and the availability of textbooks. Other factors included those relating to policy on the allocation of human and financial resources, training needs and other relevant strategic interventions.

7.2   Pre-testing and piloting of instruments

The developed research instruments were pre-tested in 5 schools in Nairobi with an aim of validating the instruments and the data collection procedures. The curriculum experts, test moderators and research specialists used the pre-test reports to refine the research instruments as well as to develop the manual for data collection. Thereafter a pilot study was conducted in 5 districts involving 25 schools, where further verification and audit of the assessment procedure was carried out. Using the Rasch Analysis, an item analysis and reliability check was carried out after the main s**tudy.**

8.0   MAIN STUDY DATA COLLECTION PROCESS

8.1   Training of the data collection personnel

A team of 24 Trainers facilitated a 5-day intensive training to 245 data collectors on the techniques of data collection using the developed research instruments.

The training also covered the modalities of visiting the sampled schools, engaging the administrators in explaining objectives of the exercise, in addition to ways of addressing logistical and administrative issues. The training emphasized on the need to ensure that data collection was conducted according to specified procedures to ensure that similar conditions were observed for questionnaire completion and testing for pupils, teachers and school heads. This was to enhance the validity of the data.

8.2   Data collection process

Under the supervision of senior researchers, the trained data collectors (research assistants) were assigned specific districts to collect data from the sampled schools**.**

8.3   Data capture and Analysis

The Census and Survey Processing System (CS-PRO Version 3.3) was identified as the computer programme for data capture and management of this study. The software has been extensively used to capture and analyze the survey data because it has in-built controls and procedures that enable accurate data capture. It enables double entry, conversion from and to different programmes, and also performs tabulations.

The data from CSPRO was thereafter transferred to Statistical Package for Social Sciences (SPSS Version 12) for data cleaning, analysis and tabulation. The statistical analysis produced results in terms of frequencies and means which were described in the form of tables, bar-graphs and pie-charts. In the analysis of pupils' competency levels, the Rasch analysis was used to chart the item difficulty and pupil abilities. In determining the relative contribution of the predictor variables to achievement, a multilevel analysis of the data was carried out using the Hierarchical Linear Modeling (HLM) Version 6 software. This enabled analysis of the relative contribution of factors at the personal relative contribution of factors at the personal, home, class and school levels.

9.0   FINDINGS OF THE STUDY IN RELATION TO IMPACT OF SCHOOL MANAGEMENT FACTORS   ON ACADEMIC ACHIEVEMENT

The National Assessment of Monitoring Learner Achievement (NASMLA) was undertaken to find out how pupils were achieving at various levels of the primary education before they sat for the Kenya Certificate of Primary Education (KCPE) examination which comes at the end of the cycle. It is imperative that the acquisition of these competencies at the formative years of schooling affect the performance of the pupil in the final examinations.

According to UNESCO (2009), professional training in school management and leadership ought to enhance skill and performance capabilities, as well as confidence among the head teachers while conducting their duties within schools. The study looked at the head teacher characteristics and the infrastructural and working resource conditions of the sampled schools with a key focus on the head teacher's educational background, professional training and continuous capacity development. It also analyzed the staffing and pupil details in view of determining how they affect learner achievement.

9.1   Head teacher and school characteristics

According to UNESCO (2009), professional training in school management and leadership ought to enhance skill and performance capabilities, as well as confidence among the head teachers while conducting their duties within schools. It is for this reason that the Kenya Education Sector Support Programme 1 (KESSP 1) made enhancement of capacities for head teachers a running theme for the ministry of education (Republic of Kenya, 2005b). This undertaking is critical for Kenya where many head teachers have to deal with challenges of inadequate resources in terms of infrastructure, equipment, Teaching and Learning Materials (TLMs), and not in at least, high teacher-pupil ratios (TPRs).

9.2   Gender of head teachers and age

The study covered a total of 328 head teachers of whom 280 (85.4%) were male while 48 (14.6%) were female. This is a big disparity in terms of gender which is against the 70:30 ratio stipulated by the Kenyan government. The survey sought to establish the age distribution of head teachers in the sampled schools. It was established that slightly more than half of the head teachers were aged between 41-50 years, while those over 50 years comprised about one fifth of the sample. Considering that almost two thirds of Kenyans are below the age of 30 (KNBS, 2009) it is worth noting that just less than 3% of head teachers in the schools sampled belongs to this age group.

9.3   Academic and professional qualifications of head teachers

The academic and professional qualifications of head teachers are expected to influence quality of service delivery at the school level. The knowledge that head teachers affect teaching and learning practices, the leadership they provide for the school and community, and the ongoing support to teachers are important in implementing successful school reforms (Mulkeen, 2005).The study established the following:

The highest proportion of head teachers (38.7%) were P1.
ATS/Diploma head teachers comprised of 26.2% while,
Degree holders comprised of only 7%.

The study therefore, confirmed that the teachers in the sampled schools had the appropriate qualification and training to impart the required skills and achievement levels.

9.4 Years of experience in school management

The number of years in school headship is assumed to be linked with the experience and skill in school management matters. While a third of head teachers were in headship positions for over ten years, less than 10% of head teachers had served in the sample school for over 10 years. 30 % of the head teachers had served in their schools for less than one year. Approximately two thirds majority of head teachers had stayed in the sample schools in leadership positions for up to 10 years.

10.0 TEACHER AND CLASSROOM CHARACTERISTICS

Teachers are the front-line service providers in education. Delivery of quality education is hence, critically dependent on having a sufficient supply of appropriately trained and motivated teachers. How teachers are deployed also impacts on equity and learning outcomes. Excellent teachers do more than teach curriculum content. They inspire and enthuse their pupils. They serve as role models in terms of attitudes and social relationships.

If schools, colleges, universities and non-formal learning programmes are to achieve their educational aims, there must be effective systems to select, train, deploy, manage and support teachers, and to help them develop their professional skills over a working lifetime. The Education for All targets adopted in Dakar in 2000 recognized that enrolment in school does not in itself ensure good education. There must be adequate quality of provision for effective learning to occur. This requires taking measures including increase in teacher employment and improvement of quality and status of the teaching force.

10.1 Age of teachers

The association between the age profile of teachers and learning is indirect. The age profile of the teaching force reflects not only on the supply of teachers and the rate of renewal of the teaching force, but also provides a proxy for teaching experience. For countries with a very young teaching force, questions related to experience, staff turnover and mentorship arise.

This is different for countries with large numbers of teachers in their forties and fifties where there are implications of future teacher shortages, and other questions of how to adapt teacher qualifications to changes in Information and Communication Technology (ICT). In Kenya, like any other part of the world, the teachers' age profile is important for purposes of planning on recruitment and succession management in the teaching work force.

From the study it was established that the age of the majority of the teachers was between 30 and 50 years as follows:

Teachers aged 41-50 years were the majority (33.5%).
Those aged between 31-40 years (33.1%).
Teachers aged over 50 years accounted for 17.3%.
Those aged 30 years and below were 16%.

The age distribution reflects that half of the teachers were in their middle career life and therefore likely to have attained requisite experience in teaching class 3. The data on teacher availability and age distribution has policy implications that require appropriate interventions to enhance learning achievement. Issues relating to teacher recruitment are of great concern to Kenya and its development partners. In Kenya, only teachers who have left service through natural attrition are replaced by the government. However, additional teachers have been recruited in small numbers and have raised the teaching force to the current 245000.

In the Kenya Vision 2030, it is proposed that an additional 28,000 teachers be recruited under its flagship project by 2012 to address the shortage. The teacher shortage currently stands at 40,223 in primary schools. The recruitment policy guidelines require that only those who graduated earliest from teacher training colleges should be given priority during recruitment. This means that the recruited teachers may be older and may not stay very long in the service.

10.2 Qualification of teachers

The qualification required for entry into the teaching profession is often used as a proxy for the quality of educational inputs. Qualification requirements are also a key policy lever for governments to influence the quality of instructional delivery.

There must be adequate quality of provision for effective learning to occur. This requires measures to increase teacher supply and improve the quality and status of the teaching force. The quality of teachers is partly indicated by teacher academic and professional qualifications and adequate systems in place at all levels for teacher professional development.

In Kenya, professional qualifications for teachers are gained through pre- service and in-service teacher education programmes. However, studies of learning achievement among primary school pupils have often linked low achievement to weaknesses related to poor subject mastery by teachers (traced to weak general and pre-service education), limited teaching skills (traced to weak general and pre- and in-service training) ,and high absenteeism (traced to poor motivation and working conditions (Hanushek, 1994).

11.0   RECOMMENDATIONS OF THE STUDY

The study made recommendations for policy makers to put intervention measures in place with a link to specific findings. The recommendations include:

11.1   The teacher professional training had an impact on pupils, such that those who were taught literacy by teachers with higher professional qualifications performed better than those taught by teachers with low professional qualification. Therefore, teachers need to upgrade their professional training, as this may be one approach to improve pupils' academic achievement. There is need for assistance in the creation of structures and institutional arrangements that support and enhance the role of teachers as life long learners. Teachers need to improve their professional training as this iis one approach to improve pupils' learning achievement.

11.2   Staff balancing exercises should be continued with a focus on schools in order to alleviate shortages. More teachers need to be recruited to address existing shortages.

11.3   Teachers should be encouraged to acquire more relevant further education and training, while at the same time retaining them in the primary schools to implement their acquired knowledge and skills.

11.4   Teachers should also be sensitive to differentiated instruction of pupils' with special education needs, whether in special schools or in inclusive settings. They should also observe proper time management and effective planning for teaching and learning.

11.5   Governments should consider absorbing all trained teachers so as to ensure a smooth transition and adequate teacher succession in the coming years. Provisions of refresher or in-service courses for older teachers are other strategies that will enhance learner achievement and quality of education in general.

11.6   There should be equitable recruitment and distribution of teachers by gender to ensure that pupils' have role models to enhance learning in schools.

11.7   Head teachers should adhere to mechanisms of identifying orphans and children with special needs as well as means of providing support sourced from relevant institutions and individuals.

12.0   CONCLUSION

For a learner to have a competitive edge in the 21st Century, the teaching and learning processes must reflect the required attributes of the future workforce: independent thinkers, problem-solvers, innovative and proactive decision makers. This study is meant to supplement national examinations by providing a systematic framework of monitoring of learner achievement as learners progress through the school system.

Assessment forms one of the critical components of the triad that defines any educational enterprise: curriculum, instruction and assessment, and thus the assessment of learning outcomes play an important role in enhancing effectiveness of an education system, namely its improvement and sustainability. It is an integral part of the teaching and learning processes.

References

Craig D. Jarald, 2009 Defining a 21st century education
    (http://www.centreforpubliceducation.org/atf/cf%7B00a4f2eg-fsda-4421-aa25-
    3919co6b542b%TD/21ST%20CENTURY%5B1%5D.JERALD.PDF)

Hanushek, A (1994) Interpreting Recent Research on Schooling in Developing Countries
    Research Observer 10,(Aug) 227-46

Kenya National Bureau of Statistics (2009a) Kenya factbook and figures.

Sylla, K, Saito M, Ross, K.(2003)SAMDEM (Sample Design Manager Software).
    Paris: International Institute for Educational Planning.

Republic of Kenya, 2005b. Kenya Education sector support programme 2005 – 2010 Nairobi:
    Ministry of Education

Republic of Kenya (2009) Kenya Economic Survey, Ministry of State for Planning.

UNESCO 2009 EFA Global Monitoring Report: Overcoming Inequality: Why Governance matter
    Paris: Oxford University Press.