

Effectiveness of Schools' Teaching Practices on KCSE Performance in Public Secondary Schools in Kakamega County, Kenya

Violet Odenda Namuhisa, Judah Ndiku

Abstract— The development and implementation of effective internal and external quality assessment and standards, provided schools with a foundation for monitoring and evaluating their programs. The purpose of the quality standards and assessment program was to provide a reasonable assurance that the school's activities conformed to the national standards set by the Ministry of Education, through its Directorate of quality and standards department. One of the ways that ensured internal quality and standards are met was implantation of effective teaching practices. The general objective of this study was to establish the effectiveness of schools' teaching practices on the Kenya certificate of secondary education performance of public secondary schools in Kakamega County, Kenya. The study was guided by School Based Management Theory. Cross-sectional study design was selected because of the advantage that it provided in saving cost and time in data collection and also that it allowed for standardization of interview questions. The target population was 415 principals, 415 Deputy Principals, 415 directors of studies and 33296 form four candidates 2019. A sample size of 700 respondents was selected using Nassiuma's formula for number of schools then stratified sampling technique applied to get the sampled schools. 100 principals 100 deputy principals 100 director of studies and 400 students were chosen as the sample. The study relied on primary data and secondary data that was collected using semi-structured questionnaire. Modifications, additional questions and other shortcomings found in the questions were corrected. Descriptive statistical analysis was done using, frequencies and percentages to describe the basic characteristics of the data. Inferential data analysis was done using Pearson's Product-Moment Correlation Coefficient. Correlation analyses were used to measure the relationship between variables. The correlation analysis results revealed that there was a positive and a strong significant association between schools' teaching practices and KCSE Performance as supported by ($r=0.655$, $p=0.000$). The coefficient of determination (R Square) of 0.875 indicated that the independent variable constituted 87.5% of the variance in the dependent variable. These results therefore explained 87.5% while the 12.5% is explained by other variables outside the scope of this study.

Index Terms— Schools' Teaching Practices and KCSE Performance.

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I. INTRODUCTION

Teaching is a complex set of practices draws on teachers' beliefs about learning, their prior experiences, their content and pedagogical knowledge and repertoire, and their commitment and personality. Recent research in education learning outcomes has turned to examining teaching practices, including content knowledge, pedagogical practices, and teacher-student interactions, primarily through quantitative data from knowledge tests and classroom observations of practices (Filmer *et al*, 2020;).

Teaching practices are activities undertaken by the teachers or persons responsible for imparting knowledge to learners that enhance learning in a school. Teaching practices are different from teaching practice. Teaching practice involved student teachers undertaking their teaching under supervision. Effective Teaching practices in a school fostered trust and emotional security, are rich in language and communication promote critical thinking and problem solving. Effective teaching practices were responsive to build on each other development and motivate learning and continued efforts. Effective teaching practices also included how schedules and routines were carried, how setting were managed and how children's challenging behaviors were addressed (Early Child hood Learning and knowledge Center Private policy 2022). Effective teaching practices helped teachers to increase student engagement in the classroom, design interesting lesson plans and encouraged an overall enthusiasm for learning. Garg, (2018) stated that the best teaching practices for learning was Creating a Student Centered Learning Environment, Building relationships that promote a safe , positive environment in which students are responsible, self-motivated, and self-evaluating. Effective teaching practices led to improved learner participation and engagement which led to improved content retention hence improved scores in evaluation tests.

Literature study also showed that student achievements was a very important aspect to highlight as it shows the product of the education process, which could be seen through student academic result, the transition from school to work (e.g., youth unemployment and employment by level of education attainment), and the social and labor-market outcomes of education (Scheerens *et al.*, 2011). Other terms used in different research works included student progression, performance and degree classification, and retention and persistence. Aside from the study result, the preliminary assessment of students' knowledge was seen to be important, which included creating an admission requirement and appropriate faculty qualifications to filter the selection of students (Chua, 2004; Mergen *et al.*, 2000).

A study done on the relationship to examine student learning outcomes based on international tests where most students passed the basic learning levels (Dang, Glewwe, Lee and Vu, 2020) had considerable variation existing between learning outcomes, particularly at the secondary level, where high achieving students

continued to upper-secondary and lower achieving students dropped out at Grade 9 (Dang and Glewwe, 2018). It was established in the study that Some characteristics of teachers, such as qualifications and professional commitment, did not vary the results greatly because most Vietnamese teachers met the national standards in terms of qualifications (had a college degree) and had a high level of professionalism (Glewwe et al,2020). So what differentiated teaching for those who achieved these high learning outcomes and those who didn't? Factors, such as using lesson plans and teaching the national curriculum, didn't count for much. Therefore, to explain how teaching affected student learning outcomes, it was important to examine more closely teachers' practices in the classroom (Dang, 2018)

The decline in education standards in secondary schools was studied in Karachi, Pakistan and the study established the causes as defective administration, inflexible curriculum, ineffective evaluation system, outdated teaching methods, and bad inspection system contributed in the low education standards (Lodhiand Faizi 2011). Recommendations called for an improved curriculum to meet the current time, societal wishes, and the use of organized evaluation systems to test student abilities and adoption of modern methods. The provision of public education was one of the primary duties of any state. This explained why the Government of Uganda, over the last two decades, had been heavily investing in improving access to, and quality of public education (Malunda, et al, 2016).

Although access at both primary and secondary levels of education appeared to have been widened, the quality of education in the country generally seemed to remain a big challenge (MoESTS, 2014). For instance, according to the Directorate of Education Standards' (DES) report of 2012, the pedagogical practices in secondary schools in Uganda were at variance with the expectations of the Government and the curriculum planners. In fact, even the subsequent annual reports of the Directorate have repeatedly revealed that the way teachers work in the secondary schools in Uganda, does not conform to the classroom standards set by the Directorate as well as the National Curriculum Development Centre [NCDC].

In many other developing countries, education is considered to be the cornerstone and pillar of economic growth and development (Oredein, & Oloyede, 2017). Nigeria government believes that to survive in the competitive world economy, quality of education was the key variable. Grounded on this belief, educational reforms have taken place to improve the quality of education. Teachers are held responsible for the quality of students' work. The quality of the students' notebooks and assignment showed that teachers' delivery quality and the students' contribution assessment results showed there is an improvement or not. Current models of supervision portrayed the teacher as a participant rather than an observer in the learning process. The emphasis of these models was for continuous improvement for both the teacher and student alike. In Kenya the effective teaching practices have been wrapped in a new curriculum Competency Based Curriculum which focuses on the knowledge skills and abilities of students resulting from teaching practices that engaged learners and were adaptive to the changing needs of students teachers and society (UNESCO 2017).The teaching practices discussed in this study were ICT integration in learning, use of question and answer method student discussion and use of practical lessons to enhance learning of skills and concepts .

SCHOOLS' TEACHING PRACTICES

Teachers and their teaching practices differ in different schools. How much time they put in, the different methods they use and planned for teaching also varie from school to school. In a study on the effect of Teaching Management Strategies on Academic Performance of Secondary Schools in Nyamira County; by Momanyi (2019) established that student centered management strategy, teacher centered management strategy and assessment

strategy were positively and significantly associated to academic performance. The joint teaching management strategies (assessment management strategy, teacher centered management and student-centered management) were found to be significant in determining academic performance. The teaching management strategies predict 53.5% of change in the academic performance. The regression analysis exhibited a unit increase in student-centered management strategy led to a rise in academic performance by 0.489 units when other factors are held constant. It was found a unit increase in teacher centered management will result in 0.475 units increase in academic performance. A unit increase in assessment strategy would increase the academic performance by 0.494 units while other factors are held constant. The study concluded that student centered management strategy, teacher centered management strategy and assessment strategy were positively and significantly related to academic performance. The study recommended that schools adopt joint teaching management strategies (assessment management strategy, teacher centered management and student-centered management) since they were found to predict 53.5% of academic performance change. The study also recommended schools could employ any of the three-teaching management strategies. The assessment strategy had the highest effect on academic performance and should be the most applied within the schools. There should be continuous assessment tests to reinforce students' learning of materials in a systematic way. The schools needed to have regular formative assessments and give continuous assessment tests. The Government of Kenya was prioritizing the use of information and communication technology (ICT) in teaching and learning at both basic and higher education levels, including through collaborations with international agencies and organizations. In response to technological changes, the 2006 National ICT Policy was revised, resulting in the development of the 2019 National ICT Policy, which led to achieve a knowledge-based society and ensure the availability of accessible, efficient, reliable and affordable ICT services (Mariga *et al.*, 2017)

In her study on Effects of School Culture On Students' Performance In Kenya Certificate Of Secondary Education (KCSE) Examination in Matungulu Sub-county Machakos County, Kenya, Mutua (2014)found out that School culture was related to students' achievement than any other variable (Watson,2001).The research objectives sought to establish how school vision, mission and values, frequent communication through school assemblies and motivation through prize giving affected student performance in KCSE. The findings revealed that there was a positive relationship between mission, vision and values and students 'performance as indicated by a correlation of 0.63. Findings also revealed that there was a positive relationship between communications through school assemblies and students' KCSE performance as indicated by a coefficient of 0.69 which implied that communication through school assemblies had a strong influence of KCSE performance. Findings also revealed that there was a positive (0.72) correlation between motivation through prize giving and students' KCSE performance.

When ICT is integrated into lessons, students became more engaged in their work because technology provides different opportunities to make it more fun and enjoyable in terms of instructing same concepts in different ways. Harris, *et al* (2016) did a quantitative study using 4th grade participants from a title 1 elementary school in central Illinois. The results showed that one on one technology could be a factor in student academic achievement and motivation. Scholars under the Scholars Strategy Network (2014) assessed the impact of digital content and resources on learner performances. Their studies concluded that there was an enormous variability in how digital instructional programs were rolled out, accessed and supported. The quality of educational programming using these resources depends on more factors than the software and technologies purchased by the state. Scholars Strategy Network (2014) concluded that from general analyses, digital content does regularly add value to instruction even when the technologies are

working well and readily accessible. Use of digital content and its effect will be studied. The extent and depth will also be looked at and their effect measured *Vis a vi* KCSE performance.

One on one technology were available in some schools due to minimal or no network coverage. Learners in such areas were stimulated to learn using other teaching methods that are not digital. Mutia, (2018) said that team teaching involved a group of instructors working purposefully, regularly, and cooperatively to help a group of students of any age learn. Teachers together set goals for a course, design a syllabus, prepare individual lesson plans, teach students, and evaluate the results. They share insights, argue with one another, and perhaps even challenge students to decide which approach was better. An increasing number of high school science classes were team taught by a general education and a special education teacher. Many high schools were offering inclusive Biology, Chemistry, Geo systems, and Physics classes. Teams could be single-discipline, interdisciplinary, or school-within-a-school teams that met with a common set of students over an extended period of time. New teachers were paired with veteran teachers. Innovations were encouraged, and modifications in class size, location, and time were permitted.

Soodmand et al (2018) Investigated Iranian English as a Foreign Language (EFL) teachers' perception of their own reflective teaching, of inhibitors to their reflective teaching, of inhibitors to their students' reflective thinking, and the impact of teaching experience and academic degree on their perception of reflective teaching. The results indicated that (1) Iranian EFL teachers perceived their reflective teaching to lie at a medium level, (2) three types of inhibitors to EFL teachers' reflective teaching included lack of knowledge, affective-emotional and teaching situation inhibitors, and (3) three types of inhibitors to EFL learners reflective thinking also comprised affective-emotional, cognitive and learning situation inhibitors.

Moreover, (Imbega, 2017) assessed the influence of quality assurance practices on students' academic performance in public secondary schools in Trans Nzoia west sub-County. Specifically the study sought to assess how internal quality assurance practices affected student's academic performance in schools, evaluate effects of external quality assurance practices on student's achievement in schools, establish the relationship between standards and quality assurance practices and attainment of quality grades in KCSE examination, and identify intervention measures that enhance internal and external QAS practices in schools. The findings from the study revealed that there were adequate internal quality assurance measures and inadequate external quality assurance practices. According the majority, external quality assurance practices influenced academic performance in schools. Internal quality assurance practices adhered to conventional practices that could not influence academic performance. The advisory gap by the external quality assurance to schools did not enhance the adoption of intervention measures to mitigate the problem of academic performance.

Additionally, Tsang, (2011) sought to determine perceptions of three cohorts of third year undergraduate students (n = 65) on in-class reflective group discussion as a critical reflective approach for evolving professionals. The key benefits of reflective group discussions perceived by students included peer learning, peer and/or tutor support and multi-perspective critical thinking. Students welcomed the inclusion of reflective group discussions into their curriculum, not as a substitute of, but rather, complementary to reflective writing. Students invoked that reflective writing and reflective group discussions were beneficial in different ways. The interactive, supportive and multi-perspective nature of reflective group discussions was particularly appealing to students.

McCabe, and O'Connor, (2014) in Ireland reported that a student-centered approach to learning encourages students to have more responsibility for their learning and is a process that relied

heavily on professional confidence to 'let-go' of traditional teaching responsibilities. The research incorporated semi-structured interviews with five lecturers who adopted student-centered learning in their teaching, focus group sessions with 36 students who engaged in a student-centered module and two classroom observations. The research identified some common understanding of a student-centered approach, although the emphasis differed slightly between lecturers and students, highlighting some implications for on-going practice.

Further, Khaombi, (2016) observed that Chemistry, just like other subjects, required a teacher to prepare appropriately so as to deliver content in a way that could encourage good understanding of the content by the students hence good performance. There are many teaching methodologies that can be applied in Chemistry and these may include lecture method, demonstration, practical and fieldwork. As Chemistry was a Science, a more practical approach was more appropriate compared to the other teaching methods. Practical lessons developed the students' skills such as ability to observe, performing routine laboratory tasks and problem solving abilities.

In Baringo County, Mbugua, et al, (2012) indicated that 5.6% of the teachers used lecture method, 3.4% use project, 64.2% use discussions, discovery method is used by 6.5% while 27% of the teachers use the question/ Answer method. According to (Costello, 1991) lecture method was ineffective in that it turned the learners into passive participants in the learning process. However, despite the disadvantage, lecture method was useful in covering large content (SMASSE, 2007). Discussions, project and discovery methods created an enabling environment for the learners and ensured that individual differences were taken care of.

In spite of these learner centered methods unfortunately in Kenya most teachers didn't prepare well for lessons. Teachers had a heavy workload per week and taught large classes. The workloads hindered proper preparations and assessment of the learnt concepts. Teachers had no time to create rich learning resources that supported learning leading to teacher centered teaching methods which according to Costello, (1991) was an ineffective methods of instruction. The large classes and heavy workloads per week hindered teachers to make meaningful engagements with students during the learning process. Lack of these engagements deny learners better understanding of the subjects they study.

II. STATEMENT OF THE PROBLEM

Examination scores prepared pupils for further formal education and training. Low student achievement on Kenya Certificate of Secondary Education examination often generates public outcry with head teachers bearing the blame (Jagero 2013). The introduction of subsidized secondary education in 2008 by the Kenyan government was an effort to improve access and retention of students in secondary schools (ROK, 2013). In addition the Kenyan government had continued to invest a lot of money from its budget allocation to the Ministry of Education in buying teaching/learning materials, conducting in-service training for head teachers and subject teachers (ROK 2019). However, when it came to students' performance in secondary school, the results are still poor (KNEC Report 2017). It is then the function of the education managers to identify and solve problems that may work against quality delivery of education (Oyetola *et al* 2012). A study by Lumosi, and Mukonyi, (2015) reported that performance in the Kenya Certificate of Secondary Education (KCSE) is a matter of great interest to all education stakeholders in Kenya. This milestone determines the future career of a KCSE graduate. Over a period of five years from 2009 to 2013, the KCSE mean scores in Kakamega East and Kakamega Central have stagnated below the average of 6.0 (C plain). In addition, according to results published by Advanced Africa (2017) no school from Ikolomani Sub-County also in Kakamega County made it to top 100 schools in the country. It is a clear sign that the students in this Sub-County do not achieve

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the minimum qualification for university admission, which is C+ and above. The situation shows that majority of form four graduates in the two sub-counties join middle level colleges for diploma courses while a few who score grade B plain and above proceed to university to pursue degree courses. Academic performance in public secondary schools in Kakamega county has been dismal as indicated by the report on county KCSE mean performance in spite the huge allocation the government pumps in the sector every financial year (ROK, 2014); Table 1 One reason, among others, is that quality assurance and standards measures have not yielded adequate results. Minimum quality standards are not being achieved, nor are schools being regularly inspected. School managers and teachers are not being held to account. (Sessional Paper no.1 of 2019). This shortcomings has led to the need to carry out a study to establish the effect of schools' teaching practices on KCSE performance of public secondary schools in Kakamega County, Kenya.

Table 1: Performance of Students in KCSE Examinations from 2017 to 2019 in Kakamega County

SUB-COUNTY	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	MS 19	MG	MS 18	MS 17	DEV
TOTAL	2472	21	70	130	201	245	312	340	495	279	27	5023	C-	4020313	3.66	1.031955	
BUTERE	2995	0	19	95	126	205	228	272	362	351	449	454	36	43749	4.628	4.24	0.246759
MUMIAS WEST	2275	3	27	67	101	118	152	226	325	395	462	366	27	40831	4.11	3.9543	0.57312
KAK CENTRAL	2693	3	11	41	101	161	204	315	442	493	519	327	39	46627	3.948561	3.557231	0.713883
LAKWANI	3639	0	14	49	145	213	292	418	523	594	604	605	79	47374	4.097709	3.678398	0.481657
KAK EAST	2654	0	2	19	67	172	217	337	403	432	566	411	28	45404	4.103	3.993	0.437408
MATUNGU	2150	0	3	22	55	103	152	262	331	443	475	286	9	4988	3.7871	4.1657	0.711733
MUMIAS EAST	2639	0	11	38	82	141	179	311	388	442	534	474	34	44715	3.648	4.133	0.923526
KAK SOUTH	1548	0	6	19	38	65	88	152	205	244	356	350	44	41353	3.718188	3.464107	0.417087
MAITTE	2733	0	5	23	63	118	140	278	350	401	609	648	101	40702	3.754304	3.354	0.315859
LIGARI	3742	0	1	22	79	155	206	295	497	588	919	873	100	39716	3.994	3.289	-0.02238
KAK NORTH	2535	0	0	17	49	100	149	198	292	400	577	618	60	34622	3.341096	3.224	0.621145
NAVAHOLE	1624	0	2	12	32	66	93	128	212	315	388	232	17	39117	3.866461	3.552248	0.085242
KHWISERO	33299	7	122	494	1066	1816	2443	3504	4678	5498	7013	5943	601	44259	4.06828	3.795	0.357639

Source Regional education office 2020

III. RESEARCH OBJECTIVE

To investigate the effectiveness of schools' teaching practices on KCSE performance in public secondary schools in Kakamega County, Kenya.

IV. RESEARCH HYPOTHESIS

H0: Schools' teaching practices have no statistically significant effect on KCSE performance of public secondary schools in Kakamega County, Kenya

V. THEORETICAL CONCEPTUAL FRAMEWORK

The study was be guided by School Based Management Theory propounded by Yin Cheong Cheng. The principles of the theory were; school based, student-centered and quality focused (Moradia, Hussinb & Barzegarc, 2012). In the words of Malen and Kranz (1990), as cited by (Babara, 2015). School Based Management can be viewed conceptually as a formal alteration of governance structure, as a form of decentralization that identifies the individual school as the primary unit of improvement and relies on redistribution of decision-making authority as primary means through which improvement might be stimulated as well as sustained. Based on the theory, there have been many SBM reforms in the developing countries. A review of World Bank Education Portfolio for financial year 2000-2006 reveals that about 10 percent of all projects support SMB.

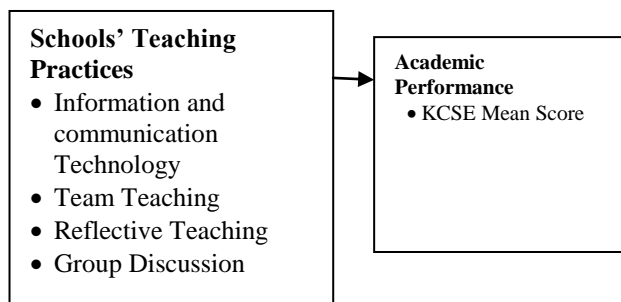
In supporting these reforms, Cheng (1991) as cited by Kamla, (2012) developed the concept and theory of school-based management and mapped its characteristics of school functioning for facilitating the ongoing discussion and effort for school management reforms in local or international contexts. In his (Cheng, 1991) as cited by (Mapunda, 2011) work, he explained that School-based management employs theories of "equifinality" and "decentralization" and it assumes that "school is a self-managing system" and regards "initiative of human factor" as well as "improvement of internal process". In this concept, he (Cheng, 1991) insisted that school managing strategies should encourage participation and give full pray to members" initiative. Therefore, SBM programs transfer authority over one or more of the following activities: budget (allocating budget), personnel management (hiring and firing teachers as well as other staff), pedagogy (developing curriculum), maintenance and infrastructures (text books and other educational materials), monitoring and evaluating teachers together with students' performance (Mercy, & Ujoro, 2012).

This theory applies to the present study as it refers to the practice of teaching adopted by individual teachers, to increase the independence, responsibility and accountability of the school. As a result, a key characteristic of SBM can be anticipated to improve student academic achievement and other school outcomes as the teachers claim closer monitoring of the teaching and learning processes, student appraisal, a closer match between the school's requirements and its policies, and a more effective use of resources; in the process stimulating continuous improvement (Seid moradi *et al* 2012).

CONCEPTUAL FRAMEWORK

Independent Variable

Dependent Variable



VI. METHODOLOGY

The study adopted cross-sectional descriptive study design. Cross-sectional study design was selected because of the advantages that it provided in saving cost and time in data collection and also the reason that it allowed for standardization of interview questions Setia (2016). This allowed testing of hypothesis. The target population was 415 Principals, 415 Deputy Principals, 415 directors of studies, 33296 students giving a total of 34541 respondents from four hundred and fifteen (415) secondary schools in Kakamega County, Kenya. The target population had been chosen because it defined the characteristics variables of the individuals who qualify for this study, and also provides the scope of the total population. It also sets clear direction on the scope and objectives of the research and data types.

Table 2: Categories of Public Secondary Schools in Kakamega County

Category	No. of Public Secondary Schools	Percentage (%)
National	2	0.5
Extra-County	26	6.5
County Schools	20	5
Sub-County Schools	367	88
Total	415	100

SAMPLE AND SAMPLING TECHNIQUE

For this study, the sample was drawn from the organizational structures of the secondary schools in Kakamega County. The major focus of this study were the Principals, Deputies and Directors of Studies of the secondary schools in Kakamega County. This study employed the Nassiuma (2009) formula to calculate the number of schools to be included in the study as sample size from the target population of 415, thus;

$$n = \frac{Nc^2}{c^2 + (N - 1)e^2}$$

Where n = sample size, N = population size, c = coefficient of variation (≤ 50%), and e = error margin (≤ 5%). Substituting into the formula:

$$n = \frac{34541 * 0.5^2}{0.5^2 + (34541 - 1) * 0.05^2} \cong 100$$

Thus, a sample size of 100 as the number of schools was obtained from the above formula and this was then distributed in a sampling frame as shown in Table 3 (Nassiuma, 2000) as cited by (Hungu, & Thuku, 2010). In the second stage, the study used stratified random sampling in order to obtain the required sample size. Stratified random sampling was also ideal for the other respondents as it had the characteristic of providing each member of the target population in their strata an equal chance of being included in the study while at the same time keeping the size manageable (Kothari, 2004) as cited by Hassan (2017). The number of secondary school in each category was divided by the total number of secondary schools then multiplied by the sample size of 100 to get the sample size of secondary school per category. The sample size was then allocated into various categories according to their relative sizes in the target population as shown in the sampling frame Table 3. The names of secondary schools were put on pieces of paper for each category and the randomly picked.

Table 3: Spreading the Sample across the Study area

Category	No. of Public Secondary Schools	Percentage (%)	Sample size for each Category
National	2	0.5	1
Extra-County	26	6.3	6
County Schools	20	5	5
Sub-County Schools	367	88.4	88
Total	415	100	100

The present study selected the respondents using stratified random sampling. The main factor that was considered in determining sample size was the need to keep it manageable while being representative enough of the entire population under study. The use of the stratified sampling method as opposed to other sampling procedures had been informed by the need for respondent specificity and also the need for introducing randomness (Mugenda, & Mugenda, 2010). The respondents were 100 principals, 100 deputy principals, and 100 director of studies; one from each sampled school; bringing a total of 300, then four students were purposively sampled from each sampled school. The Cochran Sample size population formula was adapted due to a large population of form four students in Kakamega County (i.e. 33296 students). The Cochran formula used the margin of error, the required confidence level and estimated proportion in the estimated population to calculate an ideal sample size.

The Cochran formula is:

$$n_0 = \frac{z^2 pq}{e^2}$$

Where; e is the margin of error (≤ 5%), p is the estimated proportion in the estimated population (67%), q is (1-p) and z is the value found in the z table (1.96) (Israel, 2018).

Substituting to the above equation:

$$n_0 = \frac{1.96^2 * 0.67 * (1 - 0.67)}{0.05^2} \cong 340$$

Considering the 100 sampled schools and the above student sample size of 340, approximately four students were chosen from each school. Total number of respondents was 700.

Table 4: Sample Size Distribution

	Population(N)	Sample size(n)	% of Sample
Principals	415	100	24
Deputy principal	415	100	24
DOS	415	100	24
Students	33296	400	
Total	34541	700	

A. Data Collection Instruments

The study relied on primary and secondary data that were collected using semi structured questionnaire that was administered by drop and pick methods and an interview schedule for the principals. Multiple data collection tools were used for purposes of improving respondent experience and improve data quality. The Principal’s interview schedule (PIS), the deputy principal’s questionnaires (DPQ), and student questionnaire (SQ). The purpose of the PIS was

to get varied responses on any other practices being done in their schools that were unique; regarding schools' teaching practices. This hopefully enriched the data. The deputy principals questionnaire had questions schools teaching practices distributed on Likert scale of 1 to 5 where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree. The purpose was to accommodate a large range of different responses while, the student's questionnaire had questions on schools teaching practices distributed on a Likert scale of 1 to 5 where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. The purpose was to accommodate a large range of different responses from the sampled students.

A pilot study was carried out to assess the effectiveness of the data collection instruments which was then subjected to tests for validity and reliability for standardization of the research instruments used in the study before data collection. The pilot study was carried out on a population in secondary schools in Kakamega County, Abidinor, (2012) recommended, 1% to 10% of the sample as adequate for purposes of piloting. Hence, the pilot sample comprised 10% of the sample schools. In this study, out of the 100 respondents targeted 10 respondents from Kakamega County secondary schools were sampled. Modifications, additional questions and other shortcomings found in the questions were corrected.

B. Reliability Test

Cronbach reliability coefficient was used to test the reliability of the instruments, because it helped to establish the internal consistency of the responses. It was used to ascertain the reliability of factors extracted from the Likert scale in the questionnaire because it determined the internal consistency or average correlation in a survey instrument. Cronbach alpha was a coefficient of internal consistency used as an estimate of reliability and it ranged in values from 0 - 1. The value was 0.786. This value exceeded the standard of 0.7 hence the reliability of the model was considered accurate enough (Nunnally, 1978) as cited by (Aroni, 2013). To ensure reliability in the interview schedule the interview schedule were more structured meaning that a systematic approach to interviewing was adopted where same predetermined questions were asked to all candidates in the same order and rated them with a standardized scoring system.

C. Validity Test

Content and face validity were determined through expert consultations where questionnaires, were presented to the Masinde Muliro University of Science and Technology experts in the department of Educational Planning and Management. The contents of the instruments were improved based on the advice and comments of the experts. The questionnaires were then reconstructed in a way that they related to each research question. To ensure validity in the interview there was a one to one correspondence between interview questions asked and underlying competency. Fraenkel and Wallen (1993) as cited by (Kinaro, 2015) observed that an instrument may be constructed to measure a number of things hence the validity of such instrument must be established.

D. Data Analysis and Presentation

The researchers used a mixed method approach to data analysis. Descriptive analysis involved the use of a measure of central tendency and standard deviation as a measure of dispersion. Data were analyzed using Pearson's Product Correlation and multiple regression model. Data obtained from the questionnaires was first cleaned and edited before being coded and subjected to further analysis. The Likert scales in closed-ended questions in the questionnaires were converted to numerical codes and scored on a 1-5 point scale in order of magnitude of the construct being measured. They were then entered into the Statistical Package for

Social Sciences (SPSS) version 23.0 computer program. Descriptive statistical analysis was done using, frequencies and percentages to describe the basic characteristics of the data. Inferential data analysis was done using Pearson's Product-Moment Correlation Coefficient. Correlation analyses were used to measure the relationship between variables. The importance of this was that the results of the analysis could be generalized to the larger population.

E. Regression Analysis

In this study regression analysis was done to establish whether independent variables predicted the dependent variable (Doaei, Anuar, & Ismail, 2014). The researcher used multiple regression models to establish if the relationship between the independent variables and the dependent variables is statistically significant. The multiple regression models were assumed to hold under the equation;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where;

Y represents Academic Performance

β_0 represents the regression model Constant

X_1 represents Schools' teaching practices

X_2 represents School's examination practices

X_3 represents Schools quality control practices

X_4 represents KCPE entry behavior

e represents the estimated error of the regression model

β_i are the coefficients of the variables determined by the model

VII. RESEARCH FINDINGS AND DISCUSSIONS

A. Response Rate

According to Schwarz (2018), a response rate refers to the number of units in the net sample used in the study expressed as a percentage of the units in the gross sample. In this study, the questionnaires were administered as shown in Table 5 and the response rate was outlined per respondent targeted.

Table 5: Response Rate

Respondents	Sample Size	No. of Questionnaires Returned	Response Rate (%)
Principals	100	66	66
Deputy Principals	100	77	77
Director of Studies	100	72	72
Students	400	248	62
Total	700	463	66

From Table 5, the study revealed that 66% of the questionnaires issued to the principals in schools in Kakamega County were filled and returned, while 77% of the questionnaires issued to the deputy principals were filled and returned. Further, 72% of the questionnaires issued to the Director of Studies were filled and returned. Finally, of the questionnaires issued to the students, 62% were filled and dully returned. Of all the 630 questionnaires issued 417 (66%) were duly filled and returned. In this case, the response rate of 66% was considered acceptable as supported by Mugenda and Mugenda (2003) as cited by Khakayi, (2017) who posit that a response rate of 70% and above is excellent, 60-70 is acceptable; 70-85 is very good, and 85 and above is excellent.

Students' Responses

The students' descriptive results further added to the responses. Students' questionnaires required that the respondents respond to

questions in relations to; schools’ teaching practices distributed on Likert scale of 1 to 5 where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree. Table shows the statistical results in details.

Table 6: Descriptive statistics on schools’ teaching practices from students

	N	Minimum	Maximum	Mean	Std. Deviation
We have an ICT integration program that ensure that our learning is accessible and is supported	268	1.00	5.00	3.7250	1.08575
Our teachers use team teaching to prepare individual lesson plans, teach us students, and evaluate the results	268	1.00	5.00	4.4000	.95542
Our teachers mark the examinations within a time frame and give us feedback	268	1.00	5.00	4.4000	1.12774
Through group discussion we have more responsibility for our learning	268	1.00	5.00	4.5000	.87706
Our teachers use varied teaching methods to ensure that learners are engaged	268	2.00	5.00	4.2750	.87669
Our school ensures that we engage in most of the practical lessons in order to develop our abilities to observe	268	1.00	5.00	4.0750	1.07148
Our teachers engage us by use of question and answer method to test learning	268	1.00	5.00	4.1500	1.00128

Source; Research data 2022

From Table: 8, the findings of the study established that the participants strongly agreed that they had an ICT integration program that ensured that their learning was accessible and was supported within (Mean=3.7250, Std.Dev = 1.08575). The findings established that their teachers used team teaching to prepare individual lesson plans, taught the students, and evaluated the results a set time line. (Mean=4.4000, Std.Dev = .95542). It was also established that their teachers marked the examinations within a time frame and give feedback within the said time frame. (Mean=4.4000, Std. Dev = 1.12774). It was also established that the respondents strongly agreed that through group discussion they had more responsibility for our learning (Mean=4.5000, Std. Dev = .87706).

Further the respondents concurred within (Mean=4.2750, Std. Dev = .87669) that their teachers used varied teaching methods to ensure that they were engaged. It was also established that their schools ensured that they engaged in most of the practical lessons in order to develop their abilities to observe (Mean=4.0750, Std. Dev =

1.07148). Moreover, the findings established that the respondents agreed that their teachers engaged them by use of question and answer method to test learning within (Mean=4.1500, Std. Dev = 1.00128).

Deputy Principal’s Responses

The researcher sought to find out the different ways secondary schools in Kakamega County carried out their teaching in addition to those laid by the Ministry of education. The practices were either teacher centered or learner centered methods. The descriptive data from the respondents were from the deputy principals who were asked to their level of agreement with the statements on schools’ teaching practices by using the following scale of 5 points where: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree And 5 = Strongly Agree regarding the first objective; To investigate the effectiveness of schools’ teaching practices on KCSE performance in secondary schools in Kakamega County, Kenya. Table9 shows the statistical results in details.

Table 7: Descriptive statistics on schools’ teaching practices from deputy principals

	N	Minimum	Maximum	Mean	Std. Deviation
We have set up an ICT instructional program to ensure that learning is accessible and is supported	77	1.00	5.00	3.0270	1.30142
Through team teaching, our teachers together prepare schemes of work, prepare individual lesson plans, teach students, and evaluate the results	77	1.00	5.00	4.1351	.97645
We ensure that we employ reflective teaching to our students’	77	2.00	5.00	3.7568	.89460
Through group discussion we encourage students to have more responsibility for their learning	77	1.00	5.00	4.0000	.91287
We use varied teaching methods to ensure that learners are engaged	77	1.00	5.00	4.0541	1.15340
We ensure that our students engage in most of the practical lessons in order to develop students’ ability to observe	77	1.00	5.00	3.9189	.98258
Our teachers engage our students by use of question and answer method to test learning	77	1.00	5.00	4.0811	.98258

Source; Research data 2022

As outlined in **Table** , it was established that the secondary schools in Kakamega County had ICT integration programs that ensured that learning was accessible and was supported within (Mean=3.0270, Std.Dev=1.30142). It was also established that through team teaching, that the teachers together prepared schemes of work,

individual lesson plans, taught students, and evaluated the results within (Mean=4.1351, Std.Dev=.97645).

In addition, it was established that most secondary schools in Kakamega County ensured that they employed reflective teaching to

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their students' within (Mean=3.7568, Std.Dev = .89460). Moreover, the findings revealed that the respondents used varied teaching methods to ensure that learners were engaged within (Mean=4.0541, Std. Dev = 1.15340). Additionally, it was evident from the findings that the respondents ensured that their students engaged in most of the practical lessons in order to develop students' ability to observe (Mean=3.9189, Std.Dev = .98258). Finally, the findings revealed that the teachers engaged their students by use of question and answer method to test learning (Mean=4.0811, Std.Dev = .98258).

Principals' Responses

The principals were asked in an interview to mention any teaching practice done in their schools that impacted on the KCSE performance. From the findings as is in Table 10. From this table, it was established that majority of the respondents (38%) employed remedial programs to ensure the performance improved. Further, the respondents reported that they organized internal symposiums and academic families as shown by a frequency of (16%) respectively to enhance performance.

Table 8: Education Programs

Proportion	Frequency (%)
Motivational Speakers and Creaming	14
Remedial Programs	38
Internal Symposium	16
KNEC Facilitators	3
Inter-School Competition	8
Academic Counselling	5
Academic Families	16
Total	100%

Source; Research data 2022

Inferential statistics

The data was subjected to Pearson correlation analysis whose results revealed that there was a positive and a strong significant association between schools' teaching practices and KCSE Performance as supported by ($r=0.655$, $p=0.000$). This implied that both schools' teaching practices and KCSE performance change in the same positive direction as shown in Table 11. When teaching practices are more learners centered then the more the probability of getting better KCSE outcomes by 65 %. This was also measured against the hypothesis that stated that;

Table 9: Correlations between schools' teaching practices and KCSE performance

		Schools' Teaching Practices	KCSE Performance
Schools' Teaching Practices	Pearson Correlation	1	.655**
	Sig. (2-tailed)		.000
	N	77	77
KCSE Performance	Pearson Correlation	.655**	1
	Sig. (2-tailed)	.000	
	N	77	77

** . Correlation is significant at the 0.01 level (2-tailed).

Source; Research data 2022

Schools' teaching practices had a statistically significant effect on KCSE performance of secondary schools in Kakamega County, Kenya, which was tested by determining the relationship between

schools' teaching practices on KCSE performance using multiple regressions whose results are shown on Table . The test was done at a significant level 0.05. From the beta values in Table , it was evident that there was a significant relationship ($\beta = .445$, $p < 0.05$) between the variables indicating that schools' teaching practices indeed influenced KCSE performance of secondary schools in Kakamega County, Kenya. Therefore, we failed to accept the null hypothesis and adopted the view that schools' teaching practices significantly influenced KCSE performance in secondary schools in Kakamega County, Kenya. The results were corroborated by the principal's qualitative data analysis.

To examine the influence of the independent variables on the dependent variables, multiple regression analysis was done and results were as shown in Table 12. The optimal model was;

Table 10: Multiple linear regression results

	Unstandardized Coefficients	Standardized Coefficients	T	Sig.	
	B	Std. Error	Beta		
(Constant)	2.250	4.759		.473	.638
Schools' teaching practices	.445	.084	.510	5.295	.000
School's examination practices	.177	.103	.181	1.751	.001
Schools quality and control practices	.060	.108	.058	.557	.579
KCPE entry marks	.358	.117	.256	3.494	.000

a. Dependent Variable: KCSE Performance

Source; Research Data 2022

It was deduced from the findings in Table 14 that the most influential variable in the model predicting KCSE performance was schools' teaching practices ($\beta = 0.445$, $p < 0.05$). This indicated that the dependent variable, that was, the KCSE performance, would change by a corresponding number of standard deviations when the respective independent variables changed by one standard deviation.

VIII. DISCUSSION

From the findings presented on the Effect of Schools' Teaching Practices on KCSE Performance in Secondary Schools in Kakamega County, Kenya it was evident that School teaching practices were critical in determining KCSE performance. The most effective were learner centered methods. Learner centered methods of teaching involved learners' senses and aided the learners in content retention. Learner centered teaching methods included discussion and presentation by learners, Team teaching and teachers' reflective teaching. Most examinations tested how much content the learner had retained and this plainly explains the positive relationship. The results were in tandem with those obtained at Manga Sub County by Momanyi (2019) which examined the effect of teaching management strategies on the academic performance of secondary schools whose Research findings showed that Student centered management strategy, teacher centered management strategy and assessment strategy were positively and significantly associated to academic performance. The joint teaching management strategies (assessment management strategy, teacher centered management and student-centered management) were found to be significant in determining academic performance. The teaching management strategies predicted 53.5% of change in the academic performance. Whereas in this particular study a unit increase in schools teaching practices led to the increase of performance by 44.5%. It was deduced from the findings that the most influential variable in the model predicting KCSE performance was schools' teaching practices ($\beta = 0.445$, $p < 0.05$). The study concluded that student centered management strategy, teacher centered management strategy and assessment strategy were positively and significantly related to academic performance. The student centered methods were discussed.

IX. ICT INTEGRATION

Information and Communication Technology (ICT) integration was the usage of technology seamlessly for educational processes like facilitation in the delivery of students' notes, virtual classrooms internet assignments online grading system among others. ICT integration in learning was simply the use of technology to enhance learning experience Technology provided instant accessibility to information making its presence in the classroom important. ICT integration improved learners' engagement and knowledge retention since it provided for different opportunities to make it more fun and enjoyable in terms of teaching and learning the same things in different ways. As presented in Table 8, secondary schools in Kakamega County had ICT integration programs that ensured that learning was accessible and was supported within as a mean of (Mean=3.0270 and a standard deviation of 1.30142. The findings augured with that of Scholars under the Scholars Strategy Network (2014) assessed the impact of digital content and resources on learner performances. Their studies concluded that there was an enormous variability in how digital instructional programs were rolled out, accessed and supported. With ICT integration in the classroom, students engaged in interactive tasks with a wider range of information and knowledge during their learning. At the same time, the teachers' beliefs and attitudes influenced them to integrate ICT in their teaching practice (Hatlevik & Arnseth, 2012; Rampersad, 2011).

X. TEAM TEACHING

Team teaching is when a group of two or more teachers work together to plan, conduct and evaluate the learning activities for the same group of learners. One is that two or more instructors teach the same students at the same time within the same classroom. This implies that each speaks freely during large-group instruction and moves among all the students in the class.; the other is that the instructors work together but do not necessarily teach the same groups of students nor necessarily teach at the same time. The respondents didn't specify which type was used in their schools but mentioned that team teaching was done. Team teaching was simply teachers working as a team in teaching a given concept. The importance included Creating effective, fun learning, usage of teachers' knowledge effectively together, keeping co-teacher involved in class. It allows for shared ideas including enrichment and differentiation breaking the monotony of one person doing all instruction hence creating many spontaneous teachable moments. It was also established that the schools practiced team teaching within as a mean of 4.1351 and a standard deviation of 0.97645. These findings were in tandem with those of Mutia, (2018) who noted that team teaching involved a group of instructors working purposefully, regularly, and cooperatively to help a group of students of any age learn. Teachers together set goals for a course, design a syllabus, prepare individual lesson plans, teach students, and evaluate the results. They shared insights, argued with one another, and perhaps even challenged students to decide which approach is better.

Reflective teaching:

Reflective teaching involved examining one's underlying beliefs about teaching and learning and one's alignment with actual classroom practice before, during and after a course is taught. When teaching reflectively, instructors think critically about their teaching and look for evidence of effective teaching. Reflective teaching helps you understand how to better perform each little part to create a better future. In a world of teaching standards based on student outcomes, being able to reflect upon your classroom activities may seem like a luxury that most teachers do not have time for .Reflection creates student-centered learning however, without the student in the classroom, the teacher would not have a purpose to be

there. Student-centered learning was one of the foundations of modern educational theory and practice. Their understanding was to ask for student feedback and use that information to create better lesson plans in the future. This feedback could come from a wide variety of sources, such as the students' families or other teachers. This study has established that reflective teaching was done within a Mean of 3.7568 and standard deviation of 0.89460. These findings were in tandem with those of Soodmand et al (2018) whom investigated Iranian English as a Foreign Language (EFL) teachers' perception of their own reflective teaching, of inhibitors to their reflective teaching, of inhibitors to their students' reflective thinking, and the impact of teaching experience and academic degree on their perception of reflective teaching. The results indicated that (1) Iranian EFL teachers perceived their reflective teaching to lie at a medium level. These findings also concurred with Tsang, (2011) who sought to determine perceptions of three cohorts of third year undergraduate students (n = 65) on in-class reflective group discussion as a critical reflective approach for evolving professionals. The key benefits of reflective group discussions perceived by students included peer learning, peer tutor support and multi-perspective critical thinking. Students welcomed the inclusion of reflective group discussions into their curriculum, not as a substitute of, but rather, complementary to reflective teaching. These findings concurred with Tsang, (2011) who sought to determine perceptions of three cohorts of third year undergraduate students (n = 65) on in-class reflective group discussion as a critical reflective approach for evolving professionals. The key benefits of reflective group discussions perceived by students included peer learning, peer and/or tutor support and multi-perspective critical thinking. Students welcomed the inclusion of reflective group discussions into their curriculum, not as a substitute of, but rather, complementary to reflective writing.

Varied teaching methods included group discussion question and answer technique and practicals. Since it was established that the teachers used varied teaching methods at a Mean of 4.2750; the other percentage could mean the teachers used the traditional method of teaching that was teacher centered which was mainly the lecture method. McCabe, and O'Connor, (2014) reported that a student-centered approach to learning encouraged students to have more responsibility for their learning and was a process that relied heavily on professional confidence to 'let-go' of traditional teaching responsibilities. The results were also in tandem with those of Manga Sub County, studied by Momanyi (2019) which examined the effect of teaching management strategies on the academic performance of secondary schools in Manga Sub County. Research findings showed that Student centered management strategy, teacher centered management strategy and assessment strategy were positively and significantly associated to academic performance. The joint teaching management strategies (assessment management strategy, teacher centered management and student-centered management) were found to be significant in determining academic performance. The teaching management strategies predicted 53.5% of change in the academic performance. Where as in this particular study a unit increase in schools teaching practices led to the increase of performance by 44.5% (table 4.34). It was deduced from the findings in Table 4.28 that the most influential variable in the model predicting KCSE performance was schools' teaching practices ($\beta = 0.445, p < 0.05$). The study concluded that student centered management strategy, teacher centered management strategy and assessment strategy were positively and significantly related to academic performance. Student centered teaching methods like group discussion, teaching practically and question and answer methods are discussed further.

XI. GROUP DISCUSSIONS

Group discussion is a meeting between any numbers of individuals where learners engage in lively verbal exchange about a specific topic in a specific subject. The purpose of a group discussion is to gain understanding from colleagues and friends. Also, they're really important because they help people understand different perspectives and opinions. Group discussions are a great way to create an engaging environment and foster collaboration among students. However, they can also be a lot of work for the teacher. Making sure everyone participates is difficult and making sure students are on-task can be challenging. With all that in mind, group discussions have many benefits like developing critical thinking skills and building social skill. It was also established that the respondents strongly agreed that through group discussion they had more responsibility for our learning (Mean=4.5000, Std. Dev = .87706). This concurred with Mutia, (2018) who reported that team teaching involved a group of instructors working purposefully, regularly, and cooperatively to help a group of students of any age learn. Teachers together set goals for a course, design a syllabus, prepare individual lesson plans, teach students, and evaluate the results.

Practical lessons

A practical lesson is one which you make things or do experiments rather than simply writing answers to questions. The main goals of practical tasks were to engage students in the subject and help them get a better grasp of the topics studied during science lessons. In fact, practical group work can support learning in a variety of ways. The overriding principle, however, was to be able to links the concrete and abstract worlds. In the Kenyan curriculum there were subjects that must be tested in practicals that include the science subjects i.e. Chemistry, Biology and Physics. so practical lessons in these subjects was paramount. It was established that practicals were done by a mean of 4.0750.in this study. The findings augured well with Khaombi (2016) who reported that as Chemistry was a Science, a more practical approach was more appropriate compared to the other teaching methods. Practical developed the students' skills such as ability to observe, skills in performing routine laboratory tasks and problem-solving abilities.

Question and answer method

Question and answer technique of teaching and learning is a method where the teacher teaches learners by asking questions in relation to the topic. Question and answer technique of teaching and learning was a method of teaching that Improved attention. Trying to answer questions, or formulating and asking questions, provided a break for students from passive attention to the teacher speaking. It raised their level of attention and performance and this lasted for a while afterwards. It was established in this study that teachers used this method as indicated at a mean of (Mean=4.1500, Std. Dev = 1.00128). The findings corroborated the findings of, Mbugua, et al, (2012) in Baringo County which indicated that 5.6% of the teachers use lecture method, 3.4% use project, 64.2% use discussions, discovery method is used by 6.5% while 27% of the teachers use the question answer method.

Principal's Responses'

The principals were asked in their interview schedule to state other programs and strategies in their schools that they thought improved learner outcomes in KCSE. The sampled principals mentioned motivational speakers and creaming, remedial programs, internal symposiums, KNEC speakers, academic counsellors and academic families. These programs are discussed in the order of percentage usage.

Remedial programs

Remedial programs were used by 38 % of the sampled principals. Remedial programs refer to learning programs that addressed learning gaps by re-teaching basic skills. They focused on especially

learners who were slow in grasping taught concepts. Remedial programs were open to all students, including those with disabilities. Remediation strategies included re-teaching, using alternative instructional strategies, task analysis, additional practice and one-on-one tutoring. The aim of remedial education was to provide extra assistance to students who, for whatever reason, had fallen behind the rest of the class. This concurred with the study by Mwangi, (2014), that concluded extra education programs employed in a school influenced the performance of the students in KCSE. In a study to determine the influence of principals' instructional supervision practices on students' performance in KCSE in Matuga District, Kenya.

The psychological requirements and characteristics of children with learning disabilities were the same as those of other children. The basic importance of remedial instruction was to help students to 'catch-up' with their peers and thus prevent ongoing academic low performance as 38% of the interviewed principals agreed that remedial programs improved performance. The principals didn't specify which particular subjects that remedial programs were applied in their schools. Remedial teaching involved strategies coined to meet the unique learning needs of individual learners who find it difficult to grasp concepts during normal lessons. Remedial programs referred to specific additional support concurrent with regular classes for students who, in order to succeed in formal courses, require short-term help in the acquisition of content or skills (Schwartz, 2012). These were educational interventions aimed at addressing the learning needs of a specific group of children who lagged academically in the incorporation of knowledge or the mastery of certain skills. In Brazil, public schools had a support system in place where principals and pedagogical Coordinators support teachers who were in the accelerating classes or who provided remedial education as part of their contract (Bohn, 2011).

Remedial interventions required appropriate identification of low performing students' knowledge the level their competencies as well as constant measure of their progress during the intervention. Program implementation can be improved based on information teachers get from assessing if students are mastering the materials. Teachers applying the Systematic Method for Reading Success (SMRS) in South Africa assessed their students every ten lessons which included for example recognizing letter sounds, blending sounds to recognize words, reading developmentally leveled stories using the letters and words taught, and answering comprehension questions about the stories (Hollingsworth & Gain, 2009).

Empowering local school committees to hire community teachers and monitor their teaching can maximize the benefits for children. In the Kenya study, the program was found to be more effective when the extra teachers were monitored by the School Management Committees. In schools where they were not trained to do so, regular teachers were coming less often (Duflo, Duplas, & Kremer, 2009).

In general, the evidence suggested that adequate remedial interventions could yield fast and significant improvements. The beneficial effects of remedial education programs was broad based and not just limited to developed countries. Studies from the United States (Slavin, Lake, Davis, & Madden, 2009) and from developing countries (American Institutes of Research (AIR), & World Education, Inc, 2008; Banerjee, Cole, Duflo, & Linden, 2006; Save the Children, 2010) showed that remedial interventions had beneficial impacts on reading and math skills. Piper (2009) revealed that interventions which trained teachers in techniques that emphasized literacy—implemented in combination with scripted lesson plans, and ongoing support—were able to increase oral reading fluency scores by more than 100% in South Africa, Liberia, and Kenya. Similarly, in Liberia, which supported teachers in monitoring education quality in its schools based on Early Grade Reading Assessment (EGRA), showed significant improvements from remedial interventions for students in Grades 2 and Grade 3

after only 4 months (Crouch & Korda, 2011). Intermediate results from ESCUP Project in Cambodia showed improved year academic achievement of slow learners with near 6,000 children being identified in need of academic support. After three years of implementation, 72 percent of participating schools reported a decline in repetition rates since the baseline year and at least 50% of students designated as slow learners are promoted each academic year. Promotion rates also measure math skills. At the end of the intervention results were compared to students' scores at comparison schools where students did not receive the intervention. Considering that scores at baseline were extremely low in poor resourced countries, program effects maybe expected to be high. The results of the following programs indicate that when students who do not receive this type of support, they will continue to perform poorly. Even results from students who received the interventions are far from reaching the goal of learning for all. Another intervention that targets low performing children in the early grades and that has gathered some evidence of program effect is Literacy Boost a program implemented by Save the Children in various low income countries. The program aimed at improving literacy by using assessments to identify gaps in the five core skills (letter knowledge, phonemic awareness fluency, vocabulary and comprehension); mobilizing communities for reading action and training teachers to teach the national curriculum with emphasis on reading (Save the Children, 2010) among failing children reached 68% in Year 1, 87% in Year 2, and 66% in Year 3 (American Institutes of Research (AIR), & World Education, Inc, 2008).

Program effects are usually measured by pre and post-test of students' reading levels and some in Malawi, at the end of a school year, Grade 4 literacy boosts children reading by an average of 24 -26 words per minutewith90%and 73% comprehension accuracy. Still, this is very far from the standard 45-60 words per minute to achieve reading fluency and being able to comprehend text (Abadzi, 2010) In Nepal, Comparing the end of year scores of the total sample of non Nepali speakers between the Literacy Boost group and the comparison group, the students in the Literacy Boost group did significantly better at letter identification($p=0.000$), CAP ($p=0.000$),and numeracy assessments ($p=0.001$) (Shrestha, Pinto, & Ochoa, 2010). In Pakistan Literacy boost which was defined as the difference of the mean outcome for the intervention group and that for the control or comparison group. It represents the number of standard deviation units by which the intervention group outperforms the control group. For education research, a widely cited benchmark is that an effect size of 0.25 is required for an intervention effect to have "Educational significance"(Bloom, Hill, Black, & Lipsey, 2008). Scored significantly higher on average, reading 30.92 words per minute correctly while students in comparison school read only 10.25 ($p=0.00$) (Save the Children, 2010). At the end of the school year in Malawi, there was a significant decrease in the number of Standard 2 students who participated in the Literacy Boost program (Save the Children, 2010) who scored zero in reading fluency, accuracy and comprehension from 95% and over in the pretest to 66%, 68% and 72% in the posttest. While these numbers may be still far from what should be expected, most surprisingly is that after a whole year, 95% to 99% of students in the control schools continued to present zero scores in their reading skills posttest. Looking at the scores of both Literacy Boost schools and control schools, it is difficult to identify which results are more striking: the improvements due to the program or the dismal results of the control schools.

Symposia

A symposium is a meeting organized so that students who have prepared in a certain topic in a given subject area discuss and make recommendations. Symposia can be organized within a school or several schools may come together for the discussions. This was in tandem with a study done by Usha, Haseena, Santosh Balakrishnan, Sathidevi, (2022) on the effect of symposia on learning compared to traditional lecture method on medical graduate students in India.

They said that symposia was a type of program that was competency based. Competency-based curriculum laid emphasized on student-centered learning methods. Symposia was a learner centered method that emphasized on acquisition of competencies and skills. According to perception of students, active learning was improved by symposia (83.5%). Symposia also improved presentation skills (86.9%). The study concluded that although students believed that symposia improved active learning analysis of assessment scores showed no significant enhancement of active learning in students through symposia as teaching- learning method compared to direct learning. This could be due to the fact that students presenting the topics were few. All student couldn't present topics due to limited time. The students who present topics at symposiums benefited more from that content than the many who would listen passively. This finding corroborated the findings by Thiharu, Kirikua, Maithya and Ronoh () in their study To Examine the Effects of the Principals' Invitation of Mathematics Specialists on Students' Performance in Mathematics in KCSE Examination in Meru County, Kenya; that, group discussions were utilized by 32 (34.8%) schools. In regards to CATs, minority 13 (14.1%) of principals asserted that they used it as a strategy to improve performance. Mathematics contests were also cited by only nine (9.8%) of the principals and eight (8.7%) also claimed that they organized symposiums for their students. Symposiums were found to be rarely adopted strategies by the schools. Majority of schools that performed poorly in Mathematics 65 (70.65%) were those that did not use symposiums as a technique to improve Mathematics performance, while the majority of the schools that performed well 3(3.26%) organized symposiums for their students. The study used the chi-square test of independence to test the relationship between use of symposiums as a strategy to improve Mathematics performance and students Mathematics performance. A p value of ($0.544>0.05$), which was statistically significant was realized. Therefore, they concluded that symposiums, was a good strategy to improve students' performance in Mathematics.

Academic families

Academic families as portrayed by the sampled principals refer to groups of students attached to teachers. These students are to be meeting their teacher who would give guidance on the revision of examinations and general stay at school. The families consist of the teacher and learners from each class. The importance of these academic families was to keep track of the performance of and bring in competitions of various families to encourage high achievements. It was established in this study that 16% of the sampled principals named this as an extra program that enhanced the achievement of high scores in the final examinations. There was no relevant literature agreeing or disagreeing with this finding. Making this area a source of further research.

Motivational speakers and Creaming

Creaming is a program that brings together top performers per school say top five best students or top three in a sub county or county together for a period of time. They are then subjected to an academic program including being talked to by motivational speakers and subject specialists. Motivational speakers are usually called in schools to talk to a particular group of students such as the candidates or the whole student population. They may also be called in to talk to parents, teachers, Board of Management and student leaders. Motivational speaker were put together with creaming since most of the sampled school principals did motivate the top achievers. It was established that 14 % of the sampled principals mentioned motivational speakers as an academic program that contributed to the betterment of KCSE scores. Studies done on motivational speakers concur though motivational speakers is taken a part among other factors that affected a school's performance. For example a study done by Oyoo and Achieng (2018) on Perceptions of Teachers on Influence of Motivational Strategies used by Career Teachers on Students' Choice of Computer Studies in Secondary Schools in Kisumu County, Kenya found out that Organizing joint

activities was the most commonly used strategy (74.1%) followed by awarding (66.7%), provision of resource materials (63.0%), inviting motivational speakers (63.0%), inviting role models (51.9%), while the least was organizing trips (22.2%). According to students used in the same study; inviting motivational speakers was perceived to be the most effective (4.74), followed by organizing field trips and awarding (4.41), inviting role models (4.04). A paper on the Effect of a Motivational Speaker on Dental Student's Performance on National Board Part 1 (NBDE-1) by Haddad et al (2015) concluded that incorporating a professional motivational speaker positively correlated with an increase in the pass rate on NBDE-1 from the following percentages in the past five years: 96%, 96%, 96%, 95%, and 96% to the following pass rate on NBDE-1 in 2014:99%. Results also indicated a positive correlation between the utilization of a professional motivational speaker and students' motivation, perceived ability to control their stress, and perception of preparedness for NBDE-1. The authors agreed that the sample size used was small but the fact that the pass rate in the year 2014 was the highest (99%) compared to the subsequent years when there was no motivational speaker on the board says a lot.

Academic Counseling

Academic counseling is a continuous educational process that connects the student to the school. Academic counseling assists in preparing the student for learning in the institution. Academic counselors are usually teachers since most schools can't afford to hire; represent and interpret policies and procedures to the student and help the student navigate the academic and organizational paths of the school. Academic counseling is important since it provided outreach to enhance student development, and counsel students to meet academic and career goals. It has been established that 5 % of the sampled principals mentioned that academic counseling enhanced the outcome of KCSE examination. Guidance and counseling has widely been researched on especially its impact on academic achievement but not academic counseling.

KNEC facilitators

Kenya National Examination Council facilitators are teachers who have been trained by the council to mark certain papers in specific subjects. After training they continue marking the KNEC exams after it has been done. These facilitators were deemed to have knowledge in Examination question answering techniques based on experience gained during the marking exercise. Some schools engaged these facilitators to sharpen the answering skills of their candidates. Only 3% of the sampled principals engaged these examiners. These sentiments were expressed by Campbell and Malkus (2010) who reported that when external subject specialists were invited to schools, they gave students a new positive change on how they perform with time. However, it could be seen that most of the principals in these schools relied on their own subject teachers as the subject specialists. The reason may be that the external examiners were expensive, and if a school decided to get them then a minimum of fifteen examiners would be required out of the possible thirty; a costly affair.

The schools teaching practices that were learner centered were employed in schools in Kakamega County. ICT integration was supported by students within (Mean=3.7250, Std. Dev = 1.08575) and by the deputy principals within (Mean=3.0270, Std. Dev=1.30142). The means and standard deviations of the respondents were at almost the same range. This could be because the students and the deputies viewed their importance as often as was used. Information Communication Technology and communication technologies plays major roles in education and it gives many opportunities and experiences to teachers and the students. It changes the future processes and the social environment. ICT integration in education could be done using teaching and learning process. Teachers played a major role in education (Ngeze, 2017).

Students in this study agreed that their teachers used varied teaching methods within (Mean=4.2750, Std. Dev = .87669) .The deputy principals also agreed within (Mean=4.0541, Std. Dev = 1.15340) that teachers used varied teaching methods in instructing their students. The students and deputy principal's means and standard deviations were not varied implying that the methods were of benefit to them. McCabe, and O'Connor, (2014) reported that a student-centered approach to learning encouraged students to have more responsibility for their learning and was a process that relied heavily on professional confidence to 'let-go' of traditional teaching methods.

The methods included question and answer techniques, group discussions practical lessons. These methods engaged the learner more and so the learner was able to learn certain competencies and retain content. Davis (2017) said that education should engage the student. This meant that the student should be active attentive curious optimistic interested in the learning. This in turn increased the student's performance in examinations. Nganga (2010) did a research on factors contributing to low grades in mathematics in KCSE examination in Kiambu district and found out that the methodology used in schools was problem centered and was not student centered. The student should be the one solving the problems and doing what was learnt. This required time since learners were of different cognitive abilities, yet teachers had been given an ultimatum about syllabus coverage to get the desired appraisal targets. Perhaps that was why there was a new shift to competence-based learning where the curriculum insisted on the learner gaining competencies instead of rote learning that tested memory. Wachanga and Mwangi (2004), Kibet and Kathuri (2005), Esra et al (2009) as quoted by Chrulukovian, Mondoh and Namasaka (2017) reiterated that teaching methodology was a crucial factor in determining academic performance of learners in whichever system of education. A methodology that enabled the main players in the process the learners to do what was learnt was the best i.e. learner centered methods of teaching. Learner centered methods of teaching involved learners' senses and aided the learners in content retention. Learner centered teaching methods included discussion and presentation by learners, Team teaching and teachers' reflective teaching. Most examinations tested on how much content the learner had retained and this plainly explains the positive relationship. The results were in tandem with those by Momanyi (2019) which examined the effect of teaching management strategies on the academic performance of secondary schools in Manga Sub County. Research findings showed that Student centered management strategy, teacher centered management strategy and assessment strategy were positively and significantly associated to academic performance. The joint teaching management strategies (assessment management strategy, teacher centered management and student-centered management) were found to be significant in determining academic performance. The teaching management strategies predicted 53.5% of change in the academic performance.

XII. CONCLUSION

The study concluded that schools teaching practices that were student centered improved the outcomes of learners in secondary schools in Kakamega County. The methods discussed included integration of Information Communication and Technology instructional program to ensure that learning was accessible, practical lessons in order to develop students' ability to observe. Finally, the study concluded that the teachers engaged their students by use of question and answer method to test learning and group discussions. Teachers who employed team teaching also reported an improvement in the results of KCSE. The teachers together prepared schemes of work, individual lesson plans, taught students, and evaluated the results. Other empirical studies noted that team teaching involved a group of instructors working purposefully, regularly, and cooperatively to help a group of students of any age

learn. Teachers together set goals for a course, design a syllabus, prepare individual lesson plans, teach students, and evaluate the results.

XIII. RECOMMENDATIONS OF THE STUDY

The study recommended that the secondary schools should use learner centered methods of teaching like group discussions question and answer method and involving students in practical lessons. ICT integration was recommended. Teachers should use varied teaching methods to ensure that learners were engaged. Studies had reported that a student-centered approach to learning encouraged students to have more responsibility for their learning.

REFERENCES

- [1] Abdinoor, I. (2012). Socio-Economic, Socio-cultural and school based factors that are affecting the performance in Kenya Certificate of Secondary Education in Isiolo County, Med Project (unpublished). Kenyatta University, Nairobi Kenya.
- [2] Abe, T. (2010). The effect of teachers' qualifications on students' performance in mathematics. *Sky Journal of Educational Research*, 2 (1), 10-14.
- [3] Abebe, T. (2014). The practices and challenges of school-based supervision in government secondary schools of Kamashi Zone of Benishangul Gumuz regional state. Addis Ababa: Jumma University.
- [4] Andiva, Z. K. (2019). Influence of Iso 9001: 2008 Quality Management System On Academic Staff's Service Delivery in Public Universities in Kenya (Doctoral dissertation, Maseno University).
- [5] Afolabi, F. (2019). Quality assurance in distance learning teacher preparation institute in Nigeria. *Asian Journal of Distance Education*, 14(2), 114-123.
- [6] Aized, T. (2012). Total Quality Management and Six Sigma.
- [7] Rijeka, Croatia: In Tech Prepress.
- [8] Alber, E., & Trettel, M. (2018). THE ITALIAN EDUCATION SYSTEM. Federalism and Education: Ongoing Challenges and Policy Strategies in Ten Countries, 131.
- [9] Alzafari, K., & Ursin, J. (2019). Implementation of quality assurance standards in European higher education: does context matter?. *Quality in Higher Education*, 25(1), 58-75.
- [10] Amisi, E. (2016). Influence of socio-economic factors on pupils' transition rates from primary to secondary schools in Kisumu east sub county, Kenya. Master of Education Thesis. Nairobi: University of Nairobi
- [11] Ansell, C., Sørensen, E., & Torfing, J. (2017). Improving policy implementation through collaborative policymaking. *Policy & Politics*, 45(3), 467-486.
- [12] Arhin, A. K. (2015). The Effect of Performance Assessment-Driven Instruction on the Attitude and Achievement of Senior High School Students in Mathematics in Cape Coast Metropolis, Ghana. *Journal of Education and Practice*, 6(2), 109-116.
- [13] Aroni, M. K. (2013). Effects of subsidized secondary education on access to public secondary schools in Nyamache division, Kisii county, Kenya. Master of Education Thesis. Nairobi: Kenyatta University
- [14] Asiyai, R. I. (2015). Improving Quality Higher Education in Nigeria: The Roles of Stakeholders. *International Journal of higher education*, 4(1), 61-70.
- [15] Ayeni, A. J. & Adelabu, M. A. (2012). Improving learning infrastructure and environment for sustainable quality assurance practice in secondary schools in Ondo State, South-West, Nigeria in *International Journal of Research Studies in Education*, 1 (1), 61-68.
- [16] Babara, M. M. (2015). Involvement of teachers in decision-making: the case of selected public primary schools in Missenyi district, Kagera region, Tanzania (Doctoral dissertation, The University of Dodoma).
- [17] Bostic, J., Lesseig, K., Sherman, M., & Boston, M. (2019). Classroom observation and mathematics education research. *Journal of Mathematics Teacher Education*, 1-27.
- [18] Campbell, A. (2018). Evolution Education in New Zealand. In *Evolution Education Around the Globe* (pp. 431-446). Springer, Cham.
- [19] Caspersen, J., Smeby, J. C., & Olaf Aamodt, P. (2017). Measuring learning outcomes. *European Journal of Education*, 52(1), 20-30.
- [20] Chepkuto, W. K. (2012). Contributions of Quality Assurance and Standards to Curriculum Implementation in Primary Schools of Baringo District, Baringo County, Kenya. Unpublished M.Ed Project, Kenyatta University.
- [21] Cheruiyot, K. P. (2013). Impact of Head Teacher's Supervision on Productivity; A comparative Study of Moi Girls (Eldoret) and Kesses Secondary schools. Eldoret, Moi University.
- [22] Chuachua, R., & Mafumiko, F. (2013). Integration of Academic and Vocational Education in Tanzania Is this an Innovation? The Experience of the Institute of Adult Education. *Journal of pen schooling*, 27.
- [23] Davidson, J. M., Price, O. M., & Pepper, M. (2020). Lean Six Sigma and quality frameworks in higher education—a review of literature. *International Journal of Lean Six Sigma*.
- [24] De Silva, R. (2014). Rubrics for assessment: Their effects on ESL students' authentic task performance. In *CELC Symposium*.
- [25] Deluca, C., Lapointe-Mcewan, D., & Luhanga, U. (2016). Teacher assessment literacy: A review of international standards and measures. *Educational Assessment, Evaluation and Accountability*, 28(3), 251-272.
- [26] DeLuca, C., & Bellara, A. (2013). The current state of assessment education: Aligning policy, standards, and teacher education curriculum. *Journal of Teacher Education*, 64(4), 356-372.
- [27] Denis, M. O., & Mudulia, M. (2019). Assessment of the Principals' administrative Strategies on Adequate Staffing and Its Influence on Students' performance In KCSE In Masaba South Sub County, Kisii County, Kenya. *European Journal of Education Studies*.
- [28] Do, T. N. Q., Pham, T. H., & Nguyen, K. D. (2017). Quality assurance in the Vietnamese higher education: A top-down approach and compliance-driven QA. In M. Shah & T. N. Q. Do (Eds.), *The rise of quality assurance in Asian higher education* (1st ed.). Cambridge, MA: Chandos Publishing.
- [29] Everson, K. C. (2017). Value-added modeling and educational accountability: Are we answering the real questions?. *Review of Educational Research*, 87(1), 35-70.
- [30] Engelbrecht, P., Nel, M., Smit, S., & Van Deventer, M. (2016). The idealism of education policies and the realities in schools: The implementation of inclusive education in South Africa. *International Journal of Inclusive Education*, 20(5), 520-535.
- [31] Engelbrecht, P., Nel, M., Smit, S., & Van Deventer, M. (2016). The idealism of education policies and the realities in schools: The implementation of inclusive education in South Africa. *International Journal of Inclusive Education*, 20(5), 520-535.
- [32] Fields, P., Hague, D. R., Koby, G. S., Lommel, A., & Melby, A. (2014). What is quality? A management discipline and the translation industry get acquainted. *Tradumática*, (12), 0404-412.
- [33] Furtak, E. M., Circi, R., & Heredia, S. C. (2018). Exploring alignment among learning progressions, teacher-designed formative assessment tasks, and student growth: Results of a four-year study. *Applied Measurement in Education*, 31(2), 143-156.

- [34] Furkan, H. and Kutluca, T. (2012). The effect of dynamic Mathematics software geogebra on student achievement in teaching of trigonometry. *Procedia-social and behavioral sciences*, 31, 183-187
- [35] Ganon-Shilon, S., & Chen, S. (2019). No school principal is an island: From individual to school sense-making processes in reform implementation. *Management in Education*, 33(2), 77-85.
- [36] Ghaicha, A. (2016). Theoretical Framework for Educational Assessment: A Synoptic Review. *Journal of Education and Practice*, 7(24), 212-231.
- [37] Gichuru, F. M. (2014). Classroom assessment practices in Kenyan secondary schools: teacher perspective (Doctoral dissertation, University of Nairobi).