Breadth of Learning:

Assessment of the Breadth of Learning Opportunities In Public Secondary Schools In Kenya

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ASSESSMENT OF THE BREADTH OF LEARNING OPPORTUNITIES IN PUBLIC

SECONDARY SCHOOLS IN KENYA

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Abstract

The breadth of learning skills entails providing learners with values and skills to further their personal growth; enhance their critical and exploratory thinking and encourage them to innovate and to adapt to changes in an increasingly globalized environment, as well as individuals to function as responsible citizens (Kenyan Ministry of Education and Human Resources, Tertiary Education and Scientific Research, 2016). These skills rely not only on cognition, but also on the interdependencies of cognitive, social, and emotional characteristics. .Despite the major advances made in Kenya and other developing countries in the enrolment and retention of millions of children into school over the years, studies indicate that the gains of most developing countries, including Kenya's, have been uneven and learning levels remain unacceptably low (ASER 2014).

The purpose of this study was to assess the breadth of learning opportunities in public secondary schools in Kenya. The study was guided by four objectives which were:

- to explore the qualification of teachers in their teaching subjects in the public secondary schools;
- to establish the availability and adequacy of appropriate teaching and learning resources and facilities in public secondary schools;
- to examine the time spent in teaching, learning and addressing other students need vital for holistic development in the public secondary schools;
- to establish the professional support accorded to public secondary teachers in Kenya for the effective delivery of curriculum.

The pilot study employed descriptive survey research design; an approach to inquiry that employed both qualitative and quantitative procedures to yield relevant information to explore, describe and document aspects of a situation as it naturally occurs. The study targeted all the 47 counties and all public secondary schools. The sample was generated using probability (stratified

random) and non-probability (purposive) sampling approaches. Questionnaires were the main instrument for data collection, while face to face interviews were conducted with teacher and principals. The sample size for the study was 40 public secondary schools, 40 secondary school principals and 280 Heads of Department/secondary teachers across different regions of Kenya.

The findings of the project were manifold. On the one hand, teachers and principals in schools are mostly qualified to teach in schools at secondary level, but with regards to teachers teaching physical education, social and emotional as well as culture and arts domains were not qualified in those subjects and selection was based on interest, with less workload being more important than training. The study also finds that most schools have inadequate teaching and learning resources and facilities. On top of this, limited time is invested in the development of students' skills and to address students' needs, with teachers lacking adequate support or continuous professional development to address diverse student issues,.

The report recommends that the Kenyan government incorporates the teaching and learning of a wide range of skills into its national curriculum – skills that have become essential to tackle the challenges of today's dynamic world and that can transform learners to be mindful, creative, and collaborative;. Moreover, it encourages the allocation of enough time for the teaching of certain subjects, that will allow the development of a new range of skills and address students' needs. Finally, it recommends the formulation of policies that guide the teaching and learning of examinable as well as non-examinable subjects for the benefit of Kenyan learners.

LIST OF ABBREVIATIONS

B.Ed   Bachelor's Degree in Education

CUE   Centre for Universal Education

CPD   Continuous Professional Development

EI   Education International

HoDs   Heads of Department(s)

FPE   Free Primary Education

FSE   Free Secondary Education

KNUT   Kenya National Union of Teachers

LMTF   Learnin Matrix Task Force

M.E D   Masters Degree in Education

PhD   Doctorate Qualification

TSC   Teachers Service Commission

SDGs   Sustainable Development Goals

SMT   Science Mathematics Technology

P.E   Physical Education

WHO   World Health Organization

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The principals were asked the average class size in their schools, majority of the principals 52.5 percent had average class size of 51-60 learners, this was followed by 41-50 learners at 20 percent, 30-40 learners at 15 percent, 61-70 learners at 10 percent and only one school (2.5 percent) had 71-80 learners. Majority

CHAPTER ONE

Background of the Study

Education enriches people's understanding of themselves and of the world; it improves the quality of their lives and leads to broad social benefits to individuals and society. Kenya's Vision 2030 overall goal is to reduce illiteracy by increasing access to education, improving the transition rate from primary to secondary schools, and raising the quality and relevance of education. (Government of Kenya, 2011). Article 55 of the Kenya Constitution states that the state shall take measures, including affirmative action programs, to ensure that the youth access relevant education and training (RoK/ MOEST, 2014). Many governments have put in place measures to ensure that education reaches millions of children through enrolment and that these children are then retained in school over the years. In Kenya the government implemented free primary education (FPE) and free secondary education (FSE) in 2003 and 2008 respectively in an effort to achieve the Sustainable Development Goal 4.

However, recent studies across the globe indicate that learners are exiting school without acquiring relevant skills needed to thrive in the 21st century (CUE/EI, 2016). In addition the education gains in most developing countries including Kenya have been uneven and learning levels remain unacceptably low (ASER, 2014). In most countries, much of the concern of education has been the quantitative expansion of educational opportunities with little concentration on the qualitative improvement of the type of education imparted to the learners. The low quality education jeopardizes the future of millions of children and youth across high, medium and low income countries (UNESCO Institute for Statistics and the Center for Universal Education, 2013; Allison &Kate, 2013).

Education in Kenya is characterized mainly by content and knowledge accumulation with limited skills development, but evidence has shown that learning levels are more important than the years learners spend in schools. Learning levels are the key drive to many social and economic returns on investment in education, including employability, productivity and growth (Brookings Institution, 2011). Thus, the type of education imparted to learners holds the key to economic

development of any nation. Due to its significant contribution to economic development, more emphasis should be given to an education that can develop a range of skills, essential to tackle the challenges of our dynamic, rapidly growing world and transform learners to be mindful, empathetic, critical-thinking, creative, and collaborative.

Secondary school education in Kenya starts at the age of 14 and runs for four years. Upon completion, students can choose to go to university, college or pursue other vocational fields. Students who perform well in secondary school are admitted to universities and others join colleges, teacher training institutions, technical training schools, or the job market. Thus, the secondary education program is geared towards meeting the needs of both the students who terminate their education after secondary school and those who proceed to higher education. The objectives of the secondary school education in Kenya are to prepare students to make a positive contribution to the development of society, and to acquire necessary knowledge, skills and their country's cultural values, attitudes of self-respect, self-reliance, cooperation, adaptability, and a sense of purpose and self-discipline (UNESCO/IBE, 2010); and prepare and equip the youth with necessary expertise to enable them collectively and individually to play an effective role in the life of the nation, enabling them to engage in activities that enhance the quality of life, while ensuring that opportunities are provided for the full development of their individual talents and personality.

The Kenyan secondary curriculum includes subjects grouped into six learning areas:
- Languages: English, Kiswahili, Arabic, German and French.
- Sciences: Mathematics, Chemistry, Physics, Biology, Physical and biological sciences. Applied sciences: home science, agriculture, computer studies.
- Humanities: history, geography, Christian religious education, Islamic religious education, Hindu religious education, life skills education, business studies.
- Creative arts: music, art and design.
- Technical subjects: drawing and design, building construction, power and mechanics, metal work, aviation, woodwork, and electricity (UNESCO/IBE, 2010).

The languages, mathematics, humanities and sciences are compulsory in the first two levels of secondary education, while applied sciences, technical subjects and creative subjects are elective depending on individual schools and what they can offer in terms of learning resources and teachers. In form 3 and 4 only languages and mathematics are compulsory, however learners have to do at least two sciences, one or two from applied science, humanities and other learning areas provided by the school. Assessment of learning in many countries only targets the acquisition of literacy and numeracy skills, which are emphasized as the major goals of educational systems across the globe, and viewed as primary means to open doors for children to participate effectively in society. However with increasing complexity of technology and the rise of globalization content knowledge is no longer enough for learners to succeed. Learners thus need to be equipped with the breadth of skills required to adapt to societal change and thrive in the 21st century (CUE/EI, 2016).

Quality education should allow the young people to prosper in modern economies and societies that require a broader, more holistic framework of learning. In addition to reading and numeracy, children need to learn relevant transferable skills such as critical thinking, problem solving, civic values, mental health and well-being, as well as life skills. Twenty-first century skills such as communication and technological literacy are necessary to prepare children for the workforce and to be active, productive members of their communities.

Thus, education systems should offer opportunities for children and youth to master the skills and competencies in diverse areas. The Learning Metrics Task Force recommended the adoption of seven domains of learning that are essential to prepare children and youth for their future lives and livelihoods (LMTF, 2013). The domains go beyond literacy and numeracy to include domains such as social and emotional, physical well-being, and culture and the arts (Allison &Kate, 2013).

The seven breadth of learning domains

The breadth of learning skills entails providing learners with values and skills to further their personal growth; enhance their critical and exploratory thinking and encourage learners to

innovate and to adapt to changes in an increasingly globalized environment and function as responsible citizens. (Ministry of Education and Human Resources, Tertiary Education and Scientific Research, 2016; in Care and Anderson, 2016a). The breadth of learning domains was developed to be adaptable to country context and needs. In Kenya the domains were developed to cover all the areas and subjects in the Kenyan secondary education. The domains included Physical Wellbeing (P.E), Social and Emotional Wellbeing; Culture and Arts; Language and Literacy; Learning Approaches and Cognition; Numeracy and Mathematics and Science and Technology (see table 1) for the domains and respective subjects for the Secondary schools in Kenya.

Table 1.1: Breadth of learning Domains with Respective Subjects.

Breadth of learning Domains	Secondary Subjects Covered
Physical Well being	Physical Education(P.E)
Social and Emotional Well being	Life skills (including Health Education), Religious studies and Guidance and Counseling
Culture and Arts	Art, Music, Drama, Dance or other Cultural activities
Language and Literacy	Languages; English, Kiswahili or other languages.
Learning Approaches and Cognition	All academics and learning areas in schools
Numeracy and Mathematics	Mathematics
Science and Technology	Sciences: Chemistry, physics, biology or Technical subjects: Home science, woodwork, metal work, Business studies, Agriculture, Drawing and Design, computer studies.

The study aims to assess the appropriateness of the breadth of learning opportunities across the seven domains in public secondary schools in Kenya, and was guided by the following objectives;

1. To explore the qualification of teachers in their teaching subjects in the public secondary schools in Kenya.

2. To establish whether public secondary schools in Kenya have been equipped with adequate and appropriate teaching and learning resources and facilities.

3. To examine the time spent in teaching, learning and addressing other need of students' vital for holistic development in the public secondary schools in Kenya.

4. To establish the professional support accorded to public secondary teachers in Kenya for effective delivery of curriculum.

The Breadth of learning opportunities findings will inform national governments to examine and diagnose their education systems and target interventions that promote learning and develop key learners competencies in the different education levels.

By reviewing the strengths and challenges in the system from the school and class level, policies that provide broad opportunities can be fine-tuned, in order to suggest the most effective interventions and to create policies that schools can put into practice.

The findings will aid in the establishing of learning breadth of skills; and in assessing the appropriateness of the seven domains in Kenya and other African countries. This will aid the support of the government and other education actors to increase the breadth and depth of learning around the world.
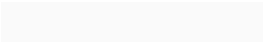
Operational Definition of Terms

National schools- These are boarding schools whose catchment is 100 per cent national. They are centers of education excellence established for purposes of stimulating education standards and fostering national unity and social cohesion.

Extra-county schools – These are boarding schools that are the second-tier national centers of education excellence. The schools complement national schools in promoting integration and benchmarking educational standards in their regions. .

County schools- these are boarding secondary schools in the county other than national and extra-county schools. They include some day schools in cities and major urban centers. Their catchment is the host county. Candidates who are not selected into national or extra-county schools are considered for placement the county schools.

Sub-county schools- these are basically day schools, all new boarding schools and boarding schools with day wings. They draw their students solely from the host sub-county.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This section provides a review of scholarly articles which have formed the basis for the establishment of the gaps and some of the themes for this study. The key themes were derived from the key research questions of this study which included the assessment of the training given to teachers, time spent on various activities across the learning domains, the resources available, and the continuous professional development offered and the impact on students.

Qualification of secondary school teachers in their teaching subjects and continuous Professional development

According to Usman (2012), a qualified teacher can be defined as one who holds a teaching certificate and/or is licensed by the state, owns at least a bachelor's degree from a four-year institution and is well qualified in his/her area of specialization. However, a qualified teacher in Kenya has degree or diploma in education with two teaching subject. The B.Ed. programme is offered as a professional course, with any two teaching subjects. Teacher education programmes are planned to cater for all levels of education and training, including special education.

Pakistan Ministry of Education describes a qualified teacher as one who possesses knowledge of: the subject matter, human growth and development, ethical values, instructional planning and strategies, assessment, learning environment, communication and advocacy, collaboration and partnership, continuous professional development, code of conduct and skillful use of information communication technologies (Musau and Abere,2014). Hence there is need to looks beyond what is in the certificate. Teacher education should develop communication skills; develop professional attitudes and values; equip the teacher with knowledge and skills to enable him/her to identify educational needs and to develop strategies for effective training and enable learners to adapt to the environment and society.

Many teachers in sub- Saharan Africa, including Kenya, are not competent in ICT thus can't apply information computer technologies in teaching due to low computer literacy. Failure to expose learners to hands- on experiences has resulted in their low academic achievement in the Science, mathematics and technology subjects. Therefore, there is need to assess the characteristics of the secondary school teachers in terms of qualification, experience and teaching methodology in order to ensure quality of education given to the youths. The teachers of SMT should be in-serviced where gaps are identified to enable them to cope with the requirements of the dynamic school curriculum (Murunga et al., 2013).

Availability and adequacy of appropriate teaching and learning resources and facilities.
The importance to of the provision of adequate instructional facilities for teaching and learning cannot be over-e emphasized. The power of the learning environment to influence and promote learning is significant and the learning spaces and learning resources provide important opportunities for students to explore ideas and knowledge, collaborate, solve problems and develop knowledge and skills. Usman (2007) noted that central to the education process are educational resources which play an important role in the achievement of education objectives and goals by enhancing effective teaching and learning.

Physical resources include buildings and grounds, utilities, laboratories, equipment and materials, adequate to enable the institution to fulfill its stated purposes and objectives. Additionally, the institution's physical resources contribute to the establishment of a climate in which effective learning can occur. The fulfillment of the goal of any school depends on adequate supply and utilization of physical and material resources among others as they enhance proper teaching and learning (Akisanya, 2010). However, many studies have established that physical and material resources in secondary schools are inadequate in the world all over. For example World Bank (2008) in a study on textbooks and school library provision in secondary education in Sub-Sahara Africa revealed that textbooks and libraries were not only inadequate but unevenly distributed among rural and urban schools in the area of study.

Similarly Asiabaka (2008) on effective management of schools in Nigeria noted that the government's failure to establish policy directive on minimum standards in relation to schools facilities has led to disparities in acquisition. This is because while some have well equipped laboratories, libraries and other facilities for effective teaching and learning others have none and where they exist, such facilities are poorly equipped. This is supported by Chiriswa (2002) who noted that effective teaching and learning depends on the availability of suitable adequate resources such as books, laboratories, library materials and host of other visual and audio teaching aids which enhance good performance in national examination.

Further according to Adeoye and Papoola (2011), for learning to take place, learners must have access to necessary information materials and resources. They have to interact with tangible and intangible resources to ensure some level of performance. Goal attainment in any school depends on adequate supply and utilization of educational resources which enhance proper teaching and learning process within a conducive environment. UNCST (2007) noted that practical experiments have been observed to be central to the teaching of science in that they help develop scientific investigation and motivates, creates curiosity, objectivity and willingness to evaluate evidence. This is supported by Mutai ((2006) who asserted that learning is strengthened when there are enough reference materials such as textbooks, exercise books, teaching aids and classrooms. Fernandes and Sturm (2010) assert that poor facility provision is a potential barrier for school physical education programmes and facility provision is lower in schools that most need them like urban and high enrolment schools. Today's teachers must overcome serious obstacles to promote a physically active lifestyle.. Sollerhead (1999)notes some conditions and issues that affect physical education in today's schools are poor facilities due to lack of support for school physical education programme in addition to physical educators limited training thus do not provide students with enough health-related physical activity

Time spent in teaching and learning for holistic development of secondary schools learners.

The time devoted to subjects in the primary and lower secondary curriculum varies across OECD countries.

At both levels of education, around three-quarters of the learning time is devoted to six subjects: reading, writing and literature; mathematics; science; social studies; modern foreign languages and arts (OECD,2014). Modern foreign languages, science and social studies play a greater role at lower secondary level. While the average time spent on reading, writing and literature decreases to 16%, the teaching of modern foreign languages increases to 14%. Similarly, most countries dedicate an equal amount of time spent in secondary with some countries continuing to focus more on mathematics (e.g. Flemish community of Belgium, Italy) while others spend more

time on science (e.g. Estonia and Finland). On average teaching duration per lesson in Kenya is 40 minutes. The average weekly time allocation to each subject the 2002 curriculum revision is displayed on table 2 .1

Table 2.1 : Average Weekly subjects Time Allocation in hours

Secondary education Subjects

Subject	No. of hours
English	4.7
Kiswahili	4.0
Mathematics	4.7
Biology	3.3
Biological science	4.0
Physics	3.3
Chemistry	3.3
Physical science (geography, history and government,)	2.0

Applied/practical skills subjects	3.3
Cultural subjects, business education	2.7
Total	**35.3**

The OECD study further established that Arts and physical education continue to have a place in the compulsory curriculum however, relatively little time is devoted to technology. The arts curricula tend to focus on visual arts, music, theatre and dance (Winner et al., 2013). Time spent on the arts ranges between 5% and 20% of the compulsory curriculum in primary education while less time is allocate for it in lower secondary education, with a few country exceptions. Arts are often offered as elective subjects in lower secondary education, so some students may actually study more arts in the higher grades (OECD,2014).

Physical education has a fairly consistent allocation in primary and lower secondary education in OECD countries (9% in primary and 8% in lower secondary). Time for technology is relatively low at both levels (1% in primary and 3% in lower secondary). However, technology is given more curriculum time in a few countries such as Chile (7% in primary), Italy and England (United Kingdom) (7% and 13% in lower secondary respectively). Further, technology could be used as a tool for learning in other subjects, even if not allocated as a specific subject in the compulsory curriculum (OECD, 2014)

Shortage of facilities and adequately trained personnel are widely reported throughout the continent as are as key reasons in the curriculum (regarded as non-educational, non-productive use of time, is treated as recreation/play time especially in primary schools) and inadequate monitory inspections in secondary schools. Generally, priority is accorded to language and Mathematics with even meager allocated physical education/sport resources often diverted to other subjects.

CHAPTER THREE

METHODOLOGY

The plans and procedures used for the study are presented which include the sample and sampling designs, data collection and data analysis procedures, instruments, and target population.

Research design

The study adopted descriptive survey research design with an attempt to explore and explain while providing additional information about a topic. The design was considered appropriate since both qualitative and quantitative procedures were employed and would yield relevant information to enable describe and document aspects of a situation as it naturally occurs. Gay (1992) asserts that descriptive survey design involves data collection in order to answer questions concerning the status of the subject of study, the design is considered appropriate in educational fact-finding as it yields accurate information.

Target Population

The study targeted all the 47 counties and the different public secondary school categories including, principals, schools departments' heads and subject teachers.

Sampling Procedures

The sample in the study was generated by both probability (stratified random) and non probability (purposive) sampling designs. Stratified random sampling design was employed in selection of counties and schools while purposive sampling was employed to select the principal, heads of department and/ subject teachers.

The study categorized counties into the former eight geographical regions one county was picked in each region with two of the larger geographical regions (Rift valley and Eastern) two counties

were selected. The geographical regions were Nairobi, Coast, Eastern, Central, Rift valley, North Eastern, Western and Nyanza.

Table 3.1: Sampled counties

NO.	REGION	Counties
1.	RIFT VALLEY	NAKURU BOMET
2.	EASTERN	KYUSO EMBU
3.	CENTRAL	KIRINYAGA
4.	NYANZA	KISUMU
5.	WESTERN	BUSIA
6.	NAIROBI	NAIROBI
7.	COAST	KILINDINI
8.	NORTH EASTERN	GARRISA

Selection of Schools

The public secondary schools were categorized into four categories based on;

- Gender; either Boys only, Girls only and Mixed(both Boys and Girls)
- Category of school; National, Extra County, County and Sub county
- Facilities type of school ; schools with boarding facilities, without boarding facilities/Day schools and schools which are both (day and boarding schools)
- Social setting of the school; Rural or Urban setting of the schools

Stratified random sampling was employed to select four (4) schools in each of the selected county, a school of each category was sampled in each region. Two schools in each county were expected to be urban and the other two rural with an exception of Nairobi where all schools were in the urban setting. A consideration was taken to have at least one school sampled in each county to represent schools with boarding facilities, schools without boarding facilities and schools which have both boarding and day facilities. In addition different gender representation was also considered where in each county, same sex schools either boys only or girls only and mixed schools were sampled (see appendix 1).

Purposive sampling was employed to selected the principal and seven Heads of department and /subject teachers teaching the respective subjects as categorized in the breadth of learning study domains. The breadth of learning domains in the Kenyan study included;

  i.   Physical Wellbeing (P.E);
  ii.   Social and Emotional Wellbeing (Life skills, Religious studies and guidance and counseling);
  iii.   Culture and Arts (Art, Music, Drama, Dance and other cultural activities);
  iv.   Language and Literacy(English, Kiswahili and other languages);
  v.   Learning Approaches and Cognition(Head of learning/ academic areas; Academic Heads/ deputy principals);
  vi.   Numeracy and Mathematics(Mathematics);
  vii. Science and Technology covers (Science: Chemistry, Physics, and Biology and Technical subjects: Home science, Woodwork, Metal work, Business studies, Agriculture, Drawing and Design, Computer studies).

Sample size
A sample size of 10 counties, 40 schools, 40 principals and 280 Heads of Departments and Subject teachers were selected for the pilot of the breadth of learning study in Kenya.

Development of the Breadth of Learning Tool

Ten Secondary school teachers who were deputies or Heads of departments in their schools were selected from different categories and types of public secondary schools within the sampled ten counties. The team of teachers held responsibility in key departments in their respective schools and were experts in their teaching subjects, secondary school syllabus and the Kenyan curriculum. The training, design and development of the breadth of learning study questionnaire took two days. The developed tool also went through experts review before it was fully adopted for the pilot study in Kenya.

Data Collection and Training

The Ten teachers trained and assisted in the design of the breadth of learning questionnaire for secondary were used to and data collectors and also to coordinate data collection in the selected schools in the counties they represented. The field researchers/ data collectors were considered due to their exposure in the different school categories, types and social settings of schools and their expertise in their teaching subjects. The trained field researchers were secondary schools deputies and Heads of departments.

The field researchers were coordinated and monitored by the union officials. A field researcher training was held on the 5th-6thOctober 2016 at Mombasa. This training had the dual objective of sensitization of teachers on breadth of learning study, development and review of a breadth of learning data collecting tool and planning on the data collection approach.

Pilot study

A pilot study was conducted between in Nairobi and October- January 2017. The study was coordinated by KNUT Breadth of learning research teams, the Respective KNUT executive secretaries in the sampled region and the teachers who participated in the designing and development of BOL training each teacher represented one region.

Research Instruments

The main instrument for data collection was a questionnaire with both close ended and semi structured questions. The tool was divided into eight sections which included demographic information of the school and teachers which was filled by the principal; Physical Education filled by P.E Teachers or head of sports; Social and Emotional filled by HoDs of humanities, or Life skills, Religious studies and guidance and counseling teachers); Culture and Arts filled by either Art, Music, Drama, Dance coordinators; language and Literacy filled by either languages HoDs of English, Kiswahili or other languages teachers; Learning and Cognition Approaches filled by Heads of academics or Deputy principals ; Numeracy and Mathematics filled by HoDs /Mathematics teachers; Science and Technology filled by HoDs of science: (Chemistry, physics, biology) or HoDs of Technical subjects (Home science, woodwork, metal work, Business studies, Agriculture, Drawing and Design, computer studies).

Each domain tool had questions covering the following themes: Teachers' qualifications and training to teach subjects, time spent on subjects, teaching and learning resources, support given to teachers and learners, class size per subject and impact of learning on learners.

Interview guides were also employed to establish teachers and principal perception concerning the tools, areas and aspects addressed by the tool, establish whether there were any omissions and the challenges experienced in responding to the tool if any.

Validity and Reliability of the data collection Instruments

Adequate consultation amongst experts' research team members was done to check on content, construct and face validity among others. Items in the questionnaire were examined to ascertain the appropriateness of the items for the study. The researchers also consulted with experts to ascertain the adequate coverage of the content.

Credibility and Dependability

Credibility entails the study reflecting the experienced of those studied and the results can be trusted. During data recording and analysis the researcher called participants at random to

confirmation of the findings. The researchers reviewed the raw data and corrected any errors in data analysis for consistency of the findings.

Data collection Procedures

The recruited and trained field researchers who were mainly teachers in collaboration with the regions unions' official visited the sampled schools. After introductions, seeking consent and explanations on Breadth of learning and its concerns they distributed the questionnaires to the principals who organized with the HoDs and teachers in the respective subjects in filling the tools. In each school a teacher, the principal/ deputy principal was assigned to coordinate the filling of the questionnaires. Questionnaires were left and picked after two-three days.

The interviews were conducted in November and December, 2016 as teachers filled the tools. The interviews were conducted in at least one school per region where union officials visited the schools. The team did face to face interview with the head teachers and the teachers who filled the tools in addressing their perception on the tools, areas covered by the tool and their challenges in answering the tool and whether there were omissions in the tool.

Data Analysis Procedures

The quantitative data was entered, coded and organized for analysis. Data entry was done in the survey monkey software then descriptive statistics such as frequency tables, charts and bar graphs were generated. Data was also exported to the SPSS for further analysis and cross tabulations. Data was interpreted and presented using different techniques. Themes were generated from the qualitative data and used to validate and expand the quantitative findings.

Ethical Considerations

All respondents were informed on the purpose of the study and allowed to consent to take part in the study. Confidentiality of the schools and teachers that took part in the study has also been maintained.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSIONS

This section is a presentation of the analyzed data for the breadth of learning study in public secondary schools in Kenya. The data was presented in form of frequency tables, graphs and charts. The findings are presented in themes emanating from the objectives and research questions. In addition demographic information of the schools, teachers and principals is presented.

Breadth of learning Domains Tools Return Rate

The study sampled 40 schools and each school was expected to fill a 7 domain questionnaire for Heads of Department and/ subject teachers and one principal's questionnaire. The heads of departments' and teacher teaching subjects in secondary schools worked in collaboration in filling the specific domain tools. A total of 280 domain tools and 40 principal's questionnaires were distributed to 40 schools in 10 regions/counties in Kenya.

All principals returned their questionnaires while 3 domains tools were not returned from respective domains. The return rate was 100 percent from principals while for domain the rate was above 99 percent.

Demographic Information of Schools

The study addressed key aspects of the secondary schools in Kenya. These included Social Setting of the schools, School category, Population size of schools, Average class size, teachers Employment status: No. of Teachers employed by TSC and No. of Non TSC Teachers in schools, Gender representation of teachers, qualification and age of teachers.

County representation

The study was conducted in ten regions. From each region four schools were sampled basing on the study criterion which included; school category; National, Extra County, County and Sub

County. Gender; Boys only, Girls only and Mixed (both Boys and Girls); Local setting of the school; urban or rural; Type of school; boarding, day or both (Boarding and Day school).The sampled counties are on displayed on figure 4.1

Figure 4.1: Representation of number of Schools in each Sampled County
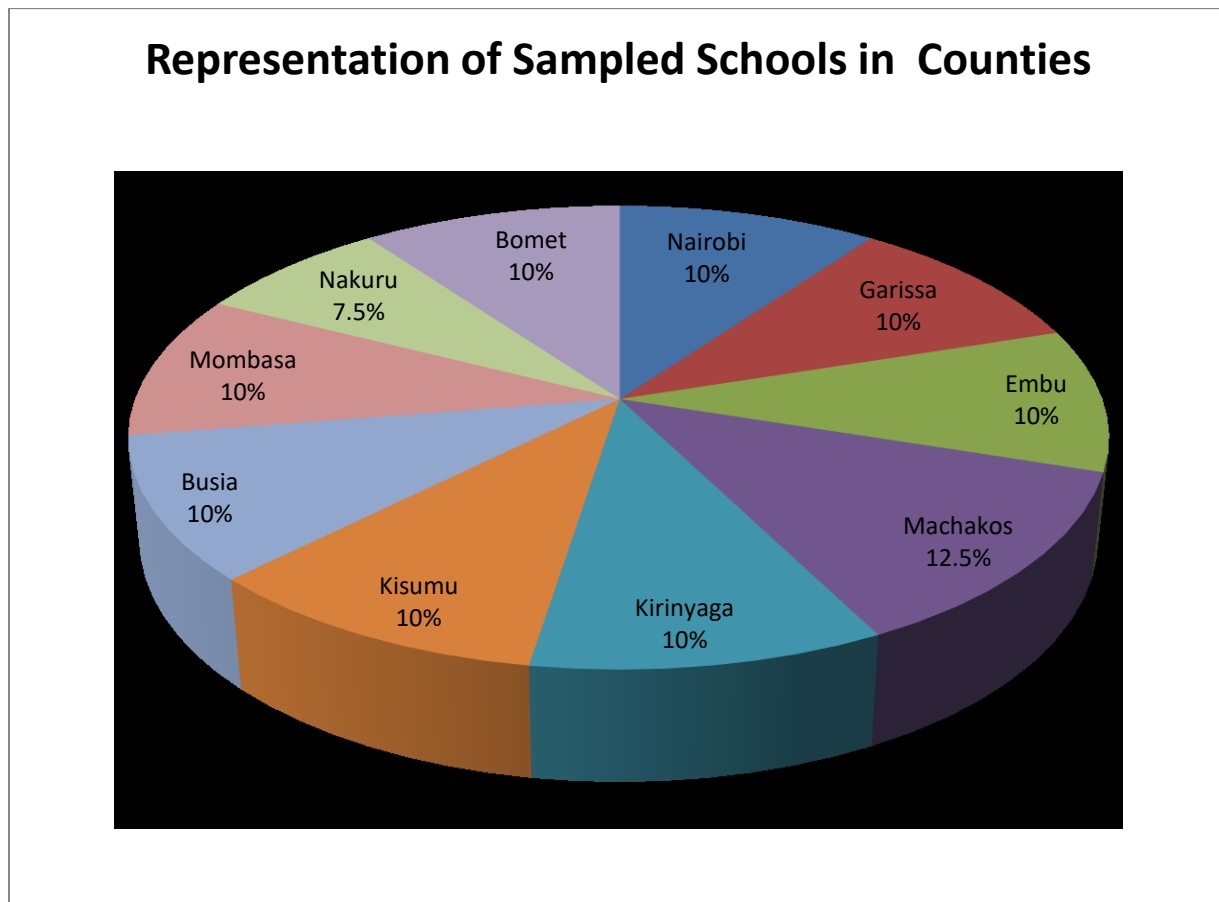
The findings indicate that all counties were well represented with data collected in four schools in eight counties while in one county data was collected in five schools and one regions data was collected in three schools at 7.5 percent.

Social Setting of the schools

The study sought to establish the location of the school whether in rural or urban settings of the school. The representation of the social setting of the school is shown on figure 4. 2.

Figure 4.2: The Social Setting of the School; Urban or Rural
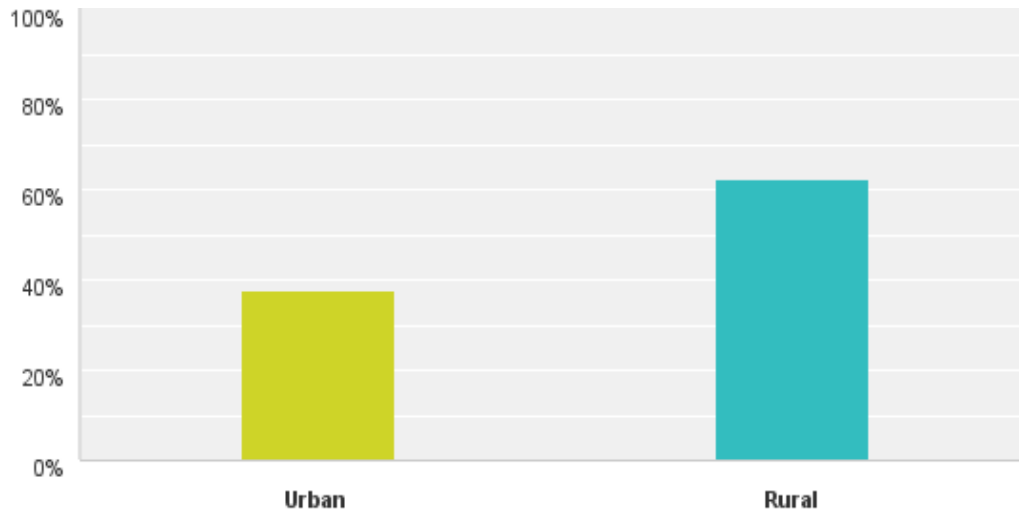
The finding on the setting of the school indicate that majority of the sampled schools were in the rural regions. 62.5 percent of the schools were in the Rural and 37.5 percent of the schools in urban regions. The setting of a school has a major influence on different aspects of a school. This include on the composition of school and facilities within the school.

School Category Representation

The study sought to collect data on secondary schools categories in Kenya with a representation of gender and type of the school the findings are represented on figure 4.3.

The study expected to have one schools of each category in all the sampled regions however there was no representation of national schools in Mombasa and Nakuru and Nairobi and Extra County in Nairobi and Mombasa hence, there lower the representation for National and Extra county schools in the pilot study. The findings indicate more of the county and sub county schools.(See appendix 2 for meaning)

Gender and Type of School

The sample criteria included a sample of secondary schools with same gender only and those mixed as well as schools that were boarding, day and mixed. This result are indicated in figure 4

Figure 4: Gender and Type of school

Gender and Type of the School

- Day School Mixed
- Day school all boys
- Day school all girls
- With boarding facilities Mixed
- With boarding facilities all boys
- With boarding facilities all girls
- Mixed Day and Boarding school 4 in 1
- Day and Boarding all boys
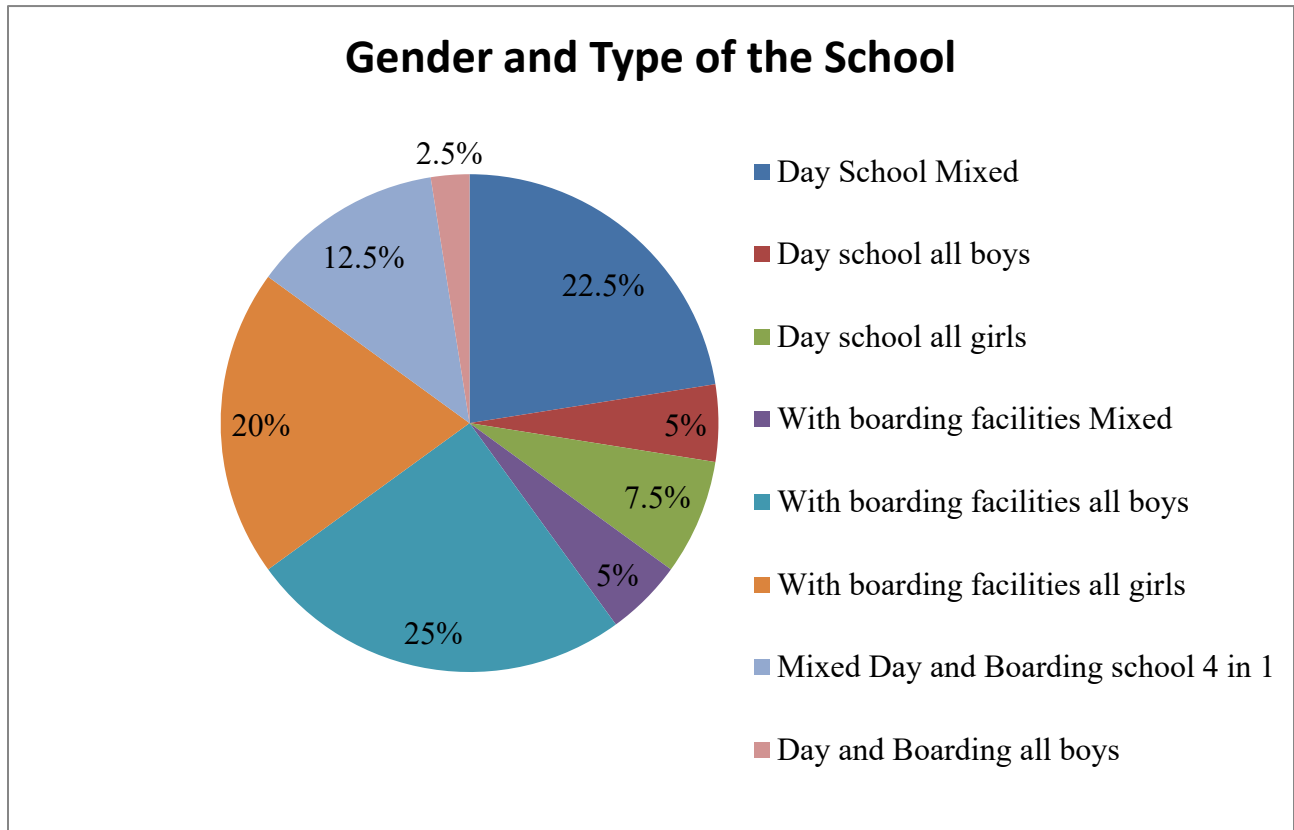
The findings indicate the gender and type of school representation of the sampled schools. Half of the schools 50 percent were boarding schools, 35 percent were day schools and 15 percent were mixed day and boarding schools. In addition on gender 27.5 percent were girls' school, 32.5 percent were boys schools and 40 percent were mixed school. This is a balanced reflection of the different types of public secondary schools in Kenya.

A cross tabulation of School Type and School category, indicate that more of the national schools 62.5 percent were boys' boarding schools and 37.5 percent were girls' boarding schools. A higher percentage of the Extra County schools were boys boarding schools and Girls Boarding school each at 33.3 percent with day schools girls and days schools boys at 22.2 and 11.1 percent respectively. More County schools were mixed day schools at 27.3 percent, boys boarding 18.2 percent and mixed day and boarding 4 in one 18.2 percent. Half of the Sub County schools were mixed day schools and 25 percent mixed day and boarding (4 in 1) schools.

Population Size of learners in Schools

The study sought to establish the population of learners in the different schools. The findings are displayed on figure 4.5.

Figure 4.5: Population of Learners in a school.
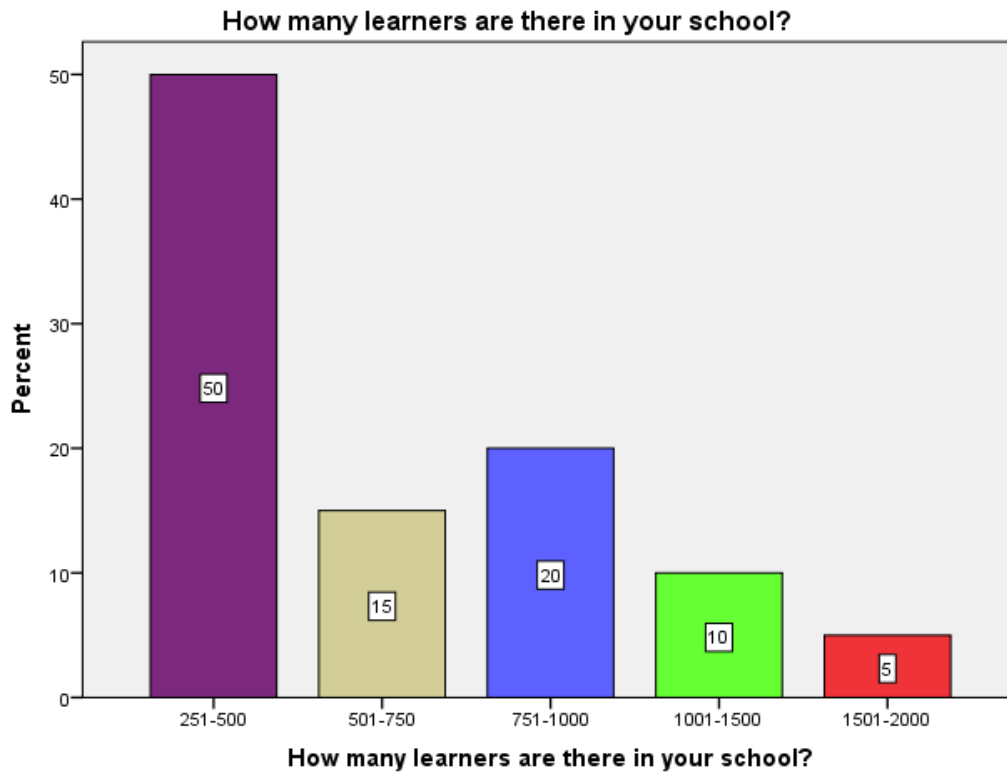
Findings on Figure 4.5indicate that 85 percent of the sampled schools had learners between 250-1000 with only 15 percent with learners over 1000 -2000 learners per school. Half of the sampled schools 50.0 percent had a population of 251-500 learners. Of these only one was a national, majority were county sub County schools. Thus

Among the schools categories majority of the National schools 37.5 percent had each a learner population of 751-1000 and 1001-1500 with only one national school with 251-500 learners and another with over 1501-2000 learners.

Majority of the Extra County schools had a learner's population of each 251-500 33.3 percent learnersand751-1000 learners33.3 percent. Majority of the County and Sub county schools 72.7 and 63.6percentrespectively had 251-500 learners per school with only one of the sub county school with 1501-2000 learners in a school. Hence the learner population in school varied with the school category and the region the schools are located.

Employment Status

TSC is obligated to employ adequate number of teachers teaching in public secondary schools in Kenya. The study sought to establish the status of teachers' employment in the sampled school. The TSC employed teachers and Non TSC teachers are shown below.

No. Teachers employed by TSC

The study sought the number of employed TSC teachers. The findings are displayed on table 4.3

Table 4.3: Number of Teacher Service Commission (T.S.C) teachers in your school.

No. of TSC teachers in a School	Frequency	Percent
1-10	11	27.5
11-20	10	25.0
21-30	9	22.5
31-40	9	22.5
41-50	1	2.5
Total	40	100.0

The majority of the schools had a range of 1-10 teachers employed by TSC in a school with only one school with 41-50 TSC teachers in a school. Most County schools and Sub County 54.5 percent and Sub county schools 41.7 percent respectively had 1-10 TSC teachers and most National 62.5 percent and Extra County 44.4 percent had 31-40 TSC teachers.

Number of Non -TSC Teachers in the School

Although TSC is commissioned to employ adequate teachers in a public school, sometimes the number posted in schools is not adequate hence the schools use their own mechanism to employs teachers to fill the inadequacy. Most are qualified teachers who are yet to be employed by TSC while in other cases schools pick untrained teachers to fill the vacancies. The findings on the status of schools on employment of Non TSC teachers are displayed on figure 4.6.

Figure 4.6: Number of Non- Teachers Service Commission (T.S.C) teachers in your school.
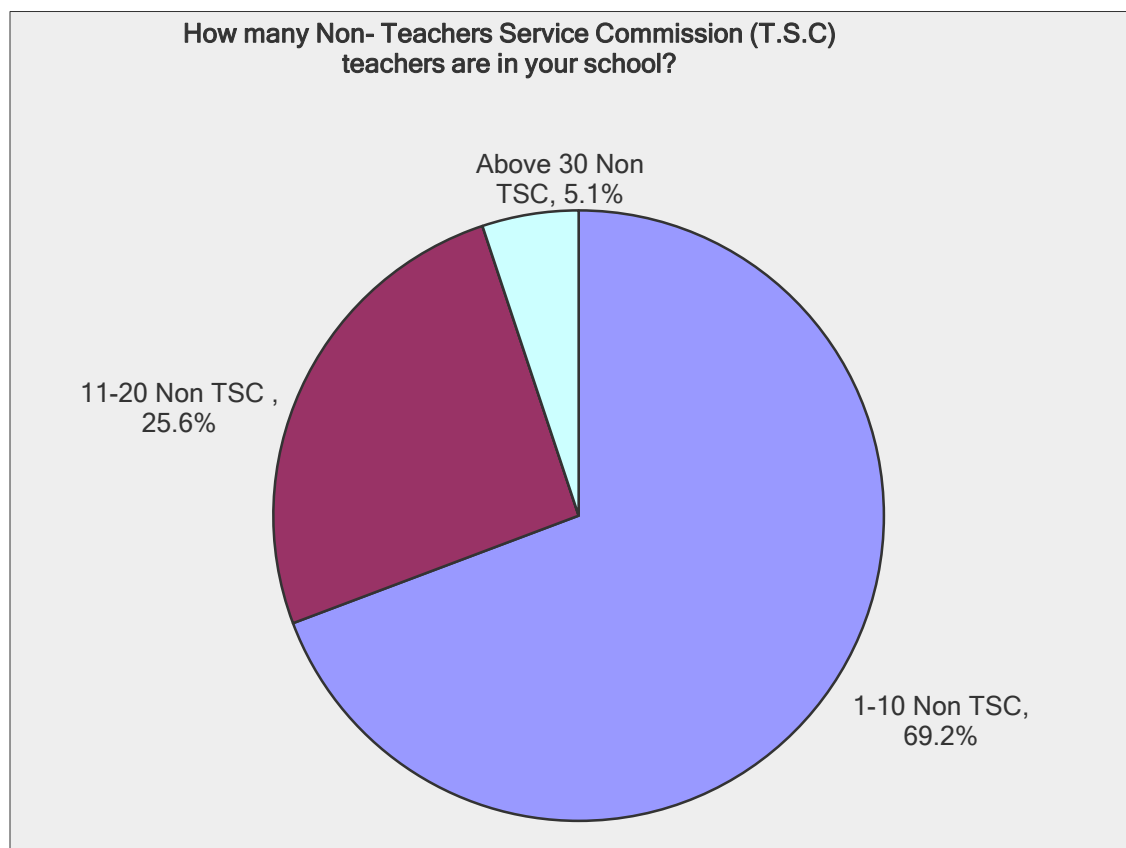
Findings on figure 6 indicate that, Majority of the schools had only 1-10 Non TSC teachers, with two schools with above 30 Non- TSC teachers.

A cross tabulation of No. of Non TSC teachers and school category showed that, the national schools have more Non TSC teachers than other categories of schools. Majority of the national schools 50 percent had 11-20 non TSC teachers with 25 percent of the schools with over 30 non TSC teachers. While majority of the Extra County schools 77.8 percent, County 81.8 percent and Sub County schools 90 percent had 1-10 non TSC teachers.

From the interviews one schools noted they have a high teacher shortage hence most of their teachers are Board of Management (BOM).

Gender Representation of Teachers and Teachers Highest Qualification

Teachers are employed having attained a qualification of a Degree, Diploma or Post graduate degree in education from either the university or a teacher training college with two secondary schools teaching subjects. The study sought to establish the teachers highest qualification based on their gender.

Male Teachers and the Highest Qualification

The study noted that 90 percent of the schools had male teachers with a master in education; 88.9 percent of these schools had 0-5 male teachers with/without a master's degree and 11.1 percent schools had 6-10 male teachers with a master's degree.

92.5 percent of the schools had the highest qualification in male teachers being a Degree in education. Out of the sampled schools 32.4 percent of the schools have 0-5 male teachers with their highest qualification as a Degree in education, 21.6 percent schools had 6-10 male teachers with Degree in education teachers and only a school had 36-40 male teachers with the same qualification.

82.5 percent of the schools had male teachers with a Diploma in education; 96.7 percent schools had 0-5 male teacher and only 3.3 percent schools had 6-10 male teachers with a diploma in education indicating that most male teachers have advanced from diploma.

55 percent schools had male teachers with Degree in a Subject. This could be referred as untrained since they are not trained to be teachers unless they had attained a PGDE.

37.5 percent schools had untrained male teachers; 86.7 percent schools had 0- 5 teachers untrained and 6.7 percent of the schools had 6-10 untrained male teachers and another 6.7 percent had 16-20 untrained male teachers. The range 0-5 could either mean availability or lack of teachers with that qualification.

Female Teachers with Highest Educational Qualification

The study noted that majority of the schools 87.5 percent of the sampled schools had female teachers with Master in Education; 88.6 percent schools had 0-5 female teachers and 11.4 percent had 6-10 female teachers with a Master's in Education respectively. Principals also noted a greater number of the teaching staff was undertaking their Masters degrees.

95 percent had female teachers with a degree in education (B.ED); 50 percent schools had 0-5 B.ED teachers and 34.2 percent of the schools had 6-15 female B.ED teachers.

65 percent of the schools had female teachers with a Diploma in education; 88.5 percent had 0-5 female teachers with Diploma in education.

25 percent of the schools had 0-5 untrained female teachers. The option 0-5 schools had or lacked that qualification it.

Gender representation of teachers in the school

Gender balance in schools is an encouragement to learners. The study sought to establish the gender balance of teachers in a school. The findings are indicated on table 4.4.

Table .44: Gender representation of teachers in the school

No. of Teachers in a school	Male		Female	
	F	Percent	F	Percent
0-10	19	47.5	17	42.5
11-20	12	30.0	18	45.0
21-30	6	15.0	4	10.0
31-40	1	2.5	1	2.5
41-50	1	2.5	0	0.0
None	1	2.5	0	0.0
Total	**40**	**100.0**	**40**	**100**

The gender difference between male and female teachers in schools is quite small, indicating overall there is gender balance, however differences may be seen in individual schools. An example is where one county school in Mombasa lacks male teachers.47.5 percent of the schools had 0-10 male teachers compared to 42.5 percent of schools had 0-10 female teachers. 45 percent of the schools had 11-20 female compared to 30 percent of schools with 11-20 male teachers. One school had 41-50 male teachers.

Age representation of teachers in the school

Age is a key concern of this study. The study sought to establish the different age groups of male and female teaching staff in their respective school. Study established that teachers were well distributed across all age groups in schools.

Age representation of Male teachers

The study established that overall 90 percent of the schools had male teachers aged 21-30 years; 85 percent of the schools had male teachers aged 41-50 and 80 percent had male teachers aged 31-40, 67.5 percent schools had teachers aged 51-60 years with only 12.5 percent of the schools with teachers under 21 years and none with above 60 years.

None school had over 30 male teachers in any age group. However one school had 21-25 male teachers in ages 21-30 years; and two schools had 26-30 male teachers' aged31-40 years. 92.6 percent schools had 1-5 male teachers aged 51-60 years with only 7.4 percent schools with 6-10 male teachers in the same age group. Only one school had 1-5 teachers above the age of 60 years. More school had 1-5 male teachers in all the age groups.

Age representation of female teachers

The study established that majority of the schools 95 percent had female teachers with 21-30 years ,80 percent had female teachers in age groups 31-40 and 41-50 years each, 45 percent of the schools had female teachers aged 51-60 years while only7.5 percent had female teachers aged above 60.

All age groups had 1-5 female teachers in a school. None of the age groups had more than 16- 25 female teachers in a school while only one school had 26-30 female teachers in one age group of 21-30 years. 94.7 percent of the schools had 1-5 female teachers aged 51-60 while only 5.3 percent of the schools had 6-10 female teachers in the same age group.

DEMOGRAPHIC INFORMATION OF PRINCIPALS

The principals were among the target population in the study and answered the first section of the tool on demographic information which entailed their information, school, and the teachers in their schools information. The findings are represented in this section.

Gender of school principals

The gender of the principal is greatly influenced by the gender of learners in a school. The study established the gender of principal in the sampled secondary schools in Kenya.

Figure 4.7: Gender Representation of School Principals
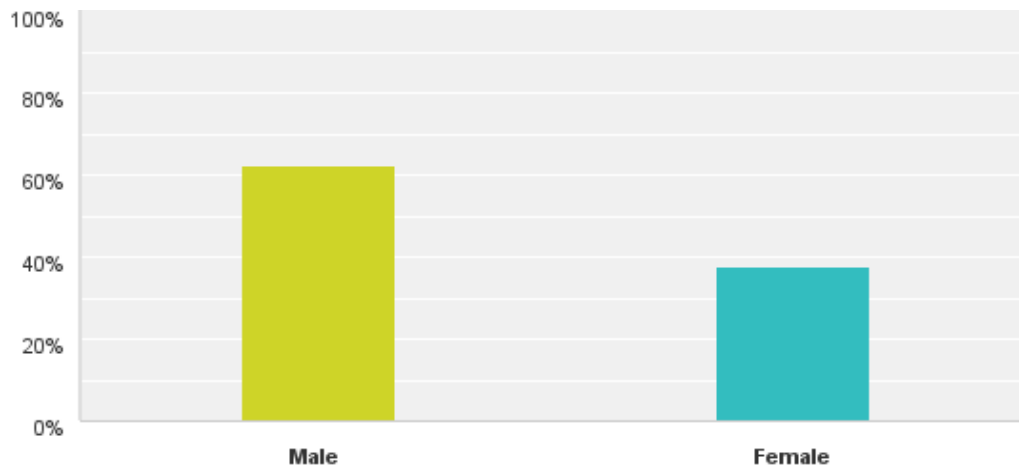
Most of the schools 62.5 percent had male principals while 37.5 percent had female principals. This concurs with the study since majority of the schools 32.5 percent were boys schools and 27.5 percent were girls schools while 40 percent of the schools were mixed day where the preference male or female principals vary.**Age category of School Principals**

The study sought to establish the age category of principals in the sampled schools. The findings are on figure 4.8

Figure 4.8: Age Category of School Principals
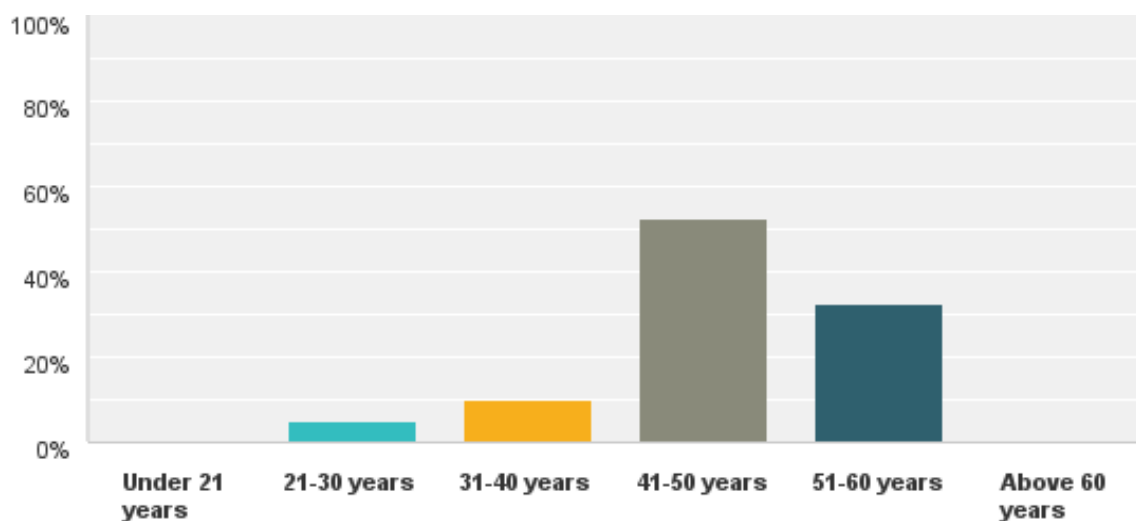
Findings on figure 8 indicate that 52.5 percent of the schools had principals aged 41-50 years and 32.5 percent of the principals were aged 51-60 years. There were no principals aged above 60 and below 21 years however 5 percent of the schools had principals aged 21-30 years and 10 percent had those aged 31-40 years.

Majority of the extra county schools 66.7 percent had principals aged 41-50 years and the remaining 32.3 percent were aged 51-60 years. This is similar to national schools where the majority of the principals 62.5 were aged 41-50, 25 percent were aged 51-60 years with one principal aged 31-40 in a National school. For county schools 45.5 percent of the principals were aged 51-60, 36.4 percent aged41-50year's and18.2 percent31-40 years. Sub county schools 36.4 percent of the principals were aged 41-50 years with an equal number 27.3percent aged 31-40 and 21-30 with only 9.1 percent with aged 51-60 years. This shows majority of the schools have principals aged 41-50 years. Hence, county schools have more aged principals 51-60 years.

Length of training

The study sought to establish the length of the teacher training program undertaken by principals. The study notes that there is no specific program or training course for principals, Principals are appointed from among teachers with similar training and experience. The main qualification for principals is to have attained the requirements of a trained teacher. Later they are promoted through the scales to principals over the years and for a teacher to move from one grade to another, he/she must pass a proficiency test administered by the inspectorate (UNESCO-IBE, 2010) to ensure teachers keep themselves updated with knowledge and developments of their profession.

Approximately teacher training program last for 3 for teacher training diploma and 4 years for university degree. The study sought the length in years of the principals were trained as teachers. 45 percent of the principals underwent a teacher training program for three years while 40 percent trained for 4 years with only 15 percent training for 5 and more years. 5 and more years are preferably for those who have advanced their career from certificate to diploma/Bachelor's degree/Master's degree.

Highest educational Qualification

The study sought to establish the findings of the highest educational qualification of principals currently in the secondary schools. The findings are displayed on table 4. 5.

Table 4.5: Secondary school Principals Highest Educational Qualification

What is your highest educational qualification?		
Answer Options	**Response frequency**	**Response Percent**
PHD	1	2.5%
Master's in Education	23	57.5%
Degree in Education	16	40.0%
Diploma in Education	0	0.0%
Total	40	100.0%

Majority of the principals 57.5 percent had a Master's degree in Education, diploma in education, with only one with a Doctorate (PHD. Other information included by the principals noted quite a larger percentage were in the process of advancing to Masters Degree.

Teaching Experience

The study sought to establish how long the principals have taught as teachers. The findings are shown on Table 4.6.

Table 4.6: Length of Teaching Experience for Secondary Principals

How long have you been teaching?		
Answer Options	**Response Percent**	**Response Count**
0-2 years	0.0%	0
3-5 years	5.3%	2
6-10 years	2.6%	1
11-15 years	7.9%	3
16-20 years	15.8%	6
21-25 years	34.2%	13
More than 25 years	34.2%	13
Total Answered	**100.0%**	**38**
Skipped question		**2**

Findings on table 6 indicate that majority of the principals had a lengthy teaching experience, over 65 percent had taught for over 21 years and above. Only 10 percent had taught for 6-15 years; 5.3 percent had taught 3-5years with none having taught for 2 years or less. This shows that most principals have reliable teaching experience.

Experience as a Principal in Current School

The study sought to establish the length of time principals had been in their current school. The finding shows that 35 percent principals have been in their current school for 3-5 years. 22.5 percent 6-10 years, 22.5 percent 0-2 years and only 5 percent had stayed for over 21 years in their current school.

DEMOGRAPHIC INFORMATION OF DOMAIN HODS /TEACHERS

The study sampled seven Heads of department/subject teachers per school to respond to each domain tool in collaboration with other subject teachers. These were HoDs of Sports/ games or P.E Teachers; HoDs of Humanities/ t Life skills, Religious studies and Guidance and Counseling

teachers; HoDs /coordinators of Art, Music, Drama, Dance or other Cultural activities; HoDs of languages, English, Kiswahili or other languages; Heads of academics or Deputy principals; HoDs Mathematics; HoDs of science: (Chemistry, physics, biology) orHoDs of Technical subjects (Home science, woodwork, metal work, Business studies, Agriculture, Drawing and Design, computer studies). A total of 280 teachers/HoDs were sampled, However 277 Teachers and HoDs submitted/returned their tools. The Seven (7) domains covered different subjects/fields taught in secondary schools. Demographic information was sought from the specific teachers who responded to the tool. These include gender, age, length of teacher training, qualification in teaching the subject and teaching experience.

Gender of Heads of Departments/Teachers per Domain

The study sought to establish the gender of HoDs/ Subject teachers in the seven domains. The findings are displayed on figure 4.9.

Figure 4.9: Gender of Heads of Departments/Teachers per Domain

Gender of Domain HoDs/Teachers

	PE	SOCIAL &EMOTIONAL	CULTURE & ARTS	LANGUAGE & LITERACY	LEARNING APPROACHES	NUMERACY & MATHS	SCIENCE & TECHNOLOGY
Female	20.5	55	55	61.5	28.9	27.5	40
Male	79.5	45	45	38.5	71.1	72.5	60
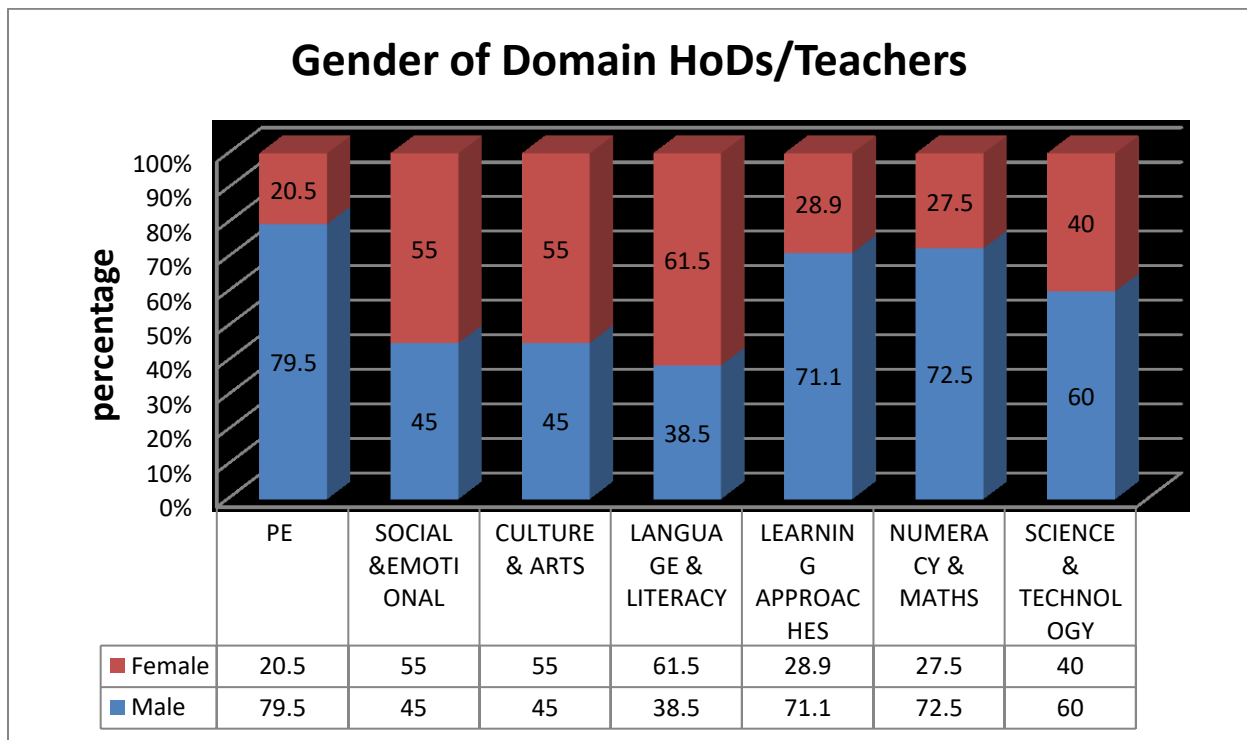
Findings indicate that majority of the teachers who filled and head the departments of physical Education, learning approach and cognition, numeracy and mathematics and science and technology domains were male while social emotional, culture and Arts and Language and literacy were female.

Age category of HoDs /Subject Teachers per Domain

The study sought to establish the age category of teachers and HoDs who responded to the domain tools. The findings are displayed on figure 4.10.

Figure 4.10: Age category of Domain HoDs /Subject Teachers

Age Category of HoDs/ Subject Teachers per Domain

	P. E	Social &Emotional	Culture & Arts	Language & Literacy	Learning Approaches& Cognition	Numeracy &Maths	Science & Technology
Above 60 years							
51-60	5.0%	12.5%	12.5%	5.1%	13.2%	17.9%	30.0%
41-50	37.5%	50.0%	25.0%	20.5%	47.4%	23.1%	15.0%
31-40 years	17.5%	15.0%	27.5%	43.6%	28.9%	38.5%	37.5%
21-30 years	40.0%	22.5%	35.0%	28.2%	10.5%	17.9%	17.5%
Under 21 years	0.0%	0.0%	0.0%	2.6%	0.0%	2.6%	0.0%
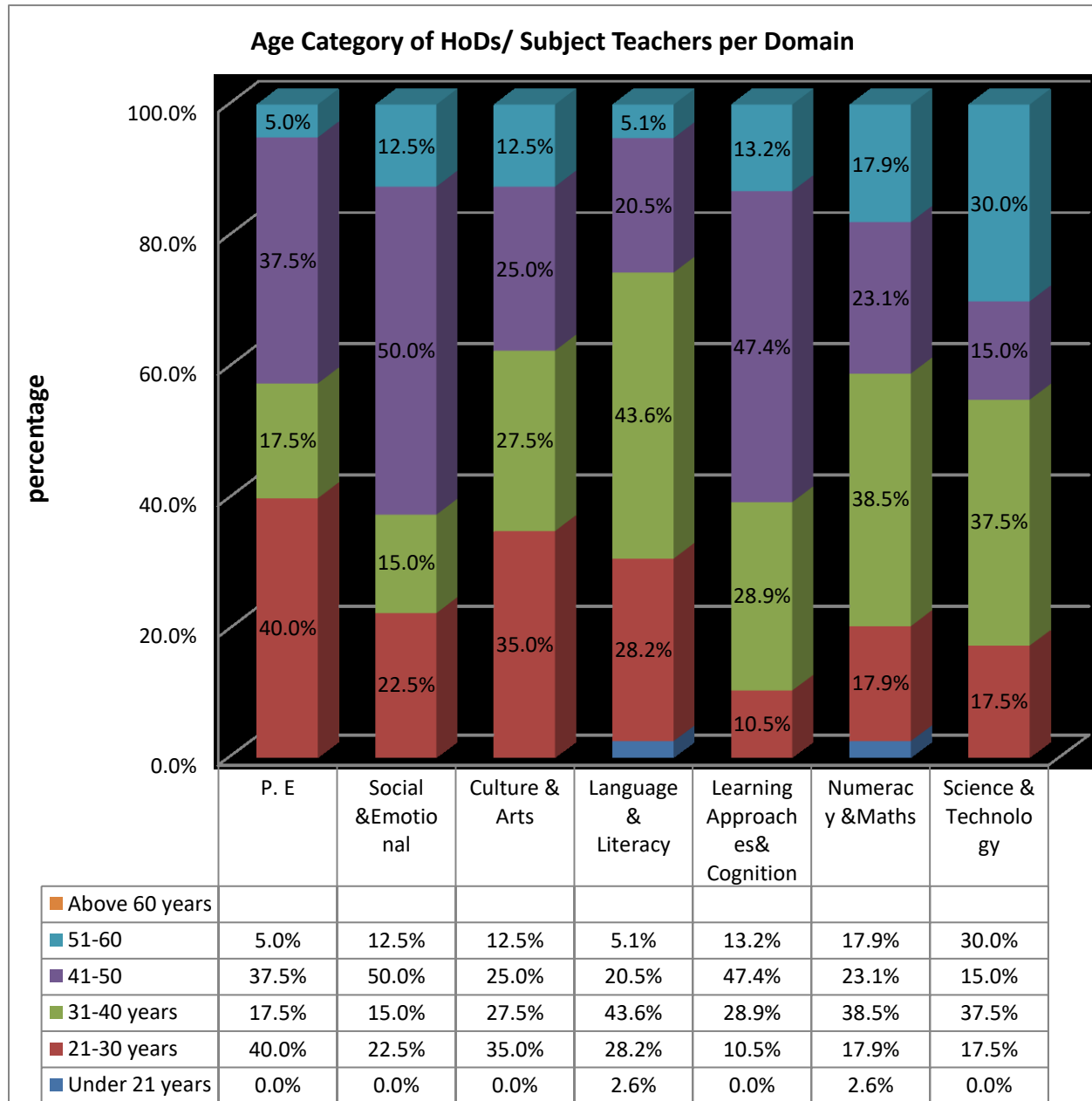
The findings on figure 4.10 indicate that HoDs/ teachers who responded to the domain tools, majority31.2 percent were between 41-50 years, 29.7 percent were 31-40 years; 24.6 percent were 21-30 years, 13.8 percent were 51-60 years old and only 0.7 percent were under 21 years with none above 60 years.

The majority of P.E teachers were between 21-30 years, Social & Emotional Domain 41-50 years, Culture & Arts 21-30 years, Language and Literacy 31-40 years, Learning Approaches and cognition 41-50 years, Numeracy 31-40 years and science and technology 31-40 years. None of the teachers/ HoDs who responded to the tool was above 60 years.

Length of teacher training program

The study sought to establish the length of teacher training in years for the teachers who filled the domain tools. The Findings are displayed on table 4.7.

Table 4.7: Length of teacher training program for HoDs /Subject Teachers

Years	P. E	C.culture & Arts	Learning Approaches	Numeracy & Maths	Science & Technology	Total
	%	%	%	%	%	%
1 year	7.5	2.5	-	5.1	-	3.0
2 years	7.5	-	13.2	2.6	7.5	6.1
3 years	22.5	17.5	7.9	17.9	20	17.3
4 years	47.5	75	57.9	59	62.5	60.4
5years and Above	15	5	21.1	15.4	10	13.2

The findings indicated on table 7 shows that majority of the teachers have attended a 4 years and 3 years teacher training program with only 3 percent attending 1 years teaching program. Teachers training programs for secondary education range from 3 years in a teacher training college and 4 years in the university while a post graduate diploma in teaching takes approximately one year.

Highest HoD/ Teacher qualification

The study sought to establish the highest qualification of teacher respondents for the domain tools. Findings on table 4. 8

Table 4.8: Highest qualification of Domain HoDs/ Teachers

Domains	P.E	Social &Emotional	Culture & Arts	Language & Literacy	Learning Approaches	Numeracy & Mathematics	Science & Technology	Total
Qualifications	%	%	%	%	%	%	%	%
PhD	0.00	-	2.5	-	-	-		0.4
Master's in Education	2.6	15.4	17.9	10.3	16.2	5.0	17.9	12.1
Degree in Education	66.7	76.9	69.2	76.9	73.0	77.5	61.5	71.7
Diploma in Education	30.8	7.7	7.7	10.3	10.8	10.0	20.5	13.9
Others								
Higher diploma/PGDE			2.5			2.5		0.7
Masters in other field/Subject				2.6		5.0		1.1
TOTAL	39	39	39	39	37	40	39	272

The findings on table 8 show that majority of the teachers in all domains had attained a degree in education. Hence 71.7 percent who answered the domain tools had a Bachelor Degree in Education, 13.9 percent had a diploma in education, and 12.1 percent had a master's in education. Only one teacher had a PhD and three with Masters Degree in a subject or other tan education field.

Teaching experience for Domain HoDs/Subject Teachers

The study sought to establish the teaching experience of the teachers who responded to the domain tools the findings are displayed on table 4.9.

Table 4.9: Teaching experience of Domain HoDs/Subject Teachers

Teaching experience (Years)	PE	Social & Emotional	Culture &Arts	Language & Literacy	Learning approaches	Numeracy & Math's	Science & Technology	TOTAL
	%	%	%	%	%	%	%	
0-2	10.0	10.0	20.0	15.4	5.3	5.0	2.5	27
3-5	35.0	12.5	15.0	12.8	15.8	20	27.5	55
6-10	15.0	10.0	17.5	20.5	13.2	32.5	12.5	48
11-15	7.5	12.5	20.0	23.1	13.2	7.5	10.0	37
16-20	12.5	25.0	15.0	15.4	18.4	7.5	12.5	42
21-25	15.0	17.5	2.5	5.1	23.7	10.0	7.5	32
More than 25 years	5.0	12.5	10.0	7.7	10.5	17.5	27.5	36
TOTAL	40	40	40	39	38	40	40	277

Findings on table 4.9 indicate that majority of the teachers have a teaching experience of 3-5 years. Majority of the P.E teachers 35 percent had a teaching experience of 3-5 years; Social and Emotional teachers 25 percent had 16-20 years; Culture and Arts 20 percent had 11-15 years and 0-2 years; Language and literacy 23.1 percent had 11-15 years; Learning approaches 23.7 percent had 21-25 years, Numeracy and mathematics 32.5 percent had 6-10 years, and Science and technology 27.5 percent had more than 25 years as well as 3-5 years. All other domains apart from Physical Education teachers had the majority teachers with 10 and above years of teaching experience.

Average Class Size in Schools

Class size is a key determinant for quality education. Class size is dependent on the subject and how the lessons are conducted whether in class level, form level or school level. It will also depend on whether the subject is an elective or a compulsory. The study sought to establish the average class size per school and in the respective subjects.

The principals were asked the average class size in their schools, majority of the principals 52.5 percent had average class size of 51-60 learners, this was followed by 41-50 learners at 20 percent, 30-40 learners at 15 percent, 61-70 learners at 10 percent and only one school (2.5 percent) had 71-80 learners. Majority of the national 62.5 percent, Extra County 55.6 percent, County 54.6 percent and sub county schools 45.5 percent had large class sizes of 51-60 learners.

The academic deans and / deputies who are in charge of the academic and all learning and cognitive activities in schools were asked to give the average class size in the school. The majority 55.3 percent noted average class size in the school is 51-60 learners, 18.2 percent. This pointed the average a class size is 61-70 learners and 15.8 percent a class size of 41-50 learners.

Average Class Size for Compulsory Subjects/ Activities

Compulsory subjects entail Mathematics, Languages (English and Kiswahili) and at least two Science subjects and social and emotional sessions. These are subjects that are taught for all students. It is mandatory that students will do them while social and emotional sessions are conducted at class level, form level or school level.

Physical Education class size

P.E lessons can either be conducted for an individual class or as stream/ form hence an average class size. Figure 11 displays the findings of the Physical education class size,

Figure 11: Physical Education Average Class size
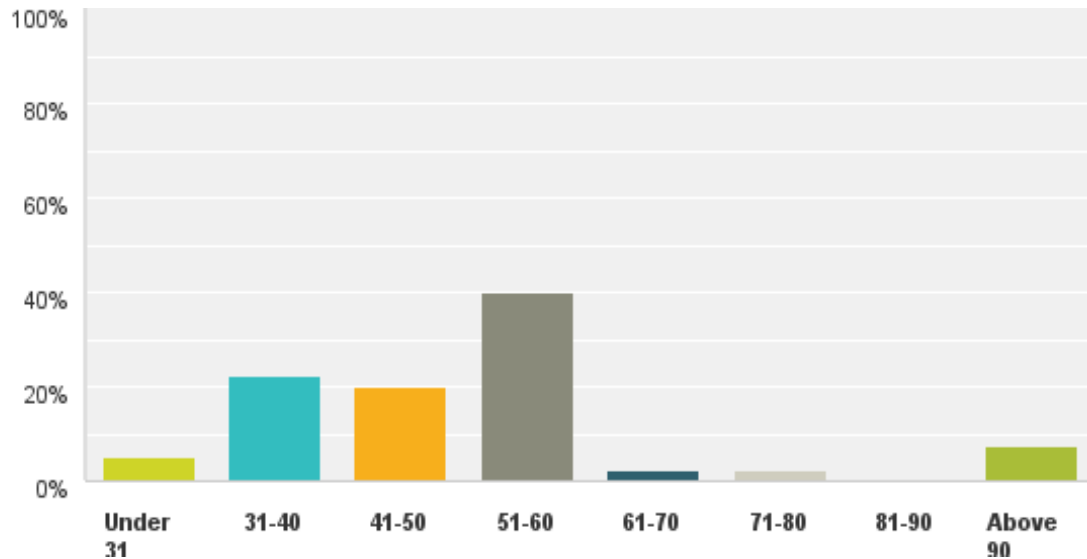
With majority of the principals indicating the average P.E class size in most schools 40 percent was 51-60 learners; this was followed by 31-40 at 22.5 percent and 41-50 learners at 20 percent and above 90 learners per class at 7.5 percent.

Average Class Size for Compulsory Subjects

English and Kiswahili, Mathematics and Science subjects is a compulsory subject in the Kenya secondary curriculum, in form 1-2 learners are taught English and Kiswahili, Mathematics and three Science subjects while form 3-4 learners may either do all science or at least two science apart from the technical subjects where learners may do at least two from form 1-4 which is dependent on a school selection, however computer studies is compulsory. The average language class size is the entire student population per class.

Table 4.10: The average class size for Compulsory subjects

What is the size of your English/Kiswahili class?				
Answer Options	English/Kiswahili class	Mathematics Class	Science & Technology Class	Social &Emotional Class size
under 31	0.0%	0.0%	2.5%	0.0%
31-40	15.4%	10.3%	20.0%	15.0%
41-50	23.1%	33.3%	27.5%	37.5%
51-60	53.8%	46.2%	37.5%	32.5%
61-70	5.1%	7.7%	12.5%	12.5%
71-80	2.6%	0.0%	0.0%	2.5%
81-90	0.0%	0.0%	0.0%	0.0%
Above 90	0.0%	2.6%	0.0%	0.0%
Total	100.0	100.0	100.0	100.0
Total Respondents	39	39	40	40
Skipped Response	1	1	0	0

Language subjects Kiswahili and English are compulsory subjects and are done by all learners, hence the class size reflect all learners in a class. The majority of languages teachers noted the average class size of English and Kiswahili is 51-60 learners.

Mathematics is a compulsory subject in the secondary schools. Majority of the schools had an average class size of 51-60 students and 41-50 learners.

The science curriculum subjects include Biology, Physics and Chemistry which are compulsory for form 1and 2 while in form 3and 4 learners take at least two while technology subjects such as Computer studies, art and design, Home science and Agriculture, business studies, woodwork, metal work, Drawing and Design vary from school to school and may be elective from form one

through to form four with learners doing one/ two subjects. Thus the average class size for Science and Technology Subjects vary from51-60, 41-50 and 31-40 learners.

Social Emotional Domain Class size

Addressing social and emotional issues among students is mandatory for schools and may be conducted at class level, form level or school level. Social and Emotional issues are addressed in life skill, religious studies classes, or guidance and counseling sessions.

The average class sizes for HoDs/Teachers addressing social and Emotional issues was 41-50 learners (37.5 percent) and 51-60 learners (32.5 percent).

Elective subjects/ extra curricular

This entails subjects that are learnt in schools though they are not mandatory for all learners. Learners are given an option to select one or two subjects over the others. This also include etra curricular subject done out of learners interests. The class size varies depending on learners choice and interests.

Average Class Size Culture and Arts

Culture and Arts domain entails fine Art, Music, Drama, Dance and any other cultural activity. The music and fine art are electives subjects hence the class size with vary with the number of students taking the subjects while in other schools Music, drama and dance are extra-curricular activities.

Figure 4.12: Average Culture and Arts Class Size
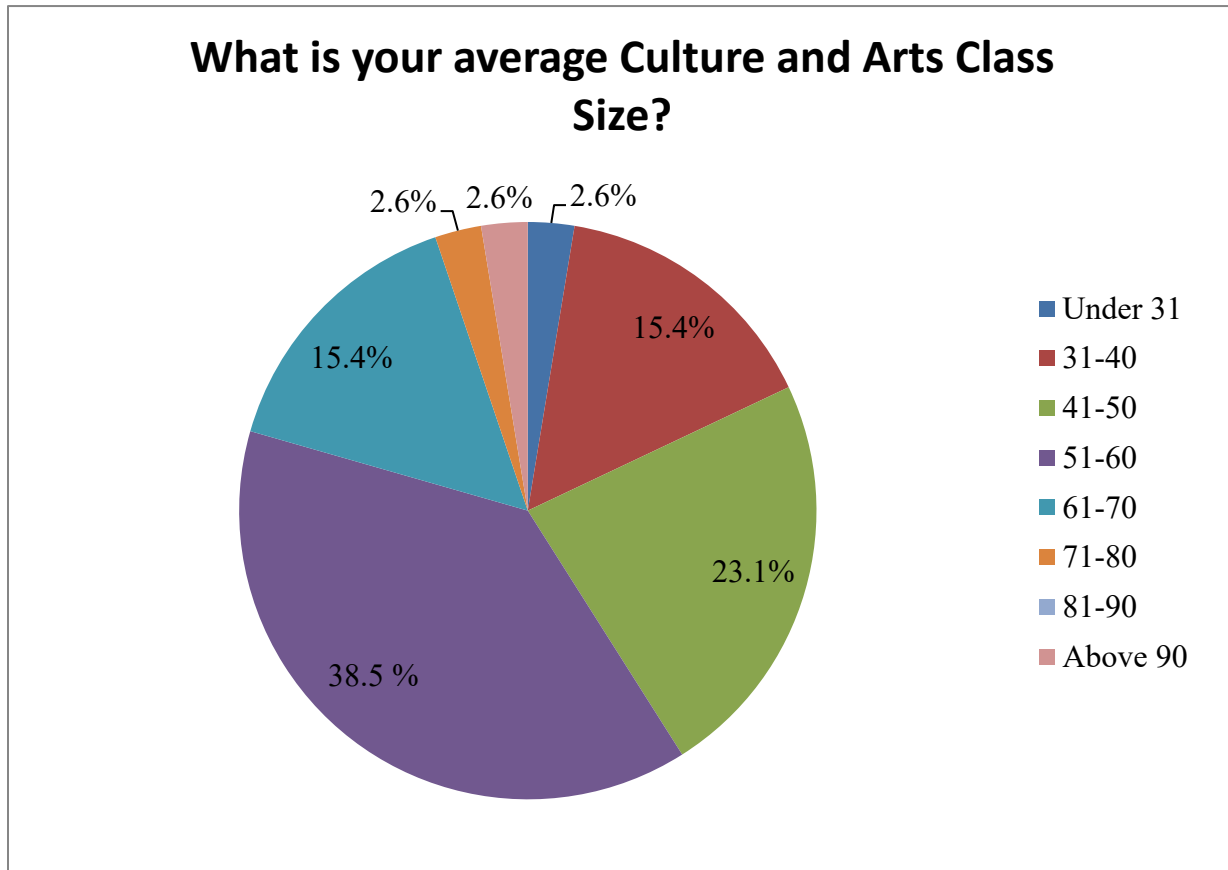
The average class size for Culture and Arts in most schools is are 51-60 and 41-50 learners as well as 31-40 and 61-70 learners

Arrangement of Learners in class

Students' organization in class enhances teaching and encourages student's active participation. The study sought to establish how learners are organized in classrooms. Majority of the responses indicate that learners are arranged in mixed groups 39.5 percent or into groups 36.8 percent. Only 15 percent of the respondents' noted learners are arranged in ability groups while 5.3 and 2.6 percent noted they are arranged individuals and pairs respectively.

The study further notes learner's arrangements vary with the category of the school.

National schools mainly organize learners in groups and others in mixed groups, none of these schools organize learners in ability or social groups while less than 20 percent organize learners

in pairs or individuals. Extra County organize learners mainly in groups and others in mixed groups, over 20 percent in ability groups and 10 percent as individuals with none social group. Hence, majority of schools arrange learners per groups, mixed groups and ability groups. County schools over 50 percent organize learners in mixed, 30 percent by groups and 10 percent by ability groups while Sub County Schools over 40 percent is groups,35 percent mixed and 18 percent ability groups.

Qualification of teachers in the teaching subjects

It's a requirement for Secondary teachers to do two teaching subject in their training as a teacher. The subjects could either be sciences, humanities, languages or a combination of two subjects from the three subject combinations. Teachers are expected to teach subjects learnt in Teacher training.

The study sought to establish the qualification of the teachers and /heads of departments in their teaching subjects in schools. The study asked whether the teachers teaching particular subjects were trained as part of their teacher training curriculum. The study also sought to establish the criteria used to select teachers to teach the secondary subjects in schools.

Subject Teachers Training

Teacher training curriculum is highly dependent on the teacher choice subjects. The study sought to establish the training the teachers received in relation to the subjects taught in schools and the criteria schools use to select teachers to teach subjects.

Training of Physical Education in the Teacher Education Curriculum

Physical education is one of the subjects taught in the teacher training colleges and limited teacher training programs in the universities. The study sought to establish whether teachers who deliver Physical Education learnt P.E as part of their Teacher Education curriculum.

The findings indicated that 38.5 percent of P.E teachers noted P.E was sometimes learnt as part of the teacher training curriculum, 17.9 percent noted it was often taught in the teacher training

curriculum, 30.8 percent noted it was rarely taught and 12.8 percent noted P.E was never taught in the teacher training program.

Asked whether Health Education was part of the teacher education curriculum, 35 percent noted that they sometimes learnt Health Education, 20 percent noted Health Education was often learnt in the teacher education curriculum, while 25 percent noted Health Education was rarely and 20 percent never learnt health education in teacher training. Hence only 20 percent learnt Health education often in the teacher training curriculum.

Criteria used to select Teachers Teaching Physical Education

Asked on the criteria used to select teachers who offer P.E in schools, the study established that teachers P.E teachers are rarely selected due to the fact that they were trained in Physical education. The findings are displayed on figure 4.13

Figure 4.13:The most appropriate Criteria schools use to pick teachers to teach PE
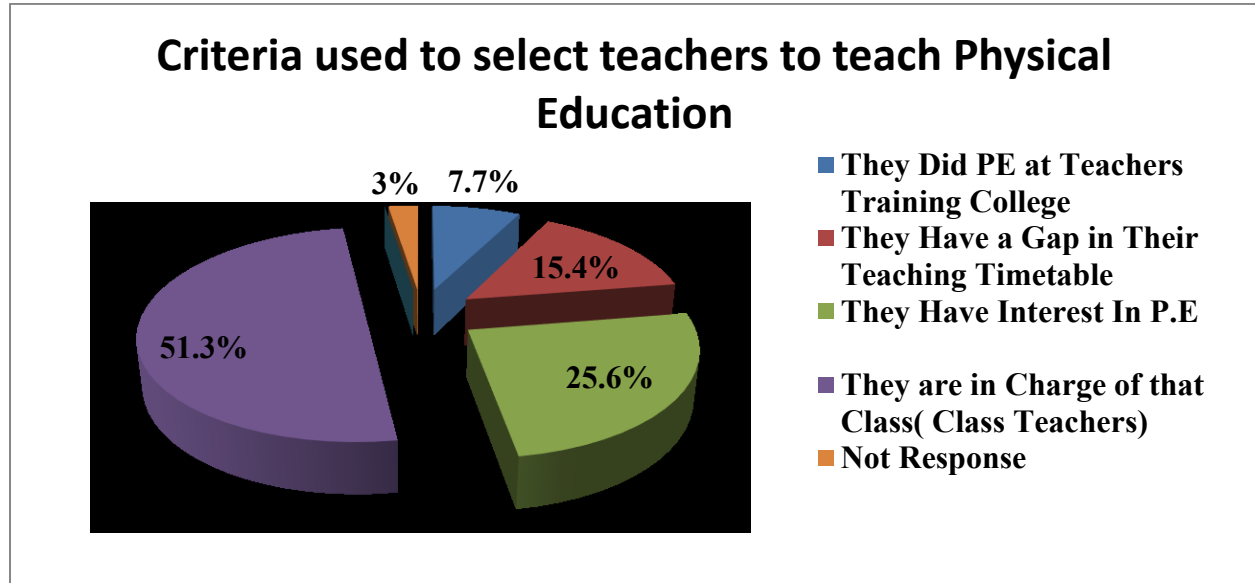
Majority of the teachers51.3 percent offering P.E were mostly selected because they are in charge of the specific classes, 25.6 percent because they had interest and only 7 percent were picked because they learnt P.E their teacher training program.

Training of Social and Emotional studies in the Teacher Education Curriculum

The study sought to establish whether teachers did Social and Emotional studies as part of the teacher education curriculum. The findings are displayed on figure 4.14.

Figure 4.14 : Social and Emotional studies as part of the teacher education curriculum

Was Social and Emotional studies part of your teacher training education curriculum?

Not sure, 5.0%
No, 30.0%
Yes, 65.0%
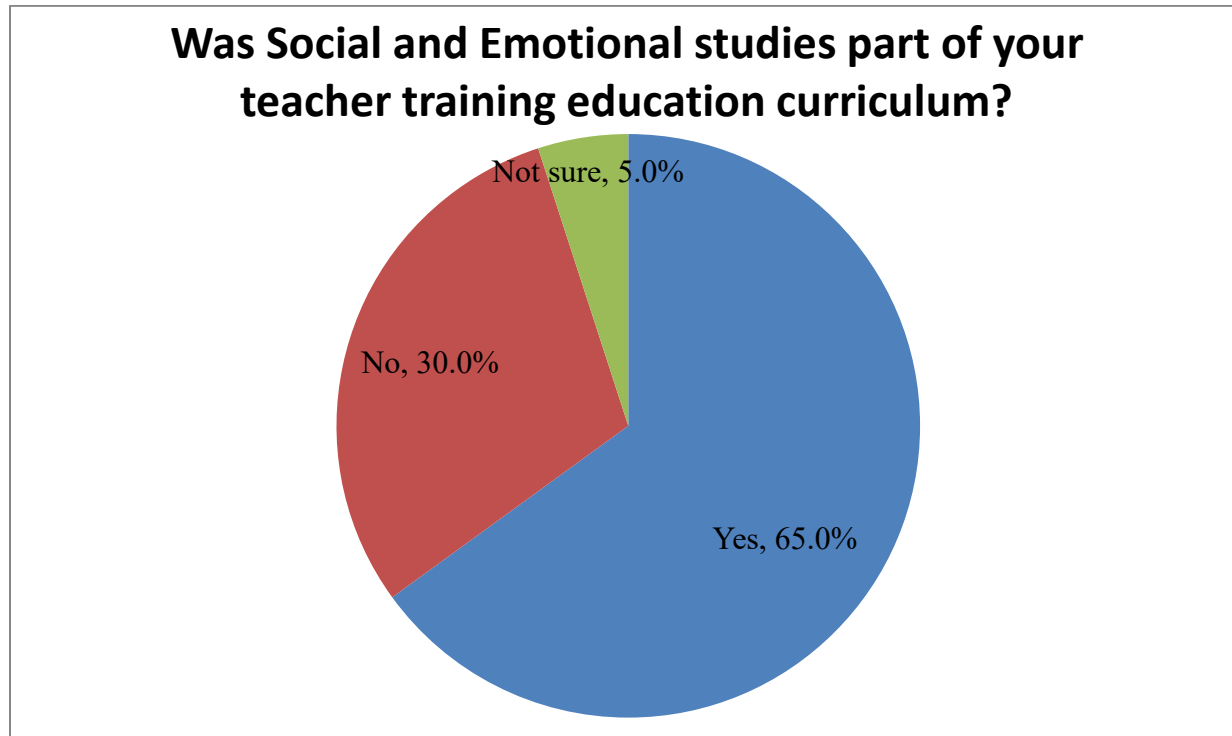
Majority of the teachers 65 percent who responded to this question noted Social and Emotional studies was part of the teacher education curriculum; 30 percent noted it was not part of the curriculum while 5 percent were not sure.

The study also sought to establish whether teachers who address social and emotional issues in schools learnt Health education as part of in their teacher training curriculum. From analysis, S&E teachers who responded to the question had almost equal opinion as to whether or not those in charge of Health education in schools had learnt it as part of their teacher training program. A slight majority 28.1 percent felt they often learnt Health education, 25 percent felt they sometimes learnt; 25 percent rarely learnt and 21.9 percent never learnt Health Education as part of their teachers training curriculum. Hence a slight majority learnt health education.

Training of life skills teachers

The study sought to establish whether teachers teaching Life skills had been trained to teach the subject. The findings indicate that majority of the teachers teaching Life skills 87.5 percent were not trained; 32.5 percent were sensitized and 25 percent had received a refresher course.

Criteria used to select Teachers Teaching Life Skills

The recent past has seen life skills implemented as a teaching subject in secondary school though not examinable. The study sought to establish how teachers were selected to teach Life skills. Majority of the Life skills teachers 35 percent were often picked because they have an interest in the subject, 25 percent had a gap on their timetable or workload, 22.5 percent had a special aptitude. Other reasons were teachers in the humanities department 2.5 percent or Class Teachers 17.5 percent.

Training of Culture and Arts in the Teacher Education Curriculum

The study sought to establish whether the culture and arts teachers were trained as part of the teacher training curriculum.

Table 4.11: Training of Culture and Arts teachers in the Teacher Education Curriculum

Are your Culture and the Arts teachers trained in these curriculum areas?		
Answer Options	Response Frequency	Response Percent
Often	10	25.0%
Sometimes	11	27.5%
Rarely	16	40.0%
Never	3	7.5%
Total	40	100.0

Learning culture in teacher education curriculum is greatly dependent on the teachers teaching subjects. The findings revealed that majority of the teachers involved in Culture and arts activities in schools rarely trained culture and Arts in the teacher training curriculum, only 25 percent of the teachers noted culture and Arts was often taught, 27.5 percent was sometimes trained while 7.5percent never learnt culture and Arts. Hence, almost 75 percent may have never learnt culture and arts in the teacher training.

Criteria used to select Teachers for Culture and Arts in schools

Respondents were asked to indicate the criteria used to select the teachers supporting culture and the Arts; drama, music, dance, festivals or any other cultural activity/ performances.

The findings indicate that teachers selected for Culture and Arts 78.8 percent often times have a passion for the subject and only 45.2 percent were often selected because they were trained in the field. However 44 percent noted they were sometimes selected to assist get promotion, only 25.8 percent noted the teachers are sometimes selected because they are trained. Thus passion for the subject is given more consideration followed by those trained in the field while those requiring promotion use it as a way to be promoted.

Interview with the respondents of the culture and arts domain revealed that culture and Arts activities are most often handled by the languages department.

Training of language teachers

The study sought to establish whether teachers teaching English, Kiswahili and other languages did the subjects as part of the teacher training curriculum. 94.9 percent noted teachers teaching language subjects did languages as part of their teacher education curriculum and 5.1 percent of the respondents weren't sure whether teachers teaching languages did the subjects in the teacher training. To teach language in secondary school, it a requirement that the teacher must have done a language subjects as a teaching subject.

Training of Mathematics teachers

The study sought to establish whether the teachers teaching mathematics were trained. The findings indicate that 97.4 percent of the respondents were trained to teach mathematics with only one respondent (2.6 percent) who noted a teacher teaching in the school was not trained. A cross tabulation of teachers teaching mathematics and Mathematics teachers highest qualification

The study sought to establish the highest qualification of teachers teaching mathematics and whether they are trained in mathematics. The findings indicate that Majority of the teachers teaching mathematics 97.4 percent were trained in mathematics while one of the teacher though qualified with a degree in education was not trained in numeracy and mathematics. Hence it's not enough to be a qualified teacher but also to be qualified to teach subjects.

Training of science in the Teacher Education Curriculum

Science and technology domain is a combination of the science subjects and the technical subjects. Teachers trained for technical subjects such as business studies may most likely not do any science unit in their program. The study sought to establish whether the teachers teaching Science and technology subjects were trained. The findings indicate that 85 percent of the respondents noted science was part of the teacher training curriculum while 15 percent noted science was not part of the curriculum. However with may vary with the meaning of science subjects in another context.

Coverage of topics in school subjects

The study sought to assess the topics covered in the secondary education syllabus for different subjects and whether teachers address or coverall the required topics in secondary schools subjects.

Health education, student safety and wellbeing Topics covered

The study sought to establish whether topics in Health education and student safety are addressed or talked in schools. 91.9 percent of the respondents noted Health education and

student safety topics are addressed in schools, 8.1 percent noted the topics are not addressed. Three teachers skipped the question.

Teachers were also asked whether students often talk about wellbeing amongst themselves in school. The findings are displayed on figure 4.15.

Figure 4.15: How often do students talk about well-being amongst themselves in your school?
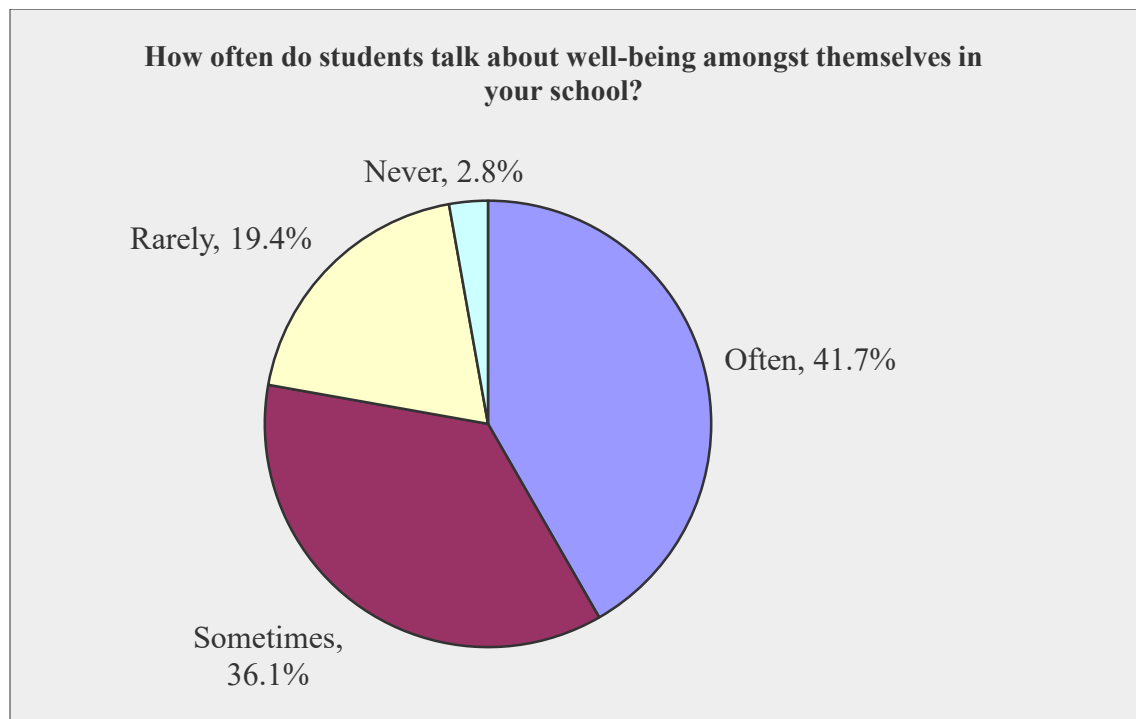
From the findings on figure 4.15, majority of the respondents 41.7 percent noted students talk about wellbeing amongst themselves often; sometimes 36.1 percent, 22.2 percent noted students' rarely talk about well-being amongst themselves.

Hence it can be concluded in almost half of the school's student's talk about wellbeing amongst themselves.

When categorized by school category, in all National Schools 62.5 percent talk about wellbeing often amongst themselves and 27.5 percent sometimes talk. In 28.6 percent of the Extra county schools, students often, 28.6 percent sometimes and 28.6 percent rarely talk about wellbeing

while only 14.3 percent never talk about wellbeing amongst themselves. More county schools 44.4 percent students often talk about wellbeing while 33.3 percent rarely talk wellbeing amongst themselves while Sub County schools 36.4 percent often talk on wellbeing among themselves. 45.5 percent sometimes talk while 18.2 rarely talk. Thus students in national schools often talk more about wellbeing amongst themselves.

Social and Emotional Domain Topics

The study sought to establish whether social and emotional studies were adequately covered in the school curriculum. Majority of the teachers 47.5 percent noted the social and emotional studies were not adequately covered in the curriculum, 42.5 percent noted they were adequately covered while 10 percent were not sure.

The study also established secondary school subjects which teach civic education. Although teachers felt that civic education is taught in all subjects, majority noted it is taught in History 79.5 percent and religious Studies 66.7 percent. Others 46.2 percent noted it is taught in life skills and43.4 percent in languages.

The study sought to establish the frequency schools/ teachers spent addressing topics with students. The findings are displayed on table 4.12.

Table 4.12: Time Spent With Students Working on Topics

Do you spend time with students working on the following topics?				
Answer Options	Often	Sometimes	Rarely	Never
Awareness of bullying	40%	37.5%	20%	2.5%
Sex education	50%	35%	10%	5%
Leadership training	35%	55%	2.50%	2.5%
Values in education	70%	20%	7.5%	0%
Relationships	42.5%	50%	7.5%	0%
Drugs and alcohol	67.5%	27.5%	2.5%	2.5%
Violence inside school	55%	30%	12.5%	2.5%
Violence outside school	30%	37.5%	22.5%	10%

The findings indicate that all topics are addressed either often or sometimes. Topics that are addressed often in most schools are Values in Education 70 percent, Drugs and Alcohol 67.5 percent, Violence inside school 55 percent and sex education 50 percent. Topics that are sometimes addressed in most schools are leadership training and Relationships. Awareness on bullying and violence outside schools are addressed more rarely.

A cross tabulation shows different schools address different topics with different measure. National schools address values in education 75 percent more often and sometimes addressed Leadership training71.4 percent.

Extra county schools address values in education 66.7 percent, sex education 55.6 and drugs and Alcohol 55.6 percent often while relationship 55.6 percent and 55.6 percent leadership training addressed sometimes

County schools often address values in education 90.9 percent, Violence inside schools 90.9 percent and drugs and Alcohol 72.3 percent more often while awareness to bullying 54.6 percent was covered sometimes.

Topics addressed often in Sub County schools are 81.2 percent Drugs and Alcohol, 72.3 percent violence inside school and 54.6 percent awareness to bullying. Topics addresses sometimes in Sub County schools are 70 percent leadership training, and 63.6 percent relationships.

Topics covered in Culture and Arts

The study sought to establish the areas on Culture and Arts that are on the school timetable. Majority of the findings established that poetry 82.1 percent, Drama 35.7 percent Music 32.1 and fine Art 17.9 percent are contained in the timetable. Areas of culture and Art not common in the school timetables are modern dance and media studies each 10.7 percent.

Interview respondents noted culture and arts are not in the secondary curriculum. Areas such as fine art and music are done out of schools interest. Most of these areas such as Poetry and drama are handled in the languages department while media studies and modern dance are not in the syllabus. Study sought to establish whether Culture and arts areas are scheduled on the timetable also differ since majority noted it not in the syllabus while some aspects that may be covered in culture and Arts are covered in other subjects.

School category findings indicate that poetry is rated highly in all school categories. This is because poetry is an area covered in Languages. All educational institutions in Kenya are expected to participate in drama and Music festival competitions where they compete for drama, plays, poems and music. In addition to poetry others areas schedule in time table are; National schools drama and music with drama rated highly. Extra county schools, Music is rated high with over 30 percent all others apart from media studies, in County schools all were scheduled for with poetry, drama and music with over 50 percent while in Sub County schools drama is rated higher than music and media studies while modern dance and fine art are not scheduled in the timetable.

Coverage of Mathematics Topics

The study sought to establish whether teachers cover topics such as Algebra, geometry, statistics, numbers and listing and counting. Findings are displayed on table 4.13.

Table 4.13: Coverage of Mathematics Topics

Answer Options	Topics Covered		Topics not Covered		
	Response Frequency	%	Response Frequency	%	Total
Algebra	38	97.4%	1	2.6	39
Geometry	36	92.3%	3	7.7	39
Statistics	38	97.4%	1	2.6	39
Numbers	37	94.9%	2	5.1	39
Listing and counting	25	64.1%	14	35.9	39
Total Responses					39
Skipped question					1

Though all the topics are in the syllabus and should be covered. Over 90 percent of the respondents noted teachers covered Algebra, geometry, statistics and numbers while only 64.1 percent of the teachers noted they cover listing and counting. In the mathematics syllabus all this topics should be adequately covered. Hence over 36 percent of the teachers fail to teach listing and counting as per the syllabus.

Pedagogy of teaching

Quality education is determined by the methodologies used by teachers in teaching different subjects and contents. The study sought to establish the pedagogies teachers use in teaching different subjects/fields.

Pedagogy of teaching Culture and Arts

The study sought to establish whether teachers teaching culture and Arts use culturally reflexive as a method of teaching. The findings established that teachers sometimes 54.1 percent use culturally reflexive, 16.2 percent noted they often use culturally reflexive method while 18.9

percent rarely and 10.8 percent never use the method. Hence majority do not always use culturally reflexive in teaching.

Pedagogies of teaching Life Skills

The study sought to establish what teaching life skills involves in most occasions. Figure 4.16 displays the findings

Figure 4.16 Pedagogies of Teaching Life Skills
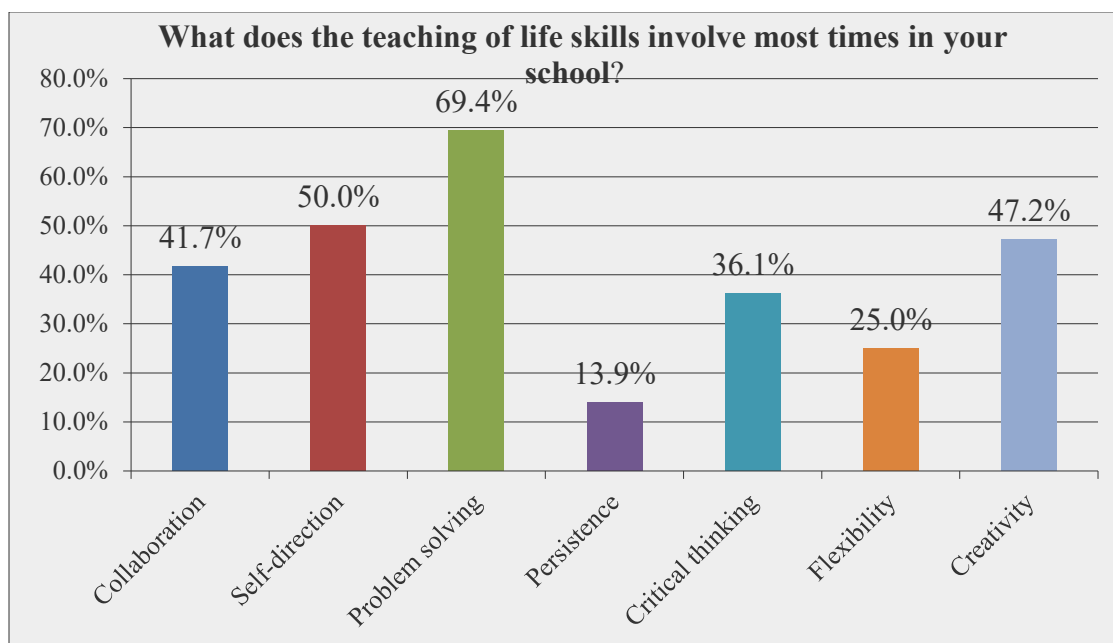
The findings on figure 4.16 indicate life skills teachers mostly use problem solving in teaching life skills in addition to self-direction.

Pedagogies of teaching Numeracy

The study sought to establish whether mathematics teachers practice collaborative teaching. 53.8 percent noted they sometimes use collaborative teaching in their schools and 43.6 percent pointed they often. Hence a greater majority use collaborative teaching.

Asked whether they do project based learning when they have new problems to solve, most of the teachers 52.6 percent noted they sometimes use project based learning for new problems to solve while only 15.8 percent noted they often use project based learning hence over 68 percent use project based learning for new problems to solve.

Differentiated learning

The study also sought from the academic heads whether teachers provide differentiated work for slow learners. The findings indicate that most teachers 52.6 percent provide differentiated work, 42.1 percent do not provide differentiated work for slow learners and 5.3 percent of the academic heads were not sure or do not know whether teachers provide differentiated work..

A comparison of school category and whether teachers provide differentiated work for slow learners is indicated on table 4.14.

Table 4.14: Cross tabulation of School Category and whether teachers provide differentiated work for slow learners?

School Category	National Schools		Extra County		County Schools		Sub County Schools		Totals	
Provision differentiated work	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
YES	4	57.1	5	55.6	7	70	4	33.3	20	52.6
NO	3	42.9	4	44.4	2	20	7	58.3	16	42.1
DON'T KNOW	0	0.0	0	0.0	1	10	1	8.3	2	5.3
TOTAL	7	100	9	100.	10	100	12	100.	38	100

Findings based on school category show that majority of the sub county schools 58.3 percent do not provide differentiated work for slow learners with only 33.3 who provide. Nationals, Extra counties and County schools provide differentiated work. A difference of 11-14 percent

respectively exits between Extra county and Nationals schools that provide and those that don't provide differentiated work for slow learners. However majority of the county schools provides differentiated work. Failure to provide differentiated enhances unfair competition between students.

Teaching and learning resources/facilities in schools

The study sought to establish whether the schools are equipped with adequate teaching and learning facilities/ resources.

Availability of P.E facilities

The study sought to establish the available of sports facilities in schools. The findings are indicated as follows.

Figure 4.17: Availability of P.E facilities in Schools
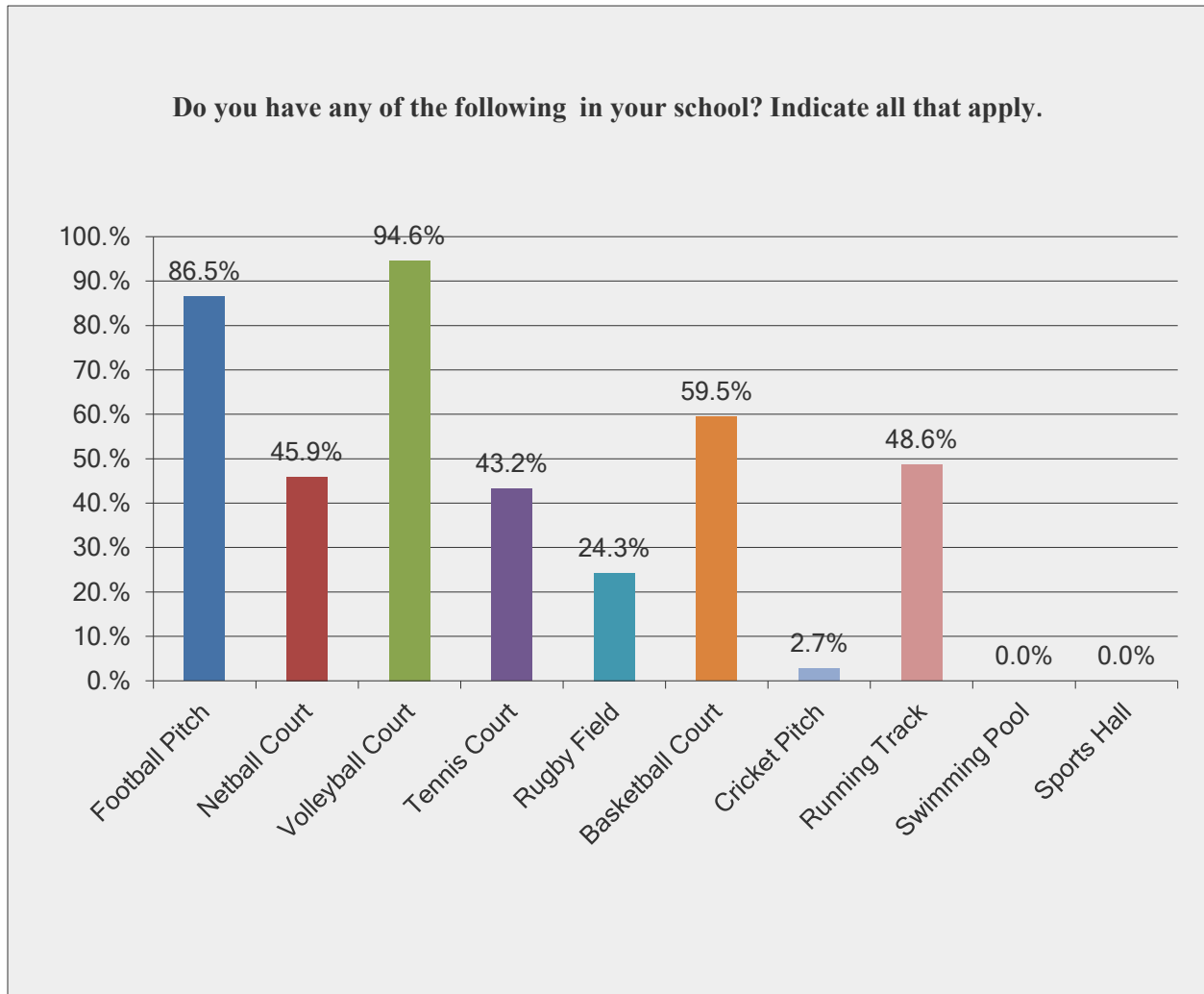
The findings indicate all the schools lack a swimming pool and sports hall with only one school 2.7 percent with a cricket pitch and few schools have a Rugby field. However majority of the schools have volleyball court 94.6 percent, football pitch 86.5 percent and basketball court 59.5 percent. Other facilities available in few schools are Running track 48.6 percent, Netball court 45.9percent and Tennis court 43.2 percent. Three of the schools didn't respond to the questions which may imply lack of all the listed facilities. Two of are in Kisumu and Mombasa and all are county schools.

Sports facilities per school category

There is a wide distinction on the availability of the sports facilities in different school categories.

The findings are presented in figure 4.18

Figure 4.18a Sports Facilities available in National schools

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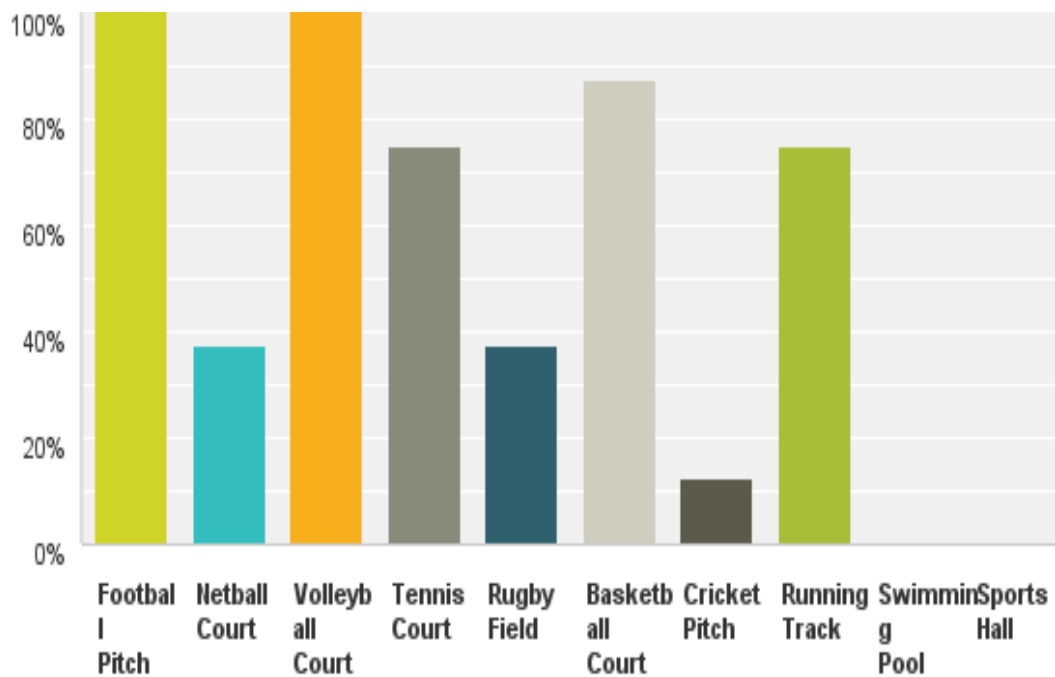
Figure 4.18b Sports Facilities available in Extra county schools.
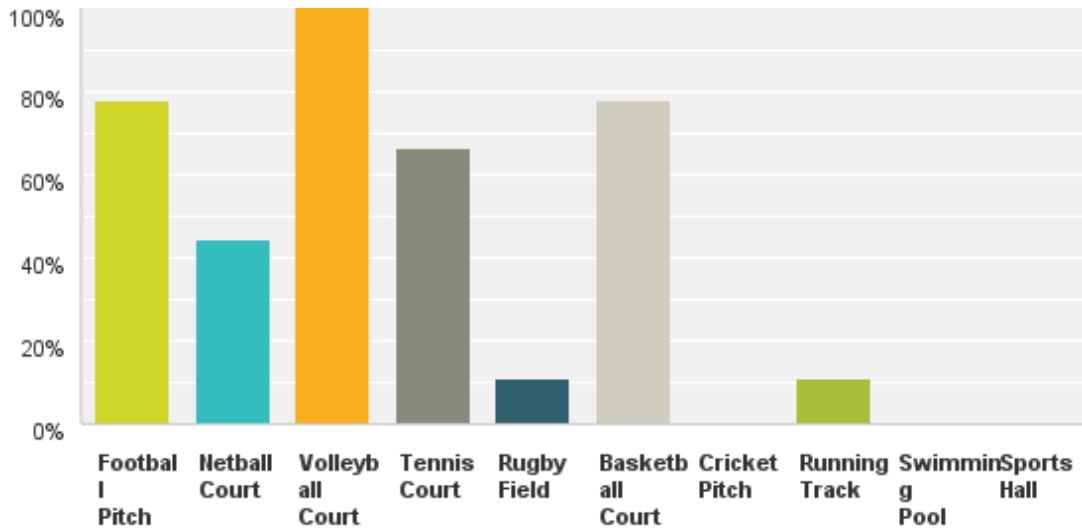
Figure 4.18c Sports Facilities available in County Schools.
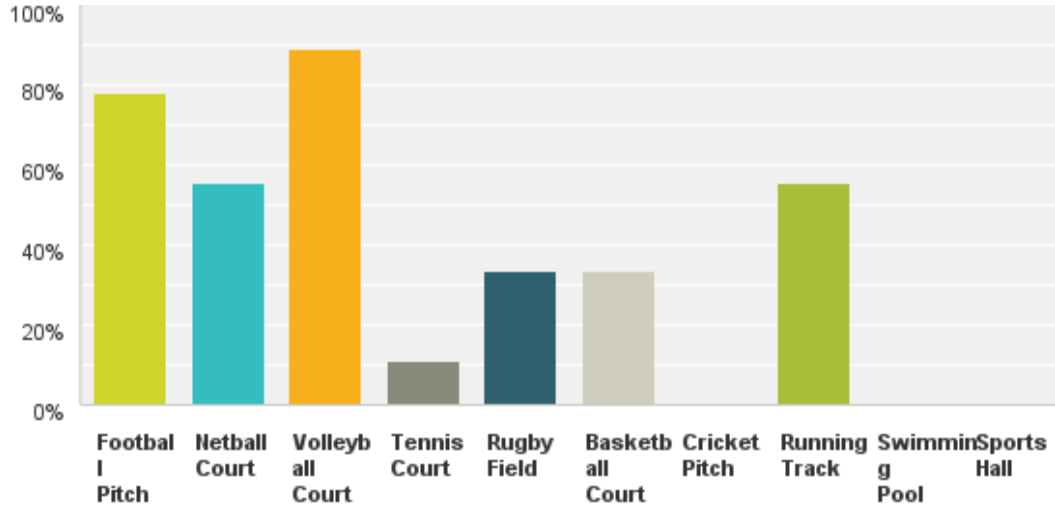
Figure 4.18d Sports Facilities available in Sub County schools.
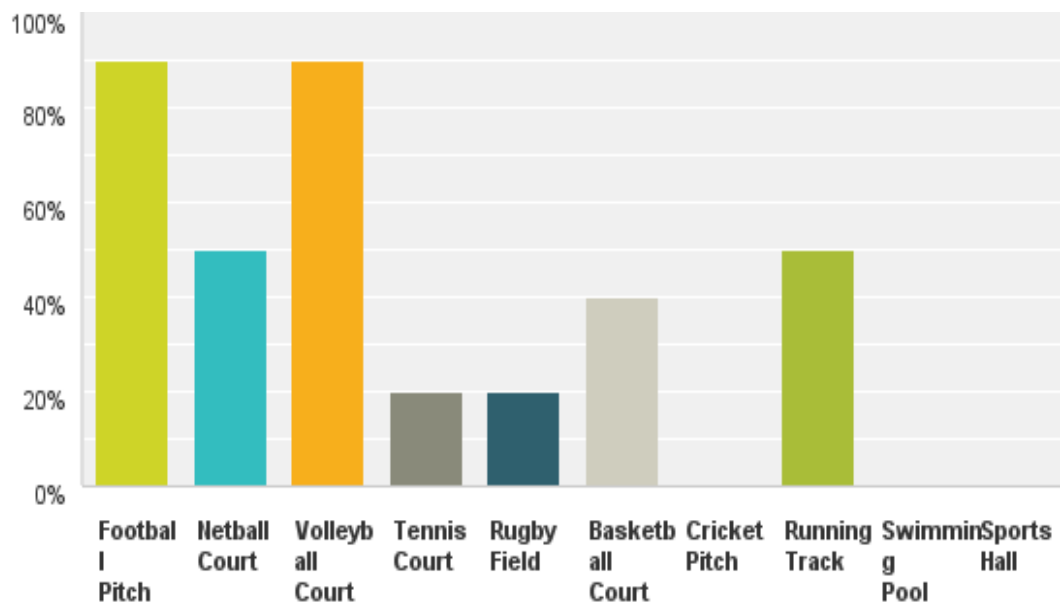
The availability of sport facilities differs greatly with the category of the school. All national schools have a football pitch and volleyball court at 100 percent. While over 75 percent of the schools have a tennis court basketball court and a running track. Few schools 37.5 percent have a Rugby field and netball court with only one school with a cricket pitch. These similar to extra county schools over 75 percent have Volleyball, basketball and football pitch but only one school has a running track and rugby field with none with a cricket pitch.

Over 75 percent of the County and sub county schools have only a volley court and football pitch, while only 50 percent have running track and a netball court, with the Rugby and basketball in county schools at 30 percent and 20 percent in sub county schools and none has a cricket pitch.

Adequacy of the sports Equipments

The study sought to establish the adequacy of sports equipment's to all learners to play. The results are displayed as follows on table 4.15.

Table 4.15: Adequacy of Sports Equipment's to all learners to play in Schools

Do you have sports equipment that enables all learners to play?		
Answer Options	**Response Percent**	**Response Frequency**
Plenty	2.7%	1
Adequate	43.2%	16
Inadequate	54.1%	20
None at all	0.0%	0
Total Responses	**100.0**	**37**
Skipped Question		**3**

The findings indicate that 37 schools have schools have equipment's however in most schools the sports equipment's are inadequate with only one school having plenty of the equipment's in the school. Three schools noted they lack sports equipment's hence never responded to this question. Adequacy of the facilities also varied with category of schools

Figure 4.19a Adequacy of the facilities in National Schools
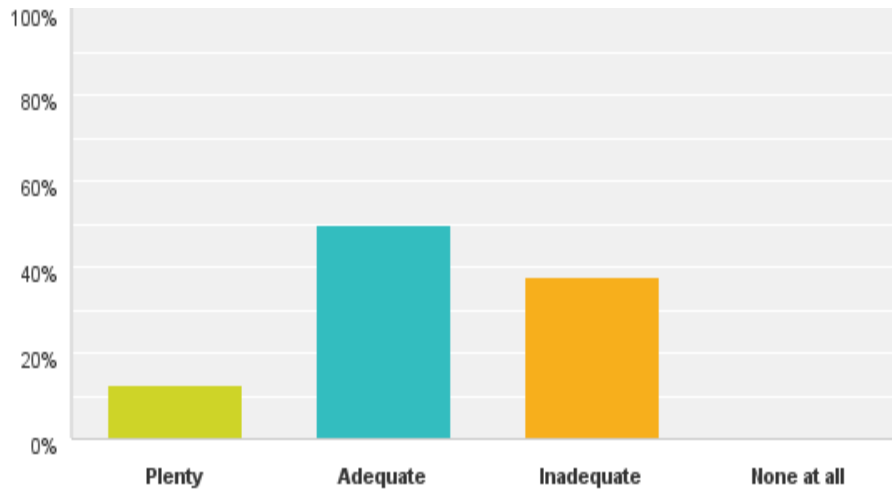
In national schools 50 percent had adequate the sports equipment's with some schools having plenty equipment's

Figure 4.19b Adequacy of the facilities in Extra County schools
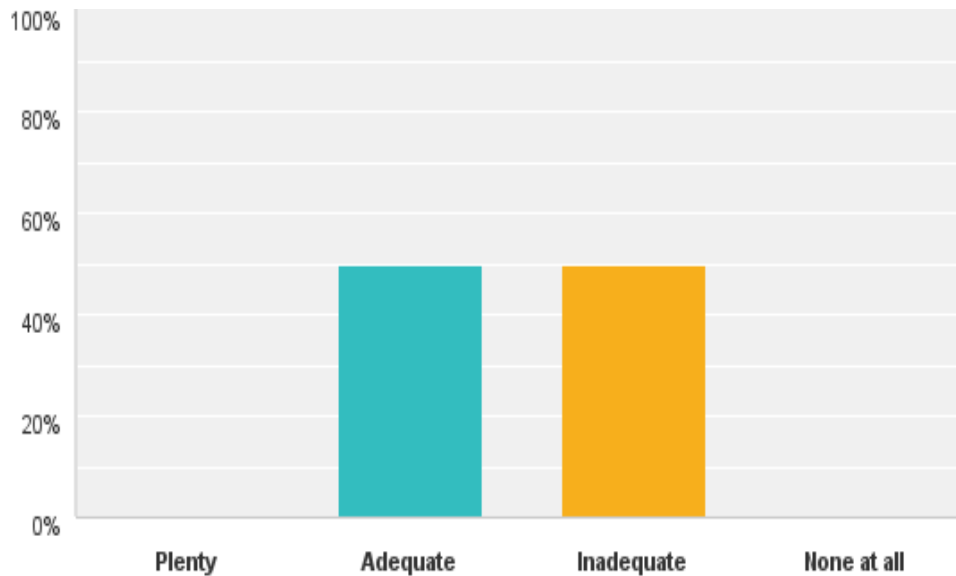
50 percent of the extra county had inadequate with another 50 percent with adequate P.E facilities.

Figure 4.19c Adequacy of the facilities in County schools
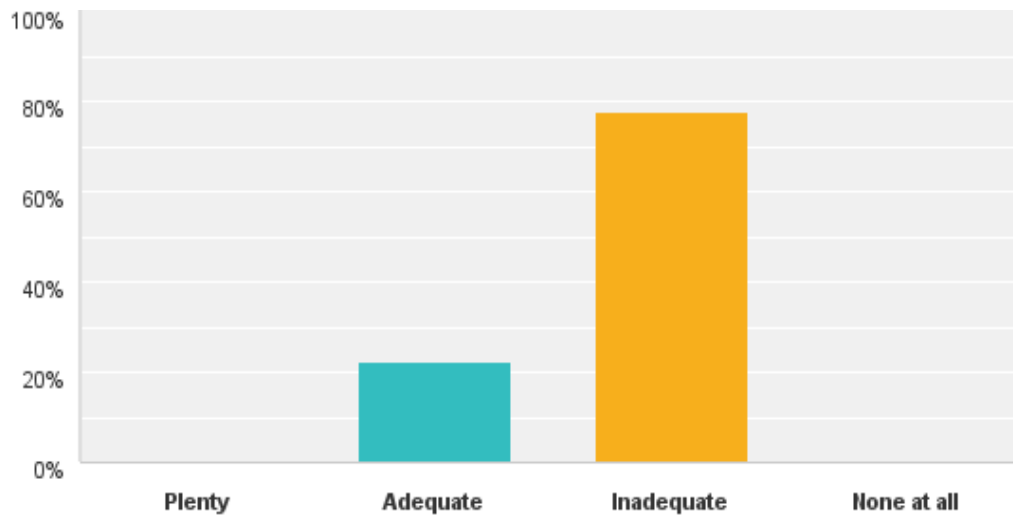
Over 75 percent of the county schools had inadequate facilities.

Figure 4.19d Adequacy of the facilities in Sub County schools
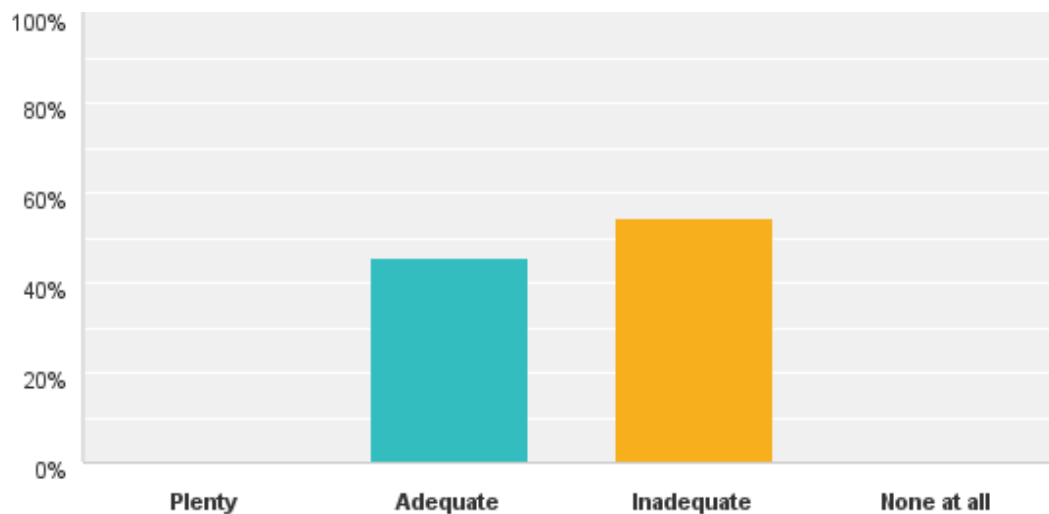
Over 50 percent Sub county schools had inadequate sports facilities.

Hardman (2002) failure to refurbish/reconstruct/ replace/maintain (out) dated and/or provide new facilities; had negative impacts on the state of physical education in schools

Availability of Specialized Rooms for Science and Technology

The study sought to establish the availability of the specialized rooms in secondary schools. These include rooms such as; computer lab, science lab, home economics room, industrial art lab, woodwork/ metal work workshop, art room, electricity room, agricultural lab, agriculture garden, music room and theatre. The findings are on figure 4.20.

Figure 4. 20: Availability of the specialized rooms in secondary schools
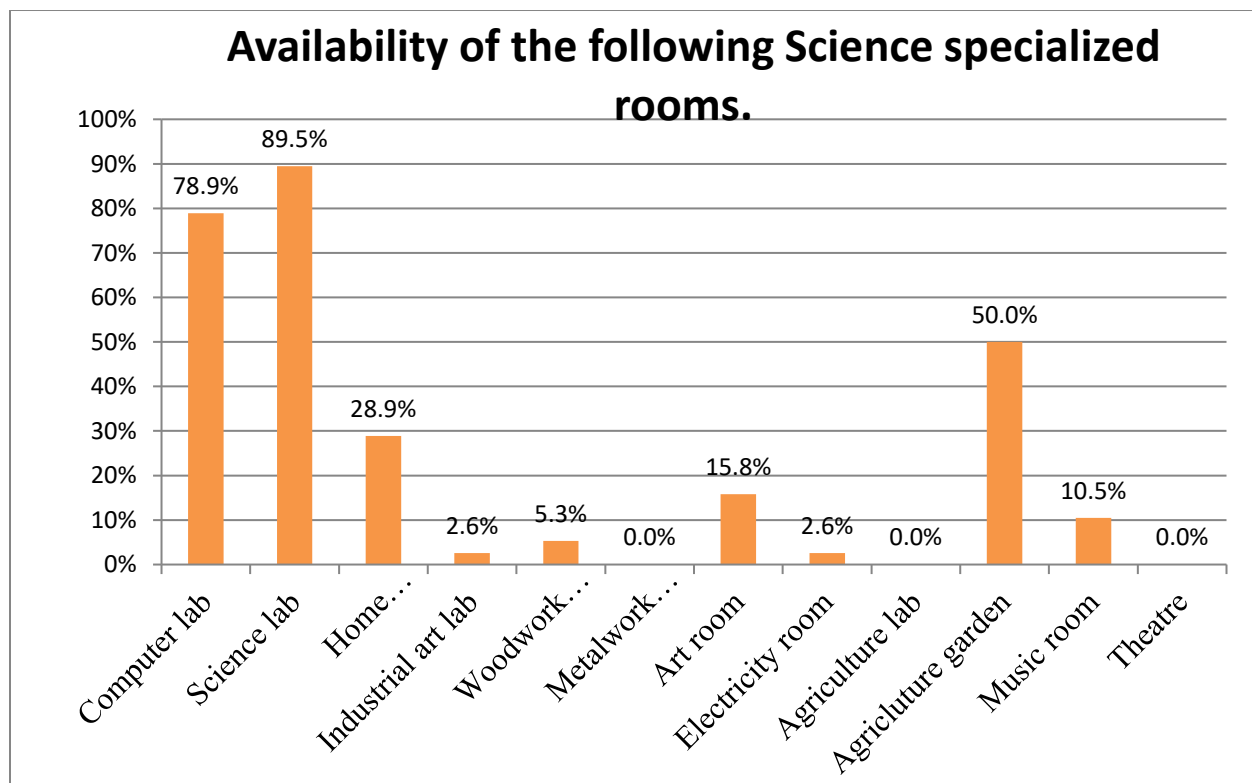
The findings indicate that 38 respondents answered this question of which majority noted their schools 89.5 percent have science labs, 78.9 percent have computer labs and 50 percent have an agricultural garden. However majority of the schools lack the essential and specialized rooms indicated. All the schools sampled do not have a theatre, agricultural lab, metal work workshop, with only less than five schools with wood work workshop, industrial art lab, electricity room and music room. However one respondent noted there was need to establish the adequacy of the specialized rooms since the school has few science labs.

Based on school categories the findings of availability of specialized rooms are indicated on table 4.16.

Table4.16: Availability of Specialized Rooms for different school categories

Rooms	National schools		Extra County		County		Sub County		Totals Schools	
	f	%	f	%	f	%	f	%	f	%
Computer lab	8	100	8	88.9	7	77.8	6	54.6	29	78.4
Science Lab	8	100	9	100.0	7	77.8	9	81.8	33	86.8
Home Economics Room	4	50.0	2	22.2	2	22.2	3	27.3	5	13.5
Industrial art lab	1	12.5	0	0.0	0	0.0	0	0.0	1	2.7
Wood Work Workshop	1	12.5	1	11.1	0	0.0	0	0.0	2	5.4
Metal Work Workshop	0	0.0	0	0.00	0	0.0	0	0.0	0	0.0
Art Room	3	37.5	2	22.2	1	11.1	0	0.0	6	16.2
Electricity Room	1	12.5	0	0.0	0	0.0	0	0.0	1	2.7
Agricultural lab	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Agriculture Garden	6	75.0	5	55.6	4	44.4	4	36.4	19	51.4
Music Room	2	25.0	1	11.1	1	11.1	0	0.0	4	10.8
Theatre	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

A 100 percent of the National schools had science labs and computer labs, all sampled extra county schools had science labs and over 85 percent had computer labs while over 75 percent of

the county schools had science labs and computer labs. 54.6 percent of Sub county schools had computer labs while over 80 percent had science labs. Home science and agriculture are examinable subjects in secondary schools however majority of the schools do not have home economics/Science lab or the agriculture garden, with none of the school categories with an agricultural lab.

Availability and Adequacy of Social and Emotional Studies resources to support teachers

The study sought to establish the resources that are available to support teachers in Social and Emotional Studies.

Table 4.17: Resources to support teachers in Social and Emotional studies?

Do you have any resources to support you in Social and Emotional studies?		
Answer Options	**Response Percent**	**Response Frequency**
Plenty	2.5%	1
Adequate	10.0%	4
Inadequate	52.5%	21
None at all	35.0%	14
Total	**100.0**	**40**

The findings indicates that majority of the schools 52.5 percent have inadequate resources while the others 35 percent have none at all. Only 10 percent noted they have adequate resources and one school 2.5 percent noted they have plenty of resources to support teachers in social and emotional studies. Availability of social and Emotional materials varied with school categories. The findings are displayed on figure 4.21

Figure 4.21a: Availability and Adequacy of Social and Emotional Studies resources to support teachers in National Schools
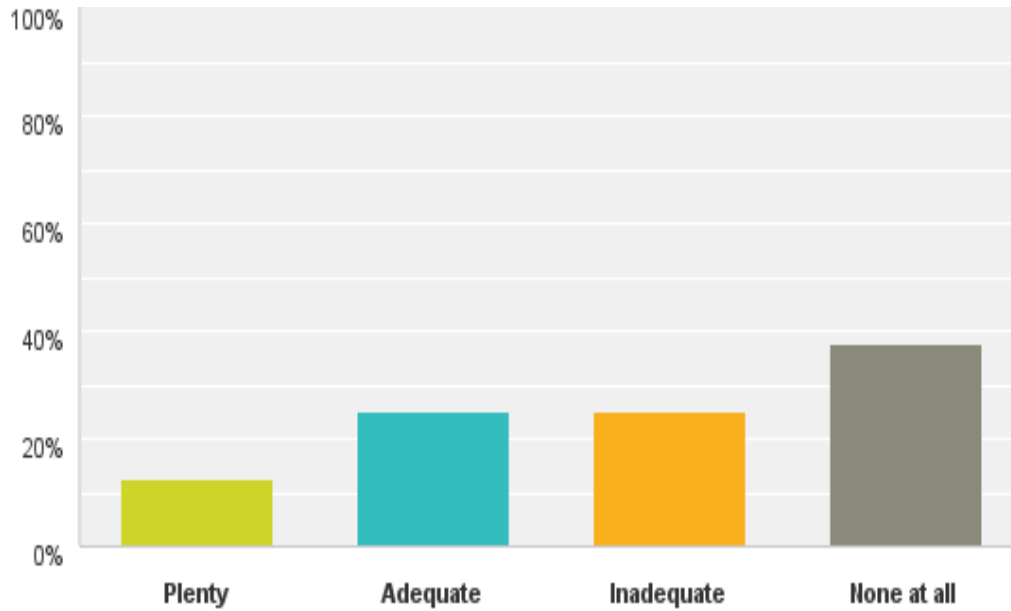
Figure 4.21b: Availability and Adequacy of Social and Emotional Studies resources to support teachers in Extra County Schools
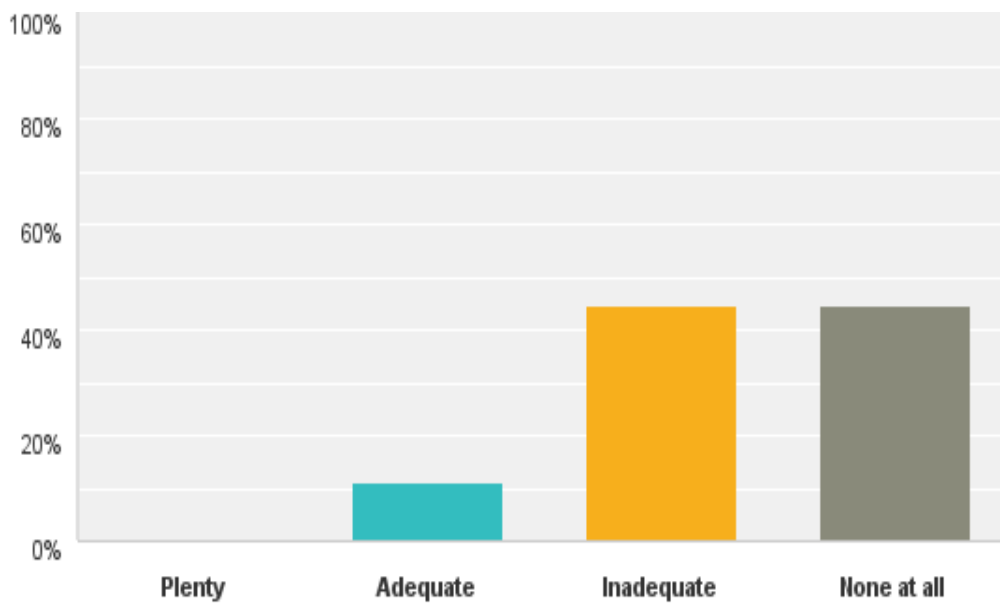
Figure 4.21c: Availability and Adequacy of Social and Emotional Studies resources to support teachers in County Schools
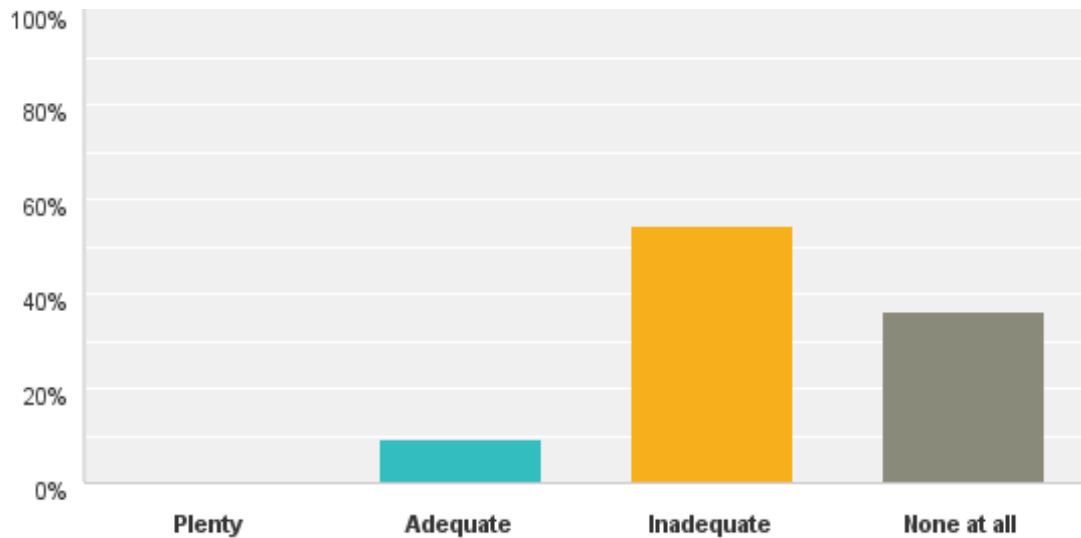
Figure 4.21d: Availability and Adequacy of Social and Emotional Studies resources to support teachers in Sub County Schools
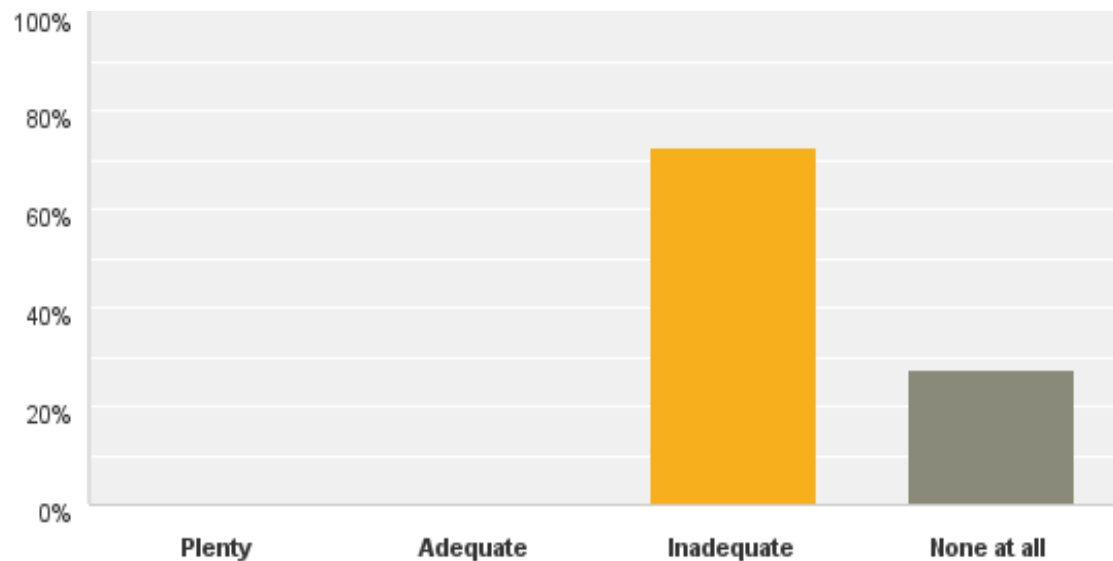
Majority of the national schools 37.5 percent had none of the social and emotional resources to support teachers while 44.4 percent of the extra county schools had no resources while 44.4

percent had inadequate resources. More of the county and Sub County schools have inadequate resources at a high rate 54.6 percent and 72.7 percent respectively.

Teaching and Learning Materials for Support in teaching culture and Arts Classroom Instruction for All Learners

The study sought to establish whether schools had available and adequate materials for support of classroom instruction for all learners in teaching culture and Arts. The findings are displayed on figure 4.22.

Figure 4.22:   Teaching and Learning Materials for Support in teaching Culture and Arts Classroom Instruction for All Learners
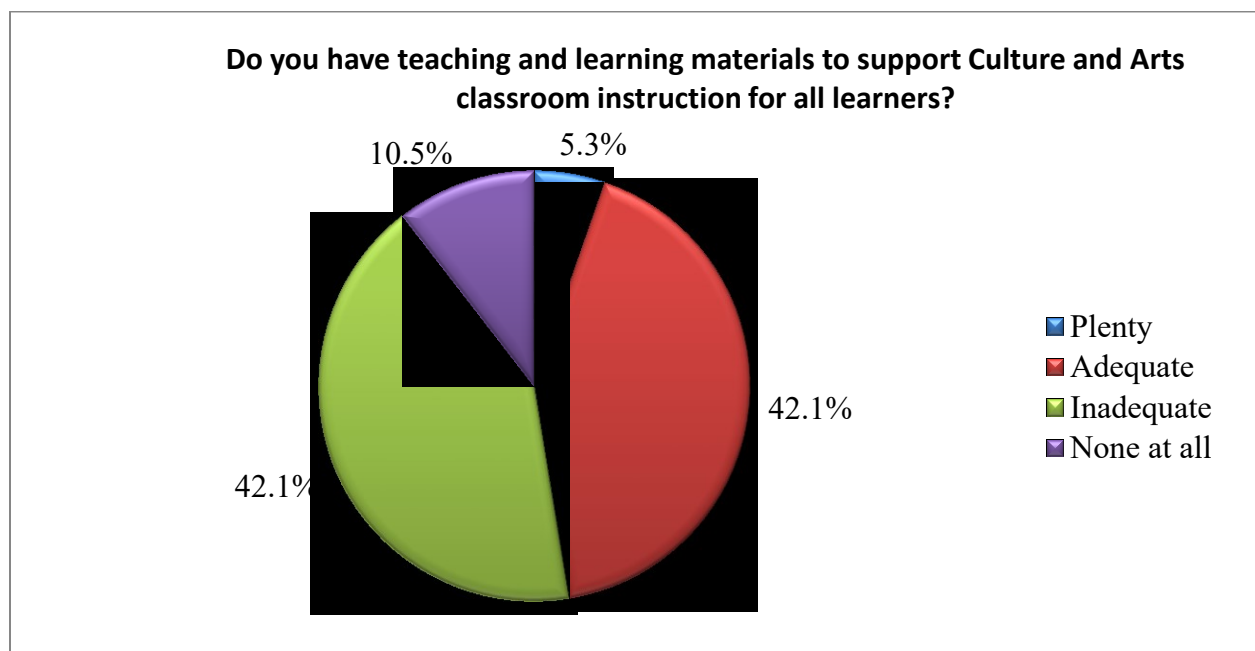
Over 40 percent of the respondents noted their schools have adequate materials while a similar number noted schools had inadequate materials with over 10 percent noting schools had none materials.

A cross tabulation of school categories and Availability of Teaching and Learning Materials for Support in teaching culture and Arts Classroom Instruction for All Learners indicate that National, Extra County and sub county schools had inadequate Teaching and Learning Materials for Support in teaching culture and Arts Classroom Instruction for All Learners while majority of the county schools had Adequate materials for culture and Arts.

National schools 50 percent had inadequate, 25 percent had adequate and 25 percent had none at all; Extra county school 50 percent had inadequate materials, 37.5% had adequate materials and 12.5 percent had none at all; County schools 81. 2 percent had adequate while 18.2 percent had inadequate; sub county schools 60 percent had inadequate, 20 percent had adequate and 20 percent had plenty, none of the sub county schools lacked culture and Arts materials..

Support Materials for Teaching Comprehension

Comprehension is section in the languages. The study sought to establish whether teachers have support materials to teach it.

Table 4.18: Availability of support materials for teaching comprehension.

	Plenty		Adequate		Inadequate		None at all		Total
	f	%	f	%	f	%	f	%	
Fiction books	5	12.8	23	58.9	11	28.2	0	0.00	39
Non Fiction books	6	15.8	20	52.6	10	26.3	2	5.3	38
Magazines	4	10.5	8	21.1	18	47.4	8	21.1	38
Digital materials	1	2.6	4	10.5	24	63.2	9	23.7	38
Internet based material	1	2.6	9	23.1	16	41.0	13	33.3	39

The study established that in overall majority of the schools have inadequate support materials for teaching comprehension. The study further established most schools 58.9 and 52.6 percent have adequate fiction and nonfiction books respectively while 28.2 and 26 percent of the schools have inadequate fiction and nonfiction books respectively. Whereas the same schools have inadequate magazines 47.4 percent, 63.2 percent digital materials and 41 percent of internet based materials. While an over 30 percent noted they have none of the internet based materials.

Teaching and Learning Materials for teaching Mathematics

The government is known to provide funds to cater for schools teaching equipments. The study sought to establish whether the schools provides and has adequate mathematical equipment's such as Mathematical sets, graph books/ papers, reference books, revision books, scientific calculators, internet based materials and models. Findings are displayed on figure 4.23.

Figure 4. 23: Does the school provide the following mathematical equipments?

School provision of the following Mathematic Equipments

	Mathematical sets	Graph books/ papers	Refrence books	Revision books	Scientific calculators	Internet based materials	Models
None at all	52.5	7.5	2.5	2.5	40	37.5	7.5
Inadequate	17.5	12.5	17.5	25	35	25	35
Adequate	25	42.5	57.5	47.5	22.5	27.5	45
Plenty	5	35	22.5	25	2.5	10	12.5

Mathematics Equipments
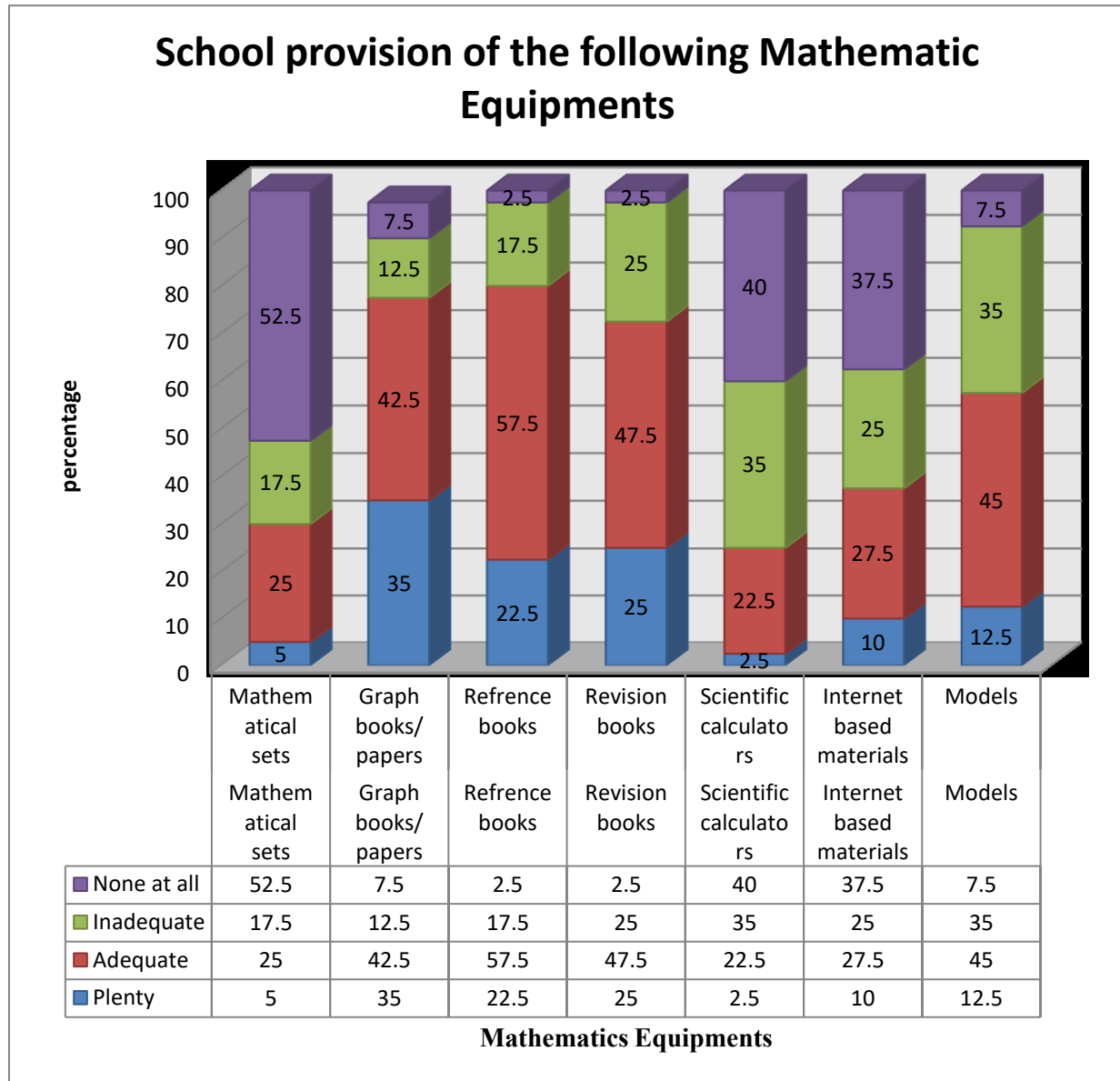
Findings revealed that half of the Mathematics teachers in the sampled schools 52.5 percent noted schools do not provide mathematics sets, scientific calculators 40 percent and internet based materials 37.5 percent. However they noted schools provide adequate and in some cases plenty graph books/papers, reference book and revision. In some schools 45 percent models are

adequate. Thus the study reveals the books are adequate in most schools while the sets, calculators are not available or are inadequate in most schools.

The study further sought to establish whether students use mathematical instruments correctly. The findings shows 52.5 percent of the teachers noted students sometimes use the mathematical instruments correctly while 45 percent noted they often use the mathematical instruments correctly. However 2.5 percent noted students rarely use the mathematical instruments correctly. Hence majority of the teachers noted learners use mathematical sets incorrectly.

The study also sought to establish the availability of blackboard, white boards, overhead projector, Printers and editing in schools

Figure 4.24: Availability of other Resources to the teachers
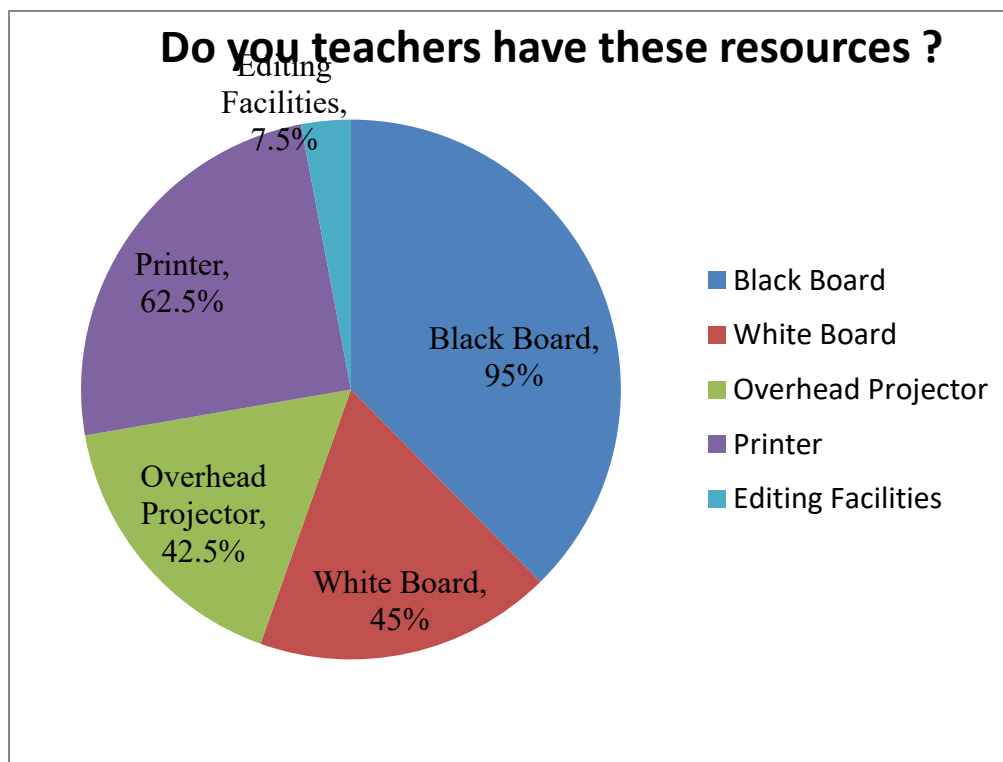
From the findings only two schools in Nairobi noted they don't have a blackboard but instead noted they have a white board. All other schools have a blackboard 95 percent. Only 7.5 percent of the schools have editing facilities. In addition majority of the schools do not have Overhead projector or white board.

Use of computers in teaching and learning

Teachers are expected to integrate ICT in teaching and learning. The study also sought to establish whether teachers and students use computers, whether teachers use it to edit written text, solve mathematics problems. The findings are displayed on figure 4.25 and 4.26.

Figure 4.25: Whether teachers work on the computers to edit written text
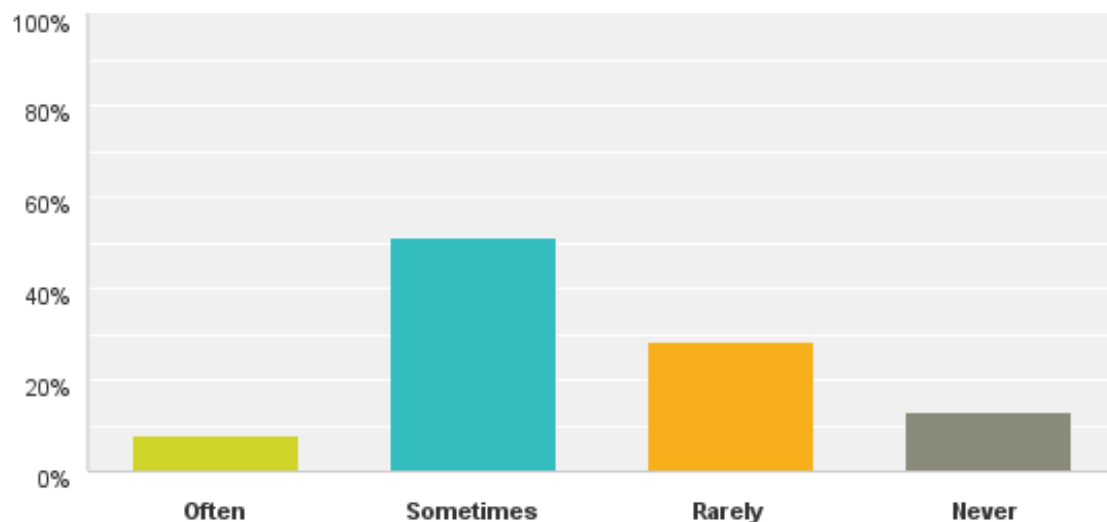
The findings on figure 4.25 established that 51.3 percent of teachers sometimes the edit written text on computers, 28.2 percent rarely, and 12.8 percent never while only 7.7 percent who noted they often edit written text on computers. This tends to concur with earlier findings whether editing facilities are available with only 7.5 percent noting they are available and only 7.7 percent note they often edit written text while the greater majority do not work on computers.

Mathematics teachers are thus expected to use computers in solving mathematics problems. The study sought to establish whether teachers use computers to solve numerical problems and draw graphs. Findings displayed on Table 4.19

Table 4.19 : Do Mathematics Teachers work on computers to solve numerical problems and to draw graphs?

Do you work on computers to solve numerical problems and to draw graphs?		
Answer Options	**Response Percent**	**Response frequency**
Often	5.0%	2
Sometimes	27.5%	11
Rarely	35.0%	14
Never	32.5%	13
Total	**100.0**	**40**

Majority of the respondents 67.5 percent noted mathematics teachers rarely and never use computers for solve numerical problems and draw graphs. However at 30 percent of the respondents noted teachers sometimes and often use computers. Hence majority of the teachers do not use computers for mathematics solutions. The study concludes that computers are not available for teachers use in the schools.

The Study sought to establish whether mathematics teachers have integrated ICT in teaching mathematics. Findings on figure4. 26

Figure 4.26: Do Mathematics teachers integrate ICT to teaching and learning mathematics.
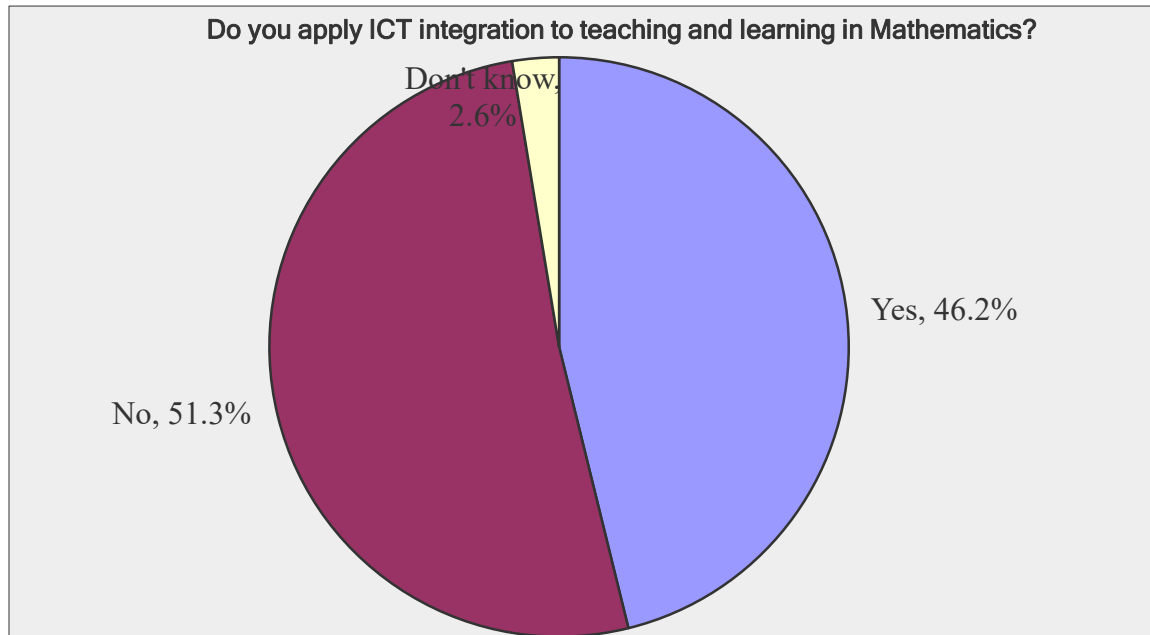
Findings on figure 4.26: concurs with the previous findings table 17 that indicated teachers do not use computers in solving mathematical problems. The findings shows that teachers have do not integrate ICT in the teaching of mathematics. This could due to either a mean lack of computers or inadequate competencies in ICT.

Do Students have regular access to computers, internet and cameras?

The study further sought to establish whether students have regular access to computers, internet and cameras. The results are displayed on figure 4.27 indicate that

Figure 4.27: Do Students have regular access to Computers, Internet and Cameras
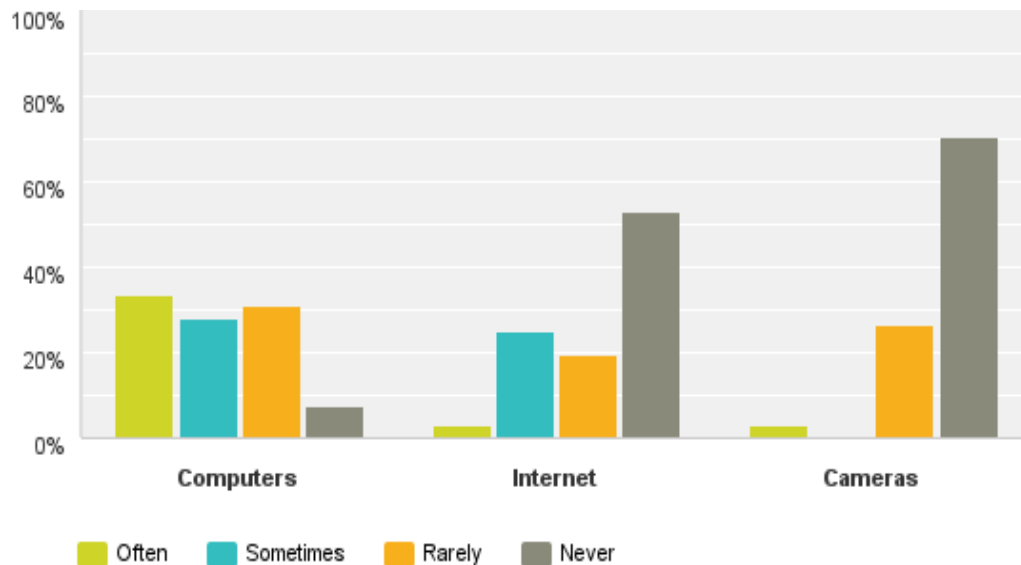
The study established that majority of the students 70.6 and 52.8 percent never have access to Cameras and internet respectively while only 2.9 noted they often have access to cameras and none has access sometimes and 2.8 percent noted they have access to internet and 25 percent noted they sometimes have access. In addition only 33.3 percent noted students often have access to computers, 28.2 the sometimes have access and only 7.7 percent noted they never have access to computers.

Participation in Competitions

The study sought to establish whether schools allow learners to participate in competitions or ceremonies.

Participation in language competitions

The study sought to find out whether students are given opportunity to participate in debating, public speaking, drama and symposiums. Findings are displayed on table 4.19

Table 4.19: Do you give students an opportunity to participate in the Language Competitions

Answer Options	Give Opportunity to participate		Do Not Participate	
	Response frequency	Response Percent	Response frequency	Response Percent
Debating	36	90.0%	4	10%
Public speaking	32	80.0%	8	20%
Drama	32	80.0%	8	20%
Symposium	26	65.0%	14	35%

The study findings indicate over 80 percent of the schools allow students to participate in debating public speaking and only 65 percent allow students participate in symposiums

The study further established that participation in competitions varies with the school category where by national schools over 42.9percent participated more in symposiums, 28.6 public speaking and drama and debating each at 14.3 percent respectively; County schools 63.6percent symposium, 27.3 Debating and 9.1 percent drama with none participating in public speaking; Extra County participated more in symposiums 55.6 percent and Debating 22.2 percent while drama and Public speaking is at 11.1 percent respectively while Sub county participated in in public speaking more 36.4 percent, symposium 27.3 percent and drama and debating each at 18.2 percent respectively. .

Students Participation in Mathematics Contests and Symposiums

The study also sought to establish whether learners participated in mathematics contests and symposiums. The findings shows that 92.5 percent of the schools allow their students to participate in mathematics contents and symposiums while only 7.5 percent of mathematics students do not participate in mathematics contests and symposiums.

Students' Participation on Science and engineering Fairs

The study sought to establish whether students participated in science and engineering fairs. The findings reveal that 50 percent of the school's students participate in science and engineering fairs often while in 40 percent of the school's students participate sometimes and only 10 percent of the schools noted students rarely participate.

Schools participation in Traditional Ceremonies

The study sought to establish whether schools participated in traditional ceremonies. 68.5 percent of the schools do not participate in traditional ceremonies. The findings indicate that majority of the schools 47.4 percent never, 21.1 percent noted rarely, 18.4 sometimes and 13.2 percent often participate. Respondents who noted often, sometimes or rarely identified they participate in the following ceremonies; parents day, fundraising, music and drama festival, prize giving days, national/public holidays celebrations, school/ communities cultural days, art and clubs competitions, church activities, burial and wedding ceremonies and talent shows.

Cultural festivals participated by students

The study sought to establish the first three cultural festivals participated most by students. The findings are displayed on table 4.20

Table 4.20: The top three cultural festivals do students participate in most

Which cultural festivals do students participate in most? Pick your top three.							
Answer Options	**First choice**		**Second choice**		**Third choice**		**Totals**
	F	%	F	%	F	%	
Talent shows	19	70.4	5	18.5	3	11.1	27
Extravaganza	1	16.7	4	66.7	1	16.7	6
Drama Productions	9	42.9	9	42.9	3	14.3	21
Dance Productions	1	10.0	7	70.0	2	20.0	10
Cultural shows	2	20.0	3	30.0	5	50.0	10
Poetry performances	3	15.0	4	20.0	13	65.0	20

The findings on table indicates that the first choice of the most participated cultural festival is talent shows 70.4 percent second choice is drama production 42.7 percent while the third choice is poetry performances 65 percent.

The study also sought to establish how often students take part in cultural events in schools. The findings indicated that half of the respondents 50percent noted cultural events are held annually, 45 percent termly and 5 percent noted they never take part in cultural events in their schools.

Time spent on the subject in schools and curriculum appropriateness

The study sought to establish whether lessons are scheduled on the timetable, and length of time is spent on teaching the each subject.

Schedule on timetable and Hours spent on the Physical Education Activities per Week

Every school time table should have one lesson (40 minutes) for P.E for each class in a week   and schools are also expected to schedule games 3 days in a week. The study sought to establish whether P.E lessons are scheduled on the timetable and what the time is spent on teaching the

subject. The findings indicate that all respondents 100 percent noted P.E is scheduled on the timetable.

P.E teachers were further asked how many hours in a week they spent on Physical Education and Life skills (Health and sex education). The findings are shown on figure 4.28.

Figure 4.28: Hours in a week spent on Physical Education and Life skills.
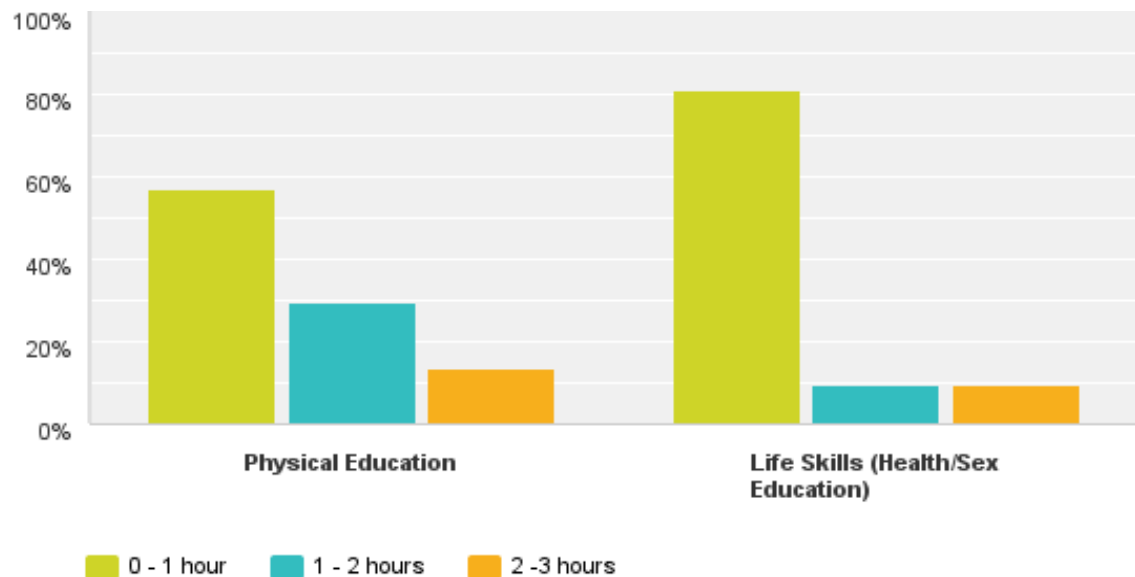
The findings indicate that majority of the respondents 56.8 percent and 81.3 percent noted they spent between 0-1 hour per week on physical Education and life skills (health and sex education) respectively. 29.7 percent noted the spent 1-2 hours per week on P.E while only 9.4percent of the respondents who spent 1-2 and 2-3 hours per week on Life skills while only 13.5 percent spent 2-3 hours per week on P.E. It is expected each school spends 40 minutes per week on P.E lesson and two lessons each 40 minutes per week for Life skills which should be scheduled on the timetable.

Whether P.E Time is spent appropriately

P.E teachers were asked whether they spend the P.E lesson scheduled on the timetable on Physical wellbeing activities or other activities. Majority of the respondents 80 percent noted they used P.E lessons on Physical wellbeing activities. However 12.5percent noted they spend P. E lesson on other activities while 7.5 percent failed to respond the question.

The study sought to establish the other activities/ subject Teachers do/teach during P.E time. 60 percent of the teachers noted they equally spent P.E lesson on English, Mathematics and Sciences while 40 percent of the noted they spend P.E Time on any other subject and/ assignments.

Time spent on Health Education and Well being

The study sought to establish the time school spent on health education and wellbeing weekly, fortnight, termly and yearly. The findings indicate majority of the schools spend some home on weekly and after a fortnight. On weekly basis, Majority 59.4 percent spend less than 1 hour on Health education and wellbeing, 21.9 percent spend 1-2 hours, 12.5 percent spent more than 2 hours and only 6.3 percent spend 0 hours weekly, meaning that health education and wellbeing is not addressed in these schools.

Fortnightly majority 58.3 percent spend 1-2 hours, in a term majority spent more than 2 hours on health education and wellbeing. Hence Health education and wellbeing issues are addressed in most school on weekly basis while in others on termly basis and a few for after a fortnight.

When talks on health education and students safety are done

The study also sought to establish whether health education and students safety talks are done in school, by whom and when the talks are done. 87.5 percent noted the talks are done in their schools, 5 percent noted they do not have such talks done in school and 7.5 didn't give response to the question.

Among those who noted it is done, 52.5 percent noted it is either done by Class teacher, 55 percent by guidance and counselor and 22.5 percent by a resource person. Hence in most schools

it's the class teacher or guidance and counselor teacher/s. other respondents also noted the talks are also offered by schools administration, a stake holders and games teachers.

The study also sought to establish when the talks are done. The findings indicates that health education and students safety talks are done during guidance and counseling time 60 percent, during assembly time 35 percent and during Roll call time 17.5 percent. Other times are indicated by teachers include after classes preferably in the evenings, weekly allocated times, weekly life skills lessons, individual Class assembly time, Day to day when need arises, P.E time and during class time.

Health education and student safety is a key concept addressed in the life skills hence its evident that much of discussions on heath education and student safety are done in weekly life skill lessons which is scheduled once or twice a week depending on the school in addition to other times as indicated by respondents.

Time spent on Social and Emotional Issues

The study sought to establish the time spent on social and emotional issues in schools. Majority of the respondents 87.2 percent spend more time on weekly basis. Most respondents 64.7 percent spend 0-1hour on weekly basis, 29.4 percent spend 2-3 hours and 5.8 percent spend 6 hours and more. On monthly basis majority 47.4 percent noted they spend 4-5 hours, 26.3 percent noted they spend 2-3 hours. On termly basis majority 64.3 percent noted they spend 6 and more hours while yearly 88.9 percent noted they spend 6 and more hours.

Based on the school category most national schools 57.1 percent spend 0-1 hour on weekly basis and other 28.6 percent spend 6 and more hours. Most Extra county schools 85.7 percent spend 2-3 hours weekly, while most county schools 81.8 percent spend 0-1 hour weekly and most of the Sub county schools 87.5 percent spend 0-1 hour weekly. Hence most schools spend 0-1 hour every week in addressing social and emotional issues.

Time spent on Language and Literacy Activities

Languages lessons scheduled daily for each class with 6 lessons each 40 minutes for form 1and 2 and 8 lessons for form 3 and 4 hence English is taught approximately 4- 5 hours per week and Kiswahili approximately 3 hours 20 minutes to 4hrs 40 minutes per week. Teachers are expected to undertake integrated teaching of language styles in all lessons. The study sought to establish the hour's teachers and students practice reading per week. Majority of the respondents 51.3 percent noted they practice reading with students 2-3 hours per week while 25.6 percent spend 0-1 hour per week whereas 15.4 percent noted they spend 4-5 hours per week with only 7.7 percent spending 6 hours and more per week. Thus with more teachers spending 2-3 hours per week on practicing to read this means limited time is left for other language styles such as writing, speaking and listening.

The study also sought to establish whether teachers in languages have adequate time to practice the functional and creative writing styles. The study established that majority of the teachers 64.1 and 60.5 percent noted they have adequate time to practice functional and creative writing styles respectively. However 35.9 percent and 39.5 teachers noted they don't have enough time to practice functional and creative writing styles respectively. This concurs to early finding hence the need for integrated teaching.

Hours spent on the Numeracy and Mathematics per Week

In every school it is recommended that mathematics should be taught daily hence approximately 6 lessons for form 1 and 2 and 8 lessons form 3 and 4 in a week hence, at least 4 hours to 5 hours 20 minutes. The study thus sought to establish how many hours per week teachers spend on mathematics and whether teachers

Table 4.21: How many hours do you spend on Numeracy and Mathematics per week?

How many hours do you spend on Numeracy and Mathematics per week?		
Hours per Week	Response Percent	Response Count
0-1 hour	5.4%	2
2-3 hours	13.5%	5
4-5 hours	43.2%	16
6 or more	37.8%	14
Total responses		**37**
Skipped Response		**3**

Majority of the teachers 43.2 percent noted teachers spend 4-5 hours per week and 37.8 percent spend 6 and more hours per week which actually concurs with the requirements while 13.5 percent of teachers who spend 2-3 hours per week spend 2 hours less the expected hours per week for teaching mathematics per week.

Marking student's assignments

The study sought to establish how often teachers mark students assignments. With a response rate of 40 mathematics teachers, majority of the teachers70 percent mark mathematics assignments daily, 22.5 percent mark weekly while 7.5 percent of the teachers mark after a fortnight.

 Support provided to teachers and learners

The study sought to establish what support is teachers were given in their continuous profession development (CPD), or how schools support teachers in dealing with students' issues as well as support given to teachers who take part in extracurricular activities.

Continuous Professional Development Support

Continuous Professional Development Support on Physical Education

The study also sought to establish whether teachers get Continuous Professional Development (CPD) in Physical Education, Health Education and students' safety.

Findings indicate 62.2 percent of teachers who responded to the PE domain noted P.E teachers had not received CPD on Physical Education; while only 37.8 noted teachers had got CPD support on Physical Education; on Health education and students safety 67.6 percent and 51.4 percent had not received CPD respectively while only 37.8 percent of teachers have attained CPD on P.E compared to those 29.7 percent with CPD on Health Education and 48.6 percent on Students Safety. Hence more teachers had received CPD on health education unlike others.

Continuous Professional Development (CPD) for Social and Emotional Domain

The study sought to establish whether Social and emotional studies teachers have attended any CPD facilitated by an external provider with expertise in the field. The findings indicated on figure 4.29

Figure 4.29: Social and Emotional Studies teachers attendance of any CPD facilitated by an external provider
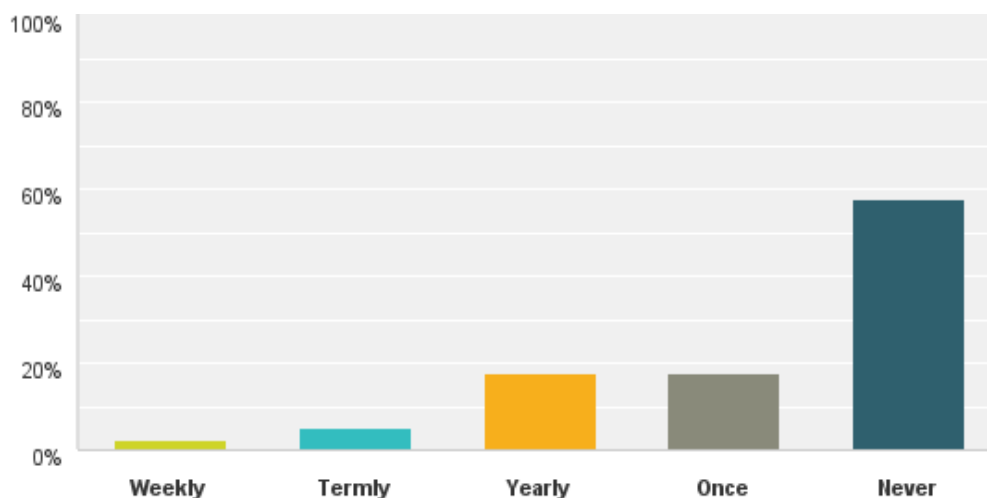
Majority of the social and emotional domain teachers57.5 percent noted they had never received any CPD provided by an external provider with expertise. With only 17.5 percent noting they had received once, another 17.5 noted had received yearly, 5 percent termly and 2.5 percent weekly. Thus only 42.5 percent had received a CPD support on social and Emotional studies.

Continuous Professional Development in language

The study also sought to establish whether the language teachers get CPD to keep them up to date with language teaching. The findings indicate that majority of the teachers 41 percent got inadequate CPD support, 23.1 percent got none at all while 35.9 percent got adequate CPD support. Thus over 60 percent never or got inadequate CPD support.

School-based inset programs

The study sought to establish whether the schools offered school based inset programs for teachers to support each other in their professional learning. The findings indicate that most schools 57.9 percent provide per term while 31.6 percent never provide the school based INSET programs.

School Support to teachers

Support school gives teachers to address social and emotional issues

The study sought to establish the support schools gives teachers to address social and emotional topics. The findings are displayed on table 4.22.

Table 4.22: Support Schools gives Teachers to address Social and Emotional topics

Topics	Awareness of bullying	Sex Education	Relationshi	Students Leadership	Values in Education	Drug and Alcohol	Violence inside school	Violence outside school
SUPPORT	%	%	%	%	%	%	%	%
Full support	51.3	47.2	48.7	56.4	64.1	48.7	47.4	30.6
Reasonable support	20.5	19.4	24.3	23.1	17.9	28.2	26.3	27.8
Some support	25.6	30.6	24.3	20.5	17.9	17.9	21.1	27.8
No support	2.6	2.8	2.7	-	-	5.1	5.3	13.9
Total	39	36	37	39	39	39	38	36
Total Percent	100.0	100	100	100	100	100	100	100

The findings reveal that at least half of the schools give teachers full support to address issues such as awareness on Bullying 50 percent, Students Leadership 55 percent and Sex education 62.5 percent. Others given full support are Values on Education 42.5percent and relationships 45 percent and violence inside school 45 percent.

Support from administration to work with students on social and emotional behavior

The study also sought to establish whether teachers get support from the administration to work with students around emotional behavior in an age appropriate way.

Figure 4.30: Support from the Administration to work with students around emotional behavior in an age appropriate way.
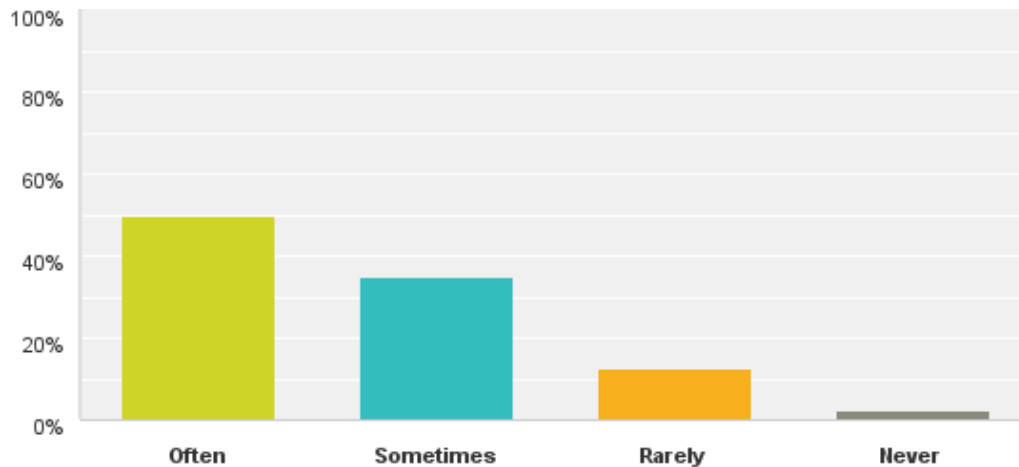
The findings noted that majority of the teachers 50 percent noted that teachers often get support, 35 percent of the teachers noted that they sometimes get support from the administration to work with students while 15 percent noted the administration rarely and never support teachers to work with students on social and emotional issues in schools.

Teachers given off duty

The study sought to establish whether teachers involved in culture and Arts get time off duty. Majority of the respondents 57.9 percent revealed that the teachers don't get time off duty or a less teaching load while 23.7 percent noted they do get time off duty whereas 18.4 percent were not sure. Indicating that although activities such as drama and music are involving in terms of time as students and teachers have to have meetings to prepare and practice majority of the teachers are not given time off or reduced work load.   Which may be disadvantageous to the students taught various subjects by teachers coordinating drama and music since in different times of the years they may be absent coordinating the festivals.

Teachers supported in Language and Literacy skills

The study sought to establish whether the language and literacy teachers are supported or get support in developing the various skills in learners. The findings revealed that 48.7 percent noted the support was adequate, 30.8 percent noted support was inadequate to develop speaking and listening; while support for assessing speaking and listening 48.7 percent felt the support was adequate while 28.2 felt the support was inadequate and 15.4 felt there were no support and 7.7 percent felt there was plenty support.

For reading analysis skills majority 43.6 percent felt they were supported adequately, 30.8 percent the support was inadequate, 23,1 percent noted they got plenty support with only 2.6 who don't get support.

For functional writing skills 58.9 noted they are adequately supported while 17.9 percent thought the support was inadequate and 17.9 percent plenty; creative writing 56.4 percent noted they get adequate support, 25.6 percent inadequate, 12.8 percent plenty and 5.1 no support. Thus majority of the teachers noted they get adequate support for writing styles.

Teachers support on Students

Teachers Support on Students

The study sought to establish what support was provided by teachers to students on different issues and how the teachers addressed it. The findings are discussed in this section.

Teachers Support on Students Social and Emotional issues

The study sought to establish teachers' role in supporting students in dealing with social and emotional issues. The findings are displayed on figure 4.31.

Figure 4.31: Teachers' Role in Supporting Students in dealing with Social and Emotional issues
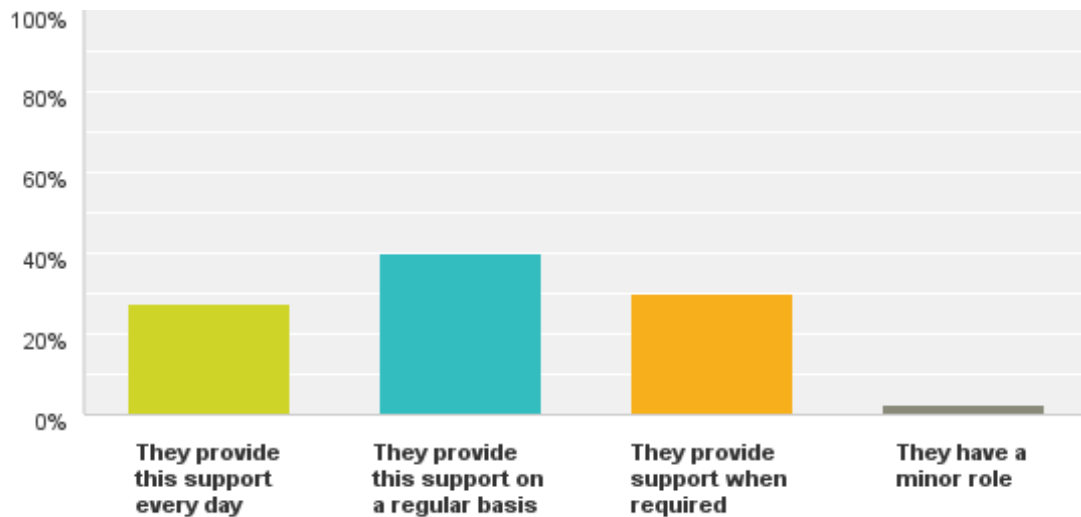
The findings indicate that majority of the teachers 40 percent provided support on a regular basis while 30 percent noted they provided support when it was required while 27.5 percent noted they provided support everyday while only 2.5 percent noted teachers have a minor role.

Social and emotional studies teachers were further asked whether they teach learners to empathize each other. Majority of the teachers 62.5 percent noted they often teach, 32.5 percent noted they sometimes teach learners to empathize each other while 5 percent teachers noted they rarely and never teach learners to empathize each other.

Involvement of parents in resolving conflicts among students

The study sought to establish whether teachers involve parents in resolving conflicts amongst students. The findings showed that majority 55percent noted the teachers sometimes involve parents while only 40 percent noted they often involve parents while 5 percent noted they rarely or never involve parents. Thus over 95 percent involve parents.

Support / Guidelines to manage relationships in school

The study also sought to establish whether there were guidelines to manage teacher –pupil relationships in school. The findings established that 90 percent of the respondents noted that there were guidelines while 10 percent noted there were no guidelines.

The study also sought to establish whether there were guidelines to manage teacher - teacher relationships in the school. The findings show that most schools 84.6 percent noted there are guidelines while 7.7 percent noted there were no guidelines and 7.7 also noted they were not sure.

Perception of secondary school teachers

The study sought to establish the perception of secondary school teachers in their teaching role and in relation to the breadth of learning opportunities in secondary schools in Kenya.

Effects of Teachers Work load: Learning Approaches Domain

The study sought to establish whether teachers work load affected the teacher's ability to mark and plan for students' success.

The findings displayed teachers marking and planning was often affected especially for teachers teaching subjects like English and languages, mathematics and sciences unlike Art and Design and technical subjects. Majority of the English and languages,48 percent mathematics 54.2 percent and sciences 43.3teachers noted the workload often affected their marking and planning. While majority of the Art and Design 53.3 percent and Technical subjects 52.4 percent noted work load only affected marking and planning sometimes. Hence for the majority of English and languages teachers 80 percent, Mathematics 75 percent, sciences 76.7 percent noted the heavy work load affected other teacher's roles. Whereas 40 percent noted Art and Design and 33 percent teachers noted technical subjects' workload doesn't affect marking and planning.

Challenges in teaching and learning mathematics

The study sought to establish the first three challenges teachers experience in teaching and in learning mathematics. The findings are displayed on figure 4.32.

Figure 4.32: Challenges Teachers Experience in Teaching and in Learning Mathematics
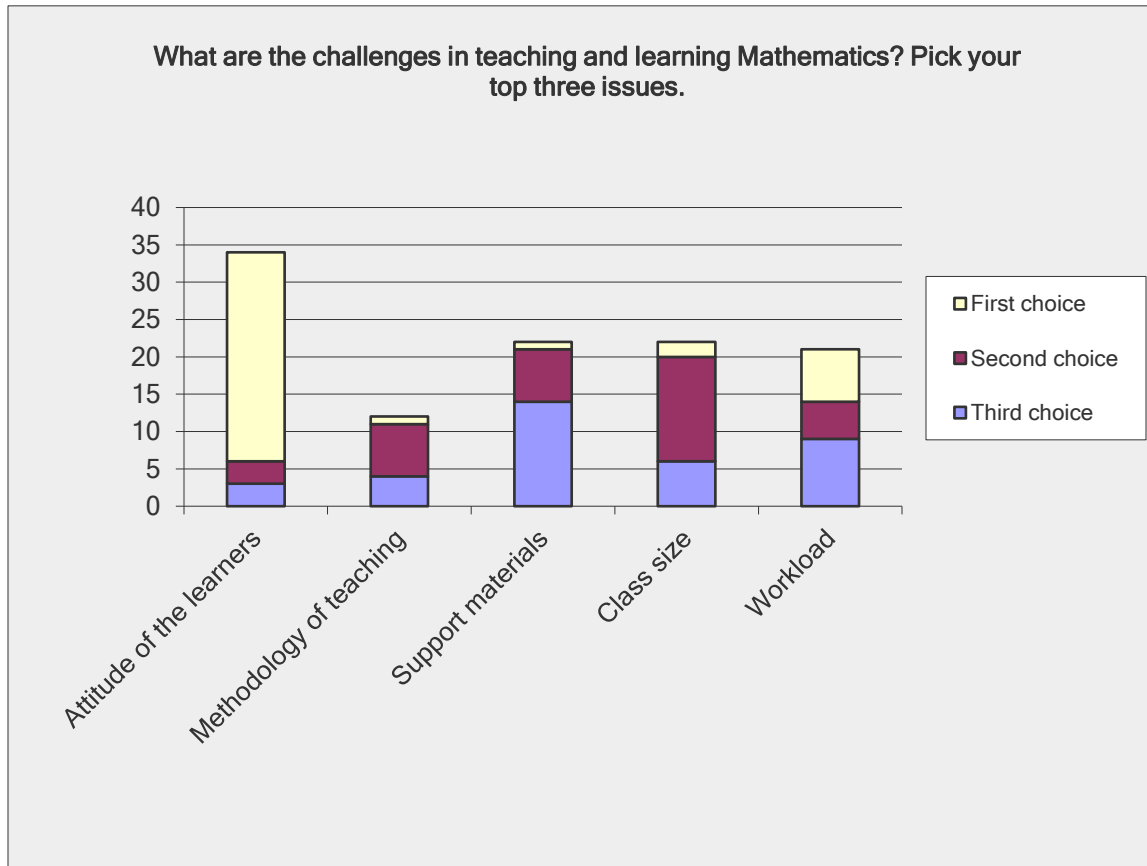
The findings indicate on figure the selected first choice challenge in teaching mathematics was the attitude of learners 82.4 percent, the second choice was class size 56 percent and third choice was support materials 51.9 percent. This concurs with a study conducted some key stakeholders (Nui & Wahome, 2006) in secondary education, that showed consistent failure in Mathematics and sciences was attributed to the attitudes students and teachers had towards the subjects. Manoah, Indoshi and Othuon (2011) observed in their study that attitudes played a critical role in students" performance. Based on this research, it means, attitude is a key component that

influences performance. Attitude therefore is a key factor in determining how well a curriculum is implemented in learning institutions and in particular Mathematics subject.

However the challenges differed greatly with the school categories. For all school categories the first choice was attitude of the learners. For the national schools the second choice was the methodology of teaching 50 percent while the third choice was class size 66.7 percent. The Extra County Schools the second choice was both the class size and support material each at 42.9 percent while the third choice is methodology of teaching 60 percent. For the County schools the second choice was the class size 83.3percent and the third choice was support material 100 percent. For the Sub County schools the second choice was class size 66.7 percent while the third choice was workload66.7 percent .

Greatest threat in learning Culture

The study sought to establish the greatest threat in learning culture in today's secondary schools. The findings indicate social media 45 percent followed by westernization 30 percent, changing gender roles 10 percent then social stratification and changing families each at7.5 percent. None felt human rights abuses were a threat.

Respondents were further asked whether learners show respect for diversity of race, colour, creed or gender. 85 percent noted yes, 10 percent don't know and 5 percent No.

The study sought to establish whether the language curriculum was molded to fit the local culture. The findings established that 56.4 percent noted the language curriculum was molded on the local culture while 33 percent noted the curriculum was not molded on the local culture.

Science and technology respondents perception of the science and technology curricula

The study sought to establish the perception of teachers on the science and technology. Findings are displayed on figure 4.33

Figure 32: Science and Technology Curricular and achievement of Developmental Goals

Do you feel that the current Science and echnology curricula will enable the learners/country to achieve set development goals?

- 15.8%
- 47.4%
- 36.8%
- Yes
- No
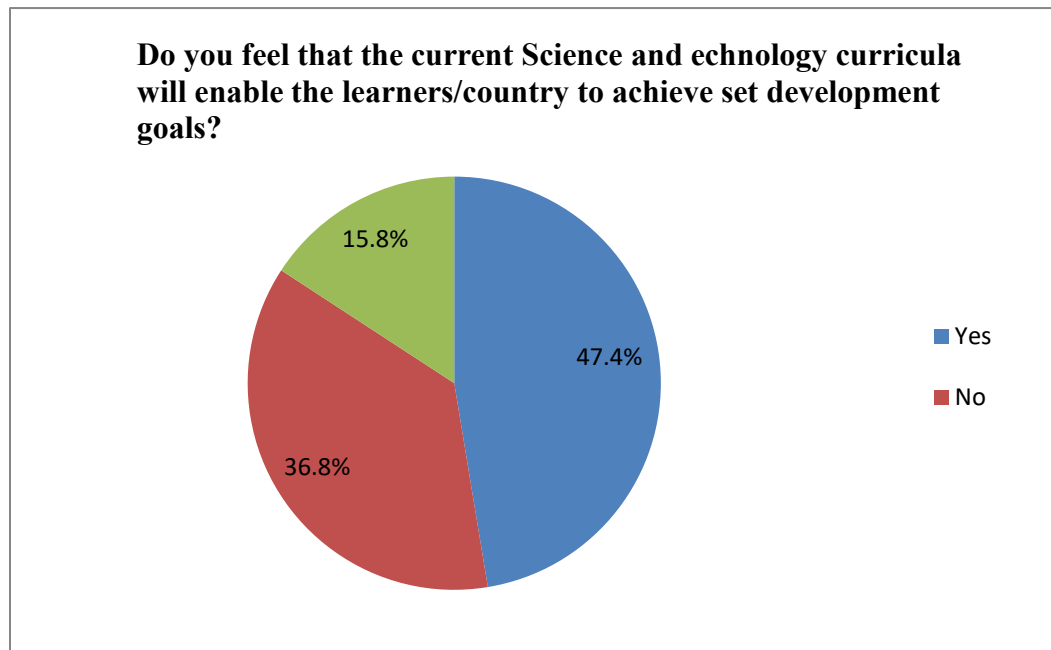
The study sought to establish whether the current science and technology curricula will enable learners / country to achieve the set development goals. The findings indicate that 47.4 percent of the teachers noted yes, 36.8 percent noted no while 15.8 percent noted they don't know. Hence it is not clear to teachers that the curricular will enable the country to achieve the set

development goals.

Perception of teachers on the breadth of learning tool

The study sought to establish teachers' perception of the Breadth of learning tool. The respondents were asked to comment on the tool coverage, opinions on breadth of learning, omissions and challenges.

On coverage, the respondents noted the tool was comprehensive and questions were well distributed. It covered vast areas in the curriculum, determinants of quality education.

Teachers had the opinion that though life skills was implemented in schools, it has not been properly included in the curriculum and teachers lacks proper training and course content to use hence most of the time scheduled for life skills is used for syllabus coverage of other subjects.

In addition respondents noted some areas of culture and arts are not in the current curriculum such as Modern dance and media studies while other respondents noted that most of the areas covered in the culture and arts domain are extra-curricular and are done out of a school interest and are mainly handled by the languages department

There is a great shortage of qualified TSC teachers in schools and high pupil- teacher ratio.

Technology equipments are very expensive hence some schools can't facilitate them.

Missing areas on breadth of learning tool

The teachers felt that there some sections that were missing in the tools. These include teachers' views on whether the current curriculum taught is fitting to world market requirement thus, a follow up should be done to establish the suitability of the curriculum and other areas that require inclusion.

Teachers response on life skills impacts and talents nurturing not included.

Questions on other factors that affect students learning such as nutrition and students welfare.

Tools should seek general opinion of teachers on other breadth of learning opportunities in schools.

CHAPTER FIVE

SUMMARY CONCLUSION AND RECOMMENDATIONS

The study summary will be based on the findings of the four research objectives for the breadth of learning study.

Objective 1: To explore the qualification of teachers in their teaching subjects in the public secondary schools in Kenya.

Principals' Highest Qualifications

All principals of the sampled schools were qualified as teachers. 57.5 percent of the principals had a Master's degree in education, 40 percent had a Bachelor's degree in education and 2.5 percent a Doctorate. None of the principals had a diploma in education as their highest.

Teacher's Highest Qualification

Majority of the teachers teaching in secondary schools have the required qualification either a bachelors or diploma in education. However untrained teachers are present in our schools.

92.5 percent of the Male teachers had a degree in education; of these 67.6 percent of the schools had6-40 male teachers with B.Ed.

95 percent female teachers had Bachelors in education; 50 percent of the schools had 6-25 female teachers with Degree in education.

82.5 percent male teachers had a diploma in education; only 3 percent of the schools had 6-10 male teachers had Diploma in education.

65 percent of the schools had female teachers with Diploma in education; only 11.5 percent had 6-10 female teachers with a Diploma in education.

37.5 percent of the schools had untrained male teachers; of these 6.7 percent of the schools had 6-10 untrained male teachers and another 6.7 percent had 16-20 untrained male teachers.

25 percent of the schools had untrained female teachers; of these 100 percent of the schools had 0-5 untrained female teachers. None of the schools had above 5 untrained female teachers.

90 percent had male teacher with Masters in educations; 11.1 percent of the schools had 6-10 male teachers. 87.5 percent had female teachers with Masters in education; 11.4 percent of schools had 6-10 female teachers with Master's in education.

37.5 percent male teachers had a Doctorate;100 percent of these schools had 0-5 male teachers with a doctorate. 40 percent of the female teachers' had a doctorate; 100 percent of these schools had 0-5 female teacher with doctorate.

Teaching Subject Qualification in respective subjects areas.

Most teachers have trained in the subjects they teach in the schools. However teachers taking culture and arts, life skills and P.E teachers have not trained in those subjects.

Only 17.9 percent P.E teachers noted they often learnt P.E and only 20 percent of the P.E teachers noted they often did Health education in the teacher training curriculum.

Only 65 percent of social and emotional domain respondents noted social and emotional studies was part of their teacher training curriculum. Only 28.1 percent of these teachers felt they often learnt Health education in the teacher training curriculum.

The majority of the Culture and arts teachers were rarely trained culture and Arts in the teacher training curriculum only 25 percent teachers taking culture and Arts (that is drama, poetry, music etc.) often learnt it in the teacher training curriculum.

87.5 percent of the teachers teaching life skills have not been trained.

2.6 percent of teachers teaching mathematics have not been trained to teach mathematics though qualified teachers with a Bachelor in Education..

15 percent of teacher respondents of the science and technology domain noted science was not part of the teacher training curriculum.

5.1 percent of teachers teaching language subjects didn't learn the subjects as part of their teacher training program.

Criteria used to select teachers to teach subjects in schools.

The criteria used to select teachers to teach P.E, Life Skills, Drama, culture and arts was not based on their qualification in the subject or training but on whether they were class teachers, have passion/ interest or had a lesser teaching load.

51.3 percent of the teachers teaching P.E were picked mainly selected mostly because they were in charge of the specific classes/ are class teachers, 25.6 percent because they had interest. Only 7 percent were picked because they learnt P.E in their teacher training.

Selection of Culture and the Arts teachers which include drama, music, dance, festivals or other cultural activity/ performances was based on passion for the subject 78.8 percent; only 45.2 percent of the teachers were picked because they were trained

35 percent of the teachers selected to teach life skills had an interest in the subject, and 25percent, had a gap on their timetable or workload and17.5 percent because they were Class Teachers.

Objective 2: To establish whether public secondary schools in Kenya have been equipped with adequate and appropriate teaching and learning resources and facilities.

Most schools do not have the required facilities/ resources and if available they are not adequate. Availability and adequacy of school facilities/ resources differed greatly with the category of the

school, with national schools having most facilities which are either adequate or plenty while county schools lack the facilities or they are inadequate.

Availability/ Unavailability of Sports facilities

7.5 percent of the school lacked any of the listed sports facilities, 100 percent of the sampled schools did not have a swimming pool and sports hall. Percent of schools that lack facilities are 97.3 percent lack a cricket pitch, 75.7 percent a Rugby field, 51.4 percent, 54.1 and 56.8 percent of the schools lack Running track, Netball court and Tennis court respectively.

Volleyball court, football pitch and basketball court are available in most schools at94.6 percent, 86.5 percent and 59.5 percent respectively.

Adequacy/ inadequacy of Sport Equipments

50 percent of the school noted sports equipment's were inadequate.

50 percent of national school have adequate and 12.5 percent had plenty sports equipment's. Extra county schools 50 percent had adequate and 50 percent of schools had inadequate sports equipment's. Sports equipment's in 77.8 percent of County schools were inadequate and sub county schools 54.6 percent have inadequate sport equipment's.

Availability and adequacy of Social and emotional resources to support teachers.

52.5 percent of the schools had inadequate resources and 35 percent had none at all. Only 10 percent had adequate resources and one school (2.5) percent had plenty of resources to support teachers addressing social and emotional studies in schools.

Availability and adequacy of culture and Arts materials to support learning

42.1 percent of the culture and Arts teachers noted schools had adequate materials while a similar number (42.1) percent noted schools had inadequate materials with 10.5 percent noted they have no culture and art materials.

Availability and adequacy of Languages materials

41.1 percent of the schools had inadequate Languages materials, 16.7 percent had none of the Languages materials. 33.3 percent of schools had adequate and 8.9 had plenty of Languages materials

47.4 percent, 63.2 percent and 41.0 percent of the schools had inadequate magazines, digital materials and internet based materials.

21.1 percent, 23.7 percent and 33.3 percent of schools do not have any magazines, digital materials and internet based materials.

58.9 percent and 52.6 percent had adequate fiction and non-fiction materials respectively.

Adequacy of Mathematics equipment's

52.5 percent, 40 percent and 37.5 percent of the schools didn't have mathematics sets, scientific calculators and internet based materials respectively.

17.5 percent, 35 percent and 25 percent schools had inadequate of the mathematic sets, scientific calculators and internet based materials.

Books are adequate in most schools 77.5 percent, 80 percent, 72.5 percent and 57.5 percent have adequate of graph books, reference books, revision books and models respectively.

Availability of Science and technology special rooms

Majority of the schools lack the essential and specialized rooms indicated. 100 percent of the schools sampled did not have a theatre, agricultural lab and metal work workshop. 94.7 percent,97.8 percent, 97.8percent and 89.5 percent of the sampled schools lacked a wood work workshop, industrial art lab, electricity room and music room.

89.5 percent, 78.9 percent and 50 percent had science labs, computer labs and an agricultural garden respectively.

95 percent of the schools had a blackboard and 62.5 had printers. 92.5 percent, 57.5 percent and 55 percent of the schools lack editing facilities, white boards and overhead projector respectively.

Students' access to resources: 70.6 percent and 52.8 percent teachers noted students had no access to Cameras and internet respectively while only 33.3 percent noted students often have access to computers. 35 percent and 32.5 percent of the teachers rarely and never use computers to solve mathematics problems. Only 7.7 percent of language teachers often edit work on computers.

Objective 3: 2.   To examine the time spent in teaching, learning and addressing other need of students' vital for holistic development in the public secondary schools in Kenya.

13.5 percent spent P.E lessons on other activities. 60 percent of the teachers equally spent P.E lesson on English, Mathematics and Sciences, 40 percent spend P.E Time on any other subject and/ assignments.

Time spent on P.E per week: Each class should be spent 40 minutes on P.E in a week. 56.8 percent of the schools spend 0-1 hour on P.E in a week. 43.2 percent spent 1-3 hours for physical education. Only 43.2 percent spent the adequate time on P.E

Schools are expected to have 1-2 lessons per week on Life skills. Between 40 minutes to 1 hour 20 minutes for Life skills (Health and sex education) in a week. Only 18.8 percent spend 1-3 hours on life skills in a week.

Time spent on Health Education and Well-being and Social and Emotional Issues

No specific time is scheduled in school time table for Health Education and Well-being, time spent on health education and wellbeing depends on an individual school. 65.7 percent of the schools

spent 0 to less than 1 hour on Health Education and Well being.Only 21.9 percent of schools spend 1-2 hours on weekly basis.

In most schools Social and Emotional Issues are addressed during life skills lessons or guidance and counseling meetings, class meeting and talks with resource persons. Life skills lesson vary in schools from 1-2 lessons in a week; 40 minutes to 1 hour 20 minutes. One- two lessons per week for life skills is not adequate to address social, emotional, health and students wellbeing.

6.3 percent spent 0 hours weekly on Health Education and Well-being.

Topics coverage on Social and Emotional lessons

47.5 percent noted the social and emotional studies were not adequately covered in the curriculum.

Topics that are addressed often in most schools are Values in Education 70 percent Drugs and Alcohol 67.5 percent, Violence inside school 55percent and sex education 50 percent.

Topics addressed sometimes are leadership training 55, Relationships. Awareness of bullying and violence outside schools are addressed rarely.

Time spent on Language and Literacy Activities

Language lessons (Kiswahili and English) are scheduled daily for each class with 6-8 lessons for English each 40 minutes per week hence approximately 4hrs - 5 hours 20 minutes per week and Kiswahili 5-7 lessons per week approximately 3 hours 20 minutes to 4hrs 40 minutes per week. Only 15.4 percent teachers spend the adequate 4-5 hours per week while 7.7 percent spent 6 hours and more per week in reading.

Only 35.9 percent and 39.5 percent teachers noted students don't have adequate time to practice functional and creative writing styles respectively.

Time spent on mathematics

Mathematics in Secondary school should be taught daily 6-8 lessons in a week. Approximately 4 hours - 5 hours 20 minutes per week. 18.9 percent of teachers do not spend the required 4-5 hours in teaching mathematics instead they spend 0-3 hours per week.

Coverage of Mathematics Topics

35.9 percent of the mathematics teachers do not cover listing and counting. While less than 10 percent of the teachers fail to cover Algebra, geometry, statistics and numbers. Despite all this topics being part of the secondary school syllabus.

Topics/ Areas covered in Culture and Arts lessons

Areas of Culture and Arts that are on the school timetable are; poetry 82.1 percent. Culture and Arts areas not scheduled on the timetable are 64.3 percent,67.9 and 72.1 percent of Drama, Music and fine Art respectively. Modern dance and media studies do not occur on the time table or curriculum. Drama is extracurricular hence done out of a schools interests. Drama and poetry are handled by language department.

Objective 4:To establish the professional support accorded to public secondary teachers in Kenya for effective delivery of curriculum.

Continuous Professional Development Support

Majority of the teachers teaching Physical Education, Health Education have not received Continuous Professional Development.

62.2 percentand69.4 percent had not received Continuous Professional Development in P.E and Health education respectively.

57.5 percent of the social and emotional domain teachers noted they had never received any CPD provider by an external provider with expertise.

41 percent of the language teachers had received inadequate CPD support. 23.1 percent of the language teachers had never received CPD support in language subjects.

57.9 percent of the schools provide school based INSET programs per term. 31.6 percent never provide the school based INSET programs.

50 percent of the schools give teachers full support to address issues such as awareness of Bullying, Students Leadership and Values on Education. Reasonable support is given to address drug and alcohol abuse, violence inside school and violence outside school. Some support is given to address sex education, violence outside schools and relationships.

Objective 5: 5.   To examine perception of the secondary teachers on learning opportunities and breadth of learning tools in public secondary schools in Kenya

Major challenges in teaching and learning mathematics is attitude of learners towards the subject, in addition to class size which was noted to be way above the standard class size of 40 learners and support materials. The study findings most of the schools lack or have inadequate mathematics equipments. In addition to work load and methodology of teaching.

Majority of the teachers teaching mathematics, Languages and sciences confirm that work load has been a key challenge in their planning, preparation and fulfillment of other teaching roles.

Majority of the teachers were satisfied with the areas covered by the tools, however some noted aspects assessing learning impacts of learners, talent development and general teachers opinion on the tool were lacking.

CONCLUSION

Curricula need to be reviewed to identify opportunities for the teaching and application of skills. Different subjects or academic disciplines provide different types of opportunities; some may provide opportunities for one type of skills, like cognitive or social emotional, while some subjects are more suited to other skills. Education systems need to explore options for teaching of skills

within subjects, within trans-disciplinary approaches, and across subjects. Teachers need to be trained to include breadth of skills in their teaching practice. Education needs to provide more comprehensive learning opportunities, and this is possible through an emphasis on the whole person in a way that is relevant to the local and global context in which they will learn and work. Focusing on breadth of skills and including transferable skills on the same plane of importance as literacy and numeracy can help counter the setting of narrow goals for children

RECOMMENDATION

Study recommends the following

Government should endeavor to incorporate the teaching and learning of a range of skills essential to tackle the challenges of our dynamic world and that can transform learners to be mindful, creative, and collaborative beings.

Government should employ qualified teachers in all domain areas. The MOE should monitorstrict syllabus coverage and time allocation for all subjects to ensure adequate time is allocated for all subjects /areas of learning for holistic development of learners.

Ministry of Education should monitor and ensure that Continuous professional development is provided regularly to all teachers and all subject to ensure teachers are adequately equipped with skills and knowledge to enable them handle all topics in their respective all subjects.

Higher education institutions responsible that offer teacher training education need to adjust their pre-service courses, and in-service courses to enable offer subjects and teacher expertise in a range of areas to enhance teacher skills development in line with the required 21st century skills and goals of education.

Provision of adequate quality teaching and learning tools is critical for quality education. Ministry should ensure all schools are adequately equipped with quality teaching and learning equipment's and resources.

Policy makers (KICD, MOE) should formulate policies that guide the implementation of non-examinable subjects to effectively enhance implementation of Life Skills, teaching Physical education, culture and arts curriculum successful and to benefit learners.

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APPENDIX 1 SAMPLING CRITERIA EMPLOYED

S/NO.	BRANCH	REGION	SCHOOL CATEGORY	SETTING	GENDER
1.	Nakuru	Rift Valley	National	Rural	Girls
			Extra County	Urban	Boys
			County	Urban	Mixed Day
			Sub-County	Rural	Mixed Boarding
2.	Bomet	Rift Valley	National	Urban	Boys
			Extra County	Rural	Girls
			County	Rural	Mixed Boarding and Day
			Sub-County	Urban	Girls Day
3.	Mombasa	Coast	National	Urban	Girls
			Extra County	Rural	Boys
			County	Urban	Girls Day
			Sub-County	Rural	Mixed Boarding
4.	Nairobi	Nairobi	National	Urban	Boys
			Extra County	Rural	Girls
			County	Urban	Mixed Boarding
			Sub-County	Rural	Girls Day
5.	Machakos	Eastern	National	Rural	Boys
			Extra County	Urban	Girls
			County	Rural	Mixed Day
			Sub-County	Urban	Boys Day
6.	Embu	Eastern	National	Urban	Boys

			Extra County	Rural	Girls
			County	Urban	Girls Day
			Sub-County	Rural	Mixed Day and Boarding
7.	Kirinyaga	Central	National	Urban	Girls
			Extra County	Rural	Boys
			County	Rural	Boys Day
			Sub-County	Urban	Mixed Day
8.	Kisumu	Nyanza	National	Rural	Girls
			Extra County	Urban	Boys
			County	Urban	Boys Day
			Sub-County	Rural	Mixed Day and Boarding
9.	Busia	Western	National	Urban	Girls
			Extra County	Rural	Boys
			County	Rural	Girls Day
			Sub-County	Urban	Mixed Day and Boarding
10.	Garissa	North Eastern	National	Rural	Boys
			Extra County	Urban	Girls
			County	Urban	Mixed Boarding and Day
			Sub-County	Rural	Boys Day

APPENDIX 2: Description of Schools Categories

National schools- These are boarding schools whose catchment is 100 per cent national. They are centers of education excellence established for purposes of stimulating education standards and fostering national unity and social cohesion.

Extra-county schools – These are boarding schools that are the second-tier national centers of education excellence. The schools complement national schools in promoting integration and benchmarking educational standards in their regions. .

County schools- these are boarding secondary schools in the county other than national and extra-county schools. They include some day schools in cities and major urban centers. Their catchment is the host county. Candidates who are not selected into national or extra-county schools are considered for placement the county schools.

Sub-county schools- these are basically day schools, all new boarding schools and boarding schools with day wings. They draw their students solely from the host sub-county.

Appendix 3: Teachers and Principals Introduction and Consent
KNUT/R/924/827/2016

October 16, 2016

THE PRINCIPAL,

,……………………………………………………………………………

INFORMED CONSENT- BREADTH OF LEARNING SURVEY

The Kenya National Union of Teachers (KNUT) in collaboration with Education International (EI) and Brookings Institute is carrying out a survey on the Breadth of Learning in the Kenyan secondary schools as a way of enhancing the quality of teaching and learning.

Your school has been selected as a pilot school. We wish to request you to mobilize the teachers of the earmarked eight departments to participate in this survey by providing information that will form a base for advocating for a well-supported education practice in Kenya and by extension to other African countries. The ear marked departments are, P.E, Social and Emotional, Culture and Arts, Language and Literacy, Learning and Cognition, Numeracy and Mathematics and Science and technology.

Please fill free to participate by completing the attached survey questionnaire which should take less than 20 minutes of your time.

All the information gathered will be treated with confidence

Yours Faithfully,

(WILSON SOSSION)

SECRETARY GENERAL

K.N.U.T.

C.C.   The National Chairman,   The National Treasurer,

KNUT Head Office   KNUT Head Office

APPENDIX III TEACHERS INTRODUCTION AND CONSENT LETTER

KNUT/R/924/827/2016

October 16, 2016

INFORMED CONSENT- BREADTH OF LEARNING SURVEY

TEACHER'S QUESTIONNAIRE

The Kenya National Union of Teachers (KNUT) in collaboration with Education International (EI) and Brookings Institute are carrying out a survey on the Breadth of Learning in the Kenyan secondary schools as a way of enhancing the quality of teaching and learning.

Since your school has been selected as a pilot school, we wish to request you to mobilize the teachers in your departments to participate in this survey. The seven ear marked departments are Physical well-being, Social and Emotional, Culture and Arts, Language and Literacy, Learning and Cognition, Science and Technology, Numeracy and Mathematics.

Please fill free to participate by completing the attached survey questionnaire which should take less than 20 minutes of your time. All the information gathered will be treated with confidence and only used for the purpose of the study.

Yours Faithfully,

**(WILSON SOSSION)**

SECRETARY GENERAL

K.N.U.T.

C.C.   The National Chairman,   The National Treasurer,

        KNUT Head Office   KNUT Head Office

Breadth of Learning:

Assessment of the Breadth of Learning Opportunities In Public Secondary Schools In Kenya

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