Teaching and Learning Resources as Determinants of Academic Performance in Public Secondary Schools in Kuria East and Kuria West Sub-Counties, Kenya

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ABSTRACT

The continued increase in enrolment in secondary schools has put pressure on the limited teaching and learning resources thus affecting the academic performance of the schools. This study sought to determine the influence of teaching and learning resources on academic performance of public secondary schools of Kuria East and Kuria West Sub counties. Objectives of the study were to establish the influence of the level of adequacy the level of utilization of teaching and learning resources on academic performance in Kuria East and Kuria West sub-counties. The study employed Descriptive survey research design. Saturated random sampling technique was used to select 36 principals nested at 40 while stratified random sampling was used to select 138 out of 345 teachers . Data was collected through questionnaires, document analysis guide and observation checklist. Quantitative data was analyzed using descriptive and inferential statistics involving percentages, mean and linear regression, qualitative data using content analysis. Findings indicated that adequacy of teaching and learning resources had significant effect on academic performance with a regression coefficient of 0.87 and utilization 0.28. The study recommended that the government should avail adequate teaching and learning resources in schools and the school management should foster optimal utilization of teaching and learning resources. Findings of the study may be useful to educational planners, policy makers, and educational managers to utilize teaching and learning resources efficiently and device measures to address shortages of the said resources in schools so as to improve academic performance and to academicians for research purposes.

Keywords: Teaching and learning resources, Academic performance, Utilization, Adequacy, Education quality, Enrolment, Free secondary education.

Highlights of this paper

- Adequacy of teaching & learning resources tested positively with academic performance therefore is necessary for effective pedagogy.
- When teaching and learning resources are optimally utilized, the education quality is enhanced.
- The government should avail teaching and learning resources to schools for better academic performance.
- School managers should utilize the available teaching and learning resources optimally and device cheap measures to avail such resources in schools for effective curriculum delivery.

1. INTRODUCTION

Kenya has committed to achieve the global Sustainable Development Goals (SDGs) by the year 2030 (Republic of Kenya Vision 2030). Goal four of the SDGs was quality education which aims to provide inclusive, equitable and quality education and promote lifelong learning opportunities for all. The quality of education imparted to Kenyan children and youth are, and would remain, the determining factor in the achievement of Kenya's Vision 2030. Investing in human capital is the sure means for Kenya to achieve her economic, social and political objectives well-articulated in Vision 2030 and the constitution.

Despite the progress made in enhancing enrolment at all levels of education, there remain challenges that hinder Kenya from reaping maximum benefits of the large investments made in the sector, which stands at close to 7% of the annual GDP (NESSP 2014-2018). One of the challenges is low quality of education outcomes. An analysis of students' 2016 performance on the KCSE examinations indicates that most learners achieved below average scores with 33000 learners' attaining E grade in KCSE of which Kuria East and Kuria West had 200 Es which represents about 7% of the total number of candidates in Kuria East and Kuria West Sub-Counties with the grade (Kenya National Examination Council (KNEC), 2016). This was a very significant percentage since there are over 300 sub counties in Kenya with only two contributing over 7% of the total number of candidates with the lowest grade. Further analysis of KCSE performance in Migori County shows that Kuria East and Kuria West sub - counties have been at the bottom of the seven sub counties in the county for a number of years as indicated in Table 1.

Table-1. Migori county KCSE result analysis from 2012 – 2016.

Year / subcounty	2012	2013	2014	2015	2016
Rongo	6.26	7.01	5.33	5.60	3.77
Awendo	5.01	5.62	5.49	5.23	3.56
Uriri	4.92	4.89	5.21	5.25	3.56
Nyatike	5.27	5.52	5.30	5.26	3.94
Migori	5.60	5.15	5.14	4.97	3.28
Kuria West	4.82	4.75	4.63	4.58	3.13
Kuria East	4.70	4.61	4.60	4.51	3.046

Source: Migori county TSC statistics office.

UNICEF (2005) observed that school infrastructure affects quantitative growth and the provision of quality education since a certain minimum space in a classroom per learner, adequate science rooms, well equipped library, recreational facilities and boarding facilities are prerequisite in providing quality education. Further, adequacy of school infrastructure was not only a problem in Africa but also in the whole world. For, instance, Atherton (2008) observed that many schools in America are suffering from incidences of peeling paint, crumbling plaster, leaking roofs, poor lighting, inadequate ventilation and inoperative heating and cooling systems among other problems limiting provision of quality education as these demotivates learners and makes them uncomfortable.

Johan (2004) stated that educational outcomes in schools are closely linked to utilization and adequacy of teaching/learning resources in different ways; poor utilization or underutilization results to low educational performance. He further stated that the inadequacy of physical and material resources in schools was a major factor responsible for learning outcome of students. He argued that schools that do not have adequate facilities such as workshops, laboratories, classrooms, teaching learning materials are unlikely to post good results. The principles of facilitating effective learning and teaching involves having the practical skills and putting the learners own experience into practice. They receive inputs from the external environment in form of human and material resources, process them and empty the same into the society as finished products and services. The quality of the products bears a direct relationship with the qualities of the facilities deployed in the process of production.

Mathematics for instance was used as a key subject for selective advancement in the education system although conditions that prevail in the education system discourage a good performance in such examinations. This was due to inadequate instructional resources and equipment, poor teacher preparation, uninspired curricular and negative attitude by majority of stakeholders in education, especially the learners.

Wambua (2011) did a study on the impact of school infrastructure on access and provision of quality secondary education in Kisumu Municipality and found that the number and quality of school teaching and learning resources like classrooms, library, and laboratory influence the provision of quality secondary education in Kisumu municipality. Adequate tuition facilities facilitated the provision of quality education. She recommended that the ministry needed to level the ground for all learners particularly those who lack the facility. The study was done in urban centre but the current study was done in the rural and remote area and not only looked at school infrastructure but also other school resources like teachers and finances. The current study took cognizance of this finding and assessed the levels of adequacy and utilization of selected teaching and learning resources and their influence on academic performance.

1.1. Statement of the Problem

There had been low and declining academic performance in public secondary schools in Kuria East and Kuria West Sub Counties over the years. This was despite the fact that the government invested heavily in education, for example, in 2016/2017 financial year; secondary schools were allocated 32 billion for FDSE in which Kuria East and Kuria West benefited (Republic of Kenya, 2016/2017 Budget) to ensure that resources required in schools are availed. Moreover, the government had continuously over the years employed more teachers in public secondary schools in which Kuria East and Kuria West are also beneficiaries but the academic performance continued to decline in Kuria East and Kuria West over the years compared to other neighboring sub counties. This study therefore sought to determine the influence of teaching and learning resources on learners' academic performance in Kuria East and Kuria West Sub Counties with a view to addressing low academic performance of public mixed secondary schools in the said sub counties.

1.2. Purpose of the Study

The purpose of this study was to determine the influence of levels of adequacy and utilization of teaching and learning resources on academic performance of public mixed secondary schools in Kuria East and Kuria West Sub Counties.

1.3. Research Objectives

This study was guided by the following objectives:

1. To establish the influence of the levels of adequacy of teaching and learning resources on learners' academic performance in Kuria East and Kuria West sub counties.
2. To determine the influence of the levels utilization of teaching and learning resources on learners' academic performance in Kuria East and Kuria West sub counties.

1.4. Conceptual Framework

This study was based on a hypothesized relationship between a set of variables as diagrammatically explained in Figure 1.
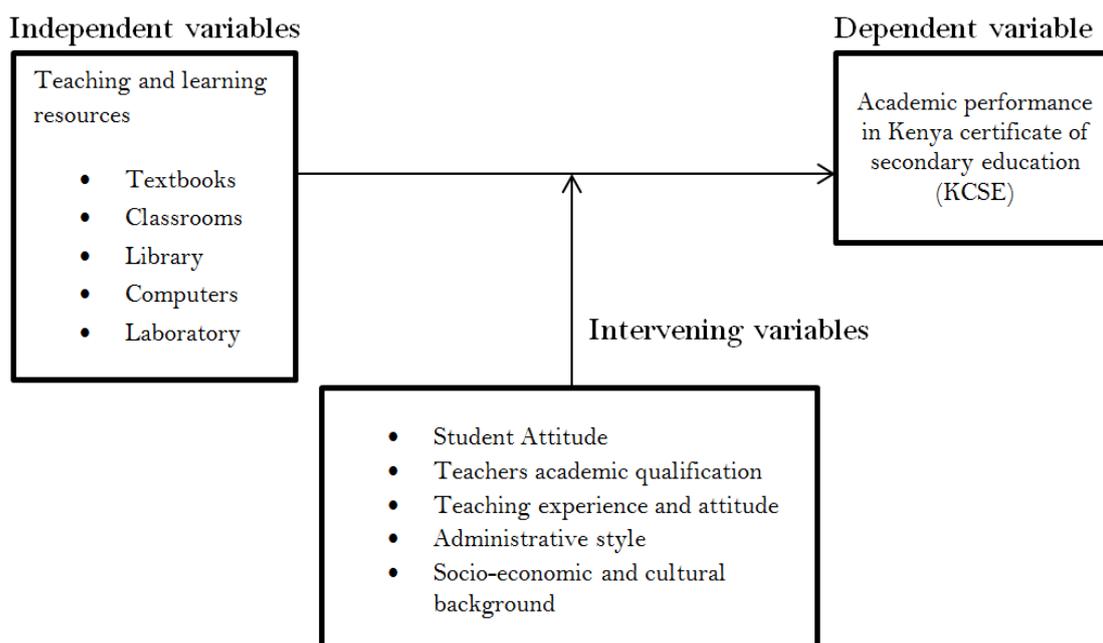

Figure-1. Relationship between the dependent and independent variables.

Source: Self conceptualization.

Figure 1 shows the teaching/learning resources commonly used in schools that this research was interested in include textbooks, classrooms, library, computers and laboratory were the independent variables in this study, and their influence on academic performance, the dependent variable. Adequacy of the above resources ensures that the learners could work independently and with ease, assignments could also be issued and completed in good time, enriched learning environment, adequate syllabus coverage and consequently improved academic results. The intervening variables which might also have had effects on academic performance included but not limited to student attitude, teachers academic qualification, teaching experience, administrative style and socio-economic and cultural background.

2. LITERATURE REVIEW

2.1. Levels of Adequacy and Utilization of Teaching and Learning Materials and their Influence on Learners Academic Performance

School resources including classrooms, desks, chairs, computers, textbooks, teachers, principals, school operating expenses and other instructional equipment/materials are critical in making teaching-learning more effective. They help improve access and educational outcomes since students are less likely to be absent from

schools that provide interesting, meaningful and relevant experiences to them. These resources should be provided in quality and quantity in schools for effective teaching-learning process.

Momoh (2010) conducted a research on the effects of instructional resources on students' performance in West Africa School Certificate Examinations (WASCE). He correlated material resources with academic performances of students in ten subjects. Data were collected from the subject teachers in relation to the resources employed in the teaching. The performances of students in WASCE were related to the resources available for teaching each of the subjects. He concluded that material resources have a significant effect on student's performance in each of the subjects.

Instructional materials in the teaching-learning process, facilitate the learning of abstract concepts and ideas; keep the learners busy and active thus, increasing their participation in the lesson; save teachers' energy of talking too much; illustrate the concepts clearer and better than the teachers' words only; help overcome the limitations of the classroom by making the inaccessible accessible; help to broaden students' knowledge, increase their level of understanding as well as discourage rote-learning; help to stimulate and motivate learners.

Recent emphasis on teaching-learning methods ensures that learners are made to have active participation. Active participation of learners increases motivation and also minimize, disruptive behavior associated with a boring curriculum overloaded with abstract concepts. Active participation was facilitated by making use of instructional materials and resources. Teaching can only be effective when adequate and relevant instructional materials are used (Falade, 2006). He observed that students learn best if they are given the opportunity to see and to make observations of what they are taught. He said a good instructional material might be a substitute for real life objects in the classroom as against the use of exploratory methods.

Many research reports abound on the inevitability of instructional materials and resources on educational outcomes. When instructional materials and resources are lacking or are inadequate education was compromised and this inevitably was reflected in low academic performance, high dropout rates, problem behaviours, poor teacher motivation and unmet educational goals. This leads to wastage of resources devoted to education.

Having noted through various researches done on the importance of instructional resources on the educational outcomes, it was inevitable to assess their levels of adequacy and utilization in Kuria East and West with an attempt to address the declining academic performance.

A key component of educational quality was infrastructure and this has been a major focus of investment. Constructing and providing for quality classrooms, water and sanitation facilities, laboratories and libraries form a learning environment that not only encourages learning but was also welcoming, gender-sensitive, healthy and safe. Provision of infrastructure in educational institutions was done by the national government, devolved funds such as CDF, and the community and development partners (NESSP 2013/14-2017/18).

A survey conducted and released by the Saturday Nation on February 4, 2017 presents a picture of decay, disuse and neglect in the schools. Pupils learn under difficult conditions while teachers struggle to create order where chaos reigns. It established, in a week long survey, a pervading sense of decay. In many areas, it was a case of absence of infrastructure as learners sit on the floor, or stones and logs. Open sewers, dumpsites in schools, crumbling ceilings, cracked walls and potholed floors, characterize the conditions under which many learners in public schools learn.

Rapid increase in school enrolments has resulted into large classes especially in secondary school level resulting to poor performance and less desirable teaching (Wangari, 2008).

Luvega (2007) in her study on the success of free primary education in Kenya established that lack of school infrastructure like classrooms, desks, toilets were a major hindrance to quality teaching and learning. Schools where

pupils were forced to share desk or sit on the floor reported poor performance. This kind of environment was found not conducive for teaching and learning hence poor academic performances.

According to Lyons (2002) learning was a complex activity that puts students' motivation and physical condition to the test. It has been a long-held assumption that curriculum and teaching are the only major parameters that have an impact on learning. However, it was becoming more apparent that the physical conditions in schools indeed influence student performance.

According to Earthman (2004) high educational performance was associated with a number of comfort factors such as; air conditioning, less noisy external environments, less graffiti and where classroom furniture are in good repair. More recent reviews have consistently found relationships between building quality and academic outcomes. These studies also seeks to find if design criteria and building conditions related to human comfort, indoor air quality, lighting, acoustical control, and secondary science laboratories have demonstrable influence on student performance.

The quality of school buildings has also been related to student behavior, including vandalism, absenteeism, suspensions, disciplinary incidents, violence, and smoking (Schneider, 2002). Thus, reviews of research on various aspects of the physical environment tend to conclude that adequate student capacity and appropriate acoustical conditions are important factors in a school environment (Schneider, 2002; Earthman, 2004; Fisher, 2006). Students are not the only ones affected by poor quality buildings. Teacher attitudes and behaviors have also been found to be related to the quality of school facilities. Teacher retention/attrition decisions were significantly related to the quality of school facilities, even when controlling for a host of factors. Factors that most directly affected the quality of teacher work life also included indoor air quality, thermal controls, noise level and acoustics, adequate classroom lighting, and the amount of natural daylight. Teachers who perceived a detrimental effect on their health due to building conditions, or who were stressed by high noise levels, poor acoustics, and lack of thermal controls were more likely to seek employment elsewhere. They therefore become demotivated and unsettled. Thus, this study assessed such characteristics mentioned above and their influence on the KCSE performance in public secondary schools in Kuria East and West Sub Counties.

3. RESEARCH METHODOLOGY

This study adopted a descriptive survey research design. As a result of the cause-and-effect relationships, this research design does not permit manipulation of the variables (Patton, 2002). Therefore the independent variables were studied after they had already exerted their effect on the dependent variable.

The study was carried out in Kuria which was constituted by Kuria East and Kuria West Sub Counties of Migori County. The researcher targeted 40 principals and 345 teachers from 40public mixed secondary schools.

The study's sample size was determined using the Bell (2005) rule of thumb which suggests that at least a third of the total population was sufficient for representativeness in a social study. In this study, the principal for each school (90% of the population) and teachers randomly chosen from each of the schools sampled were the respondents in this study. A total of 36 principals were sampled for the study after 4 principals had been used for piloting. This was because principals were the administrators of these institutions therefore possessed all the information about the school they administered and were custodians of all the resources in a school. The other teachers were to complement the data that might have not been given by the principal for objectivity purposes.

To ensure fair representation of teachers for the study, stratified random sampling was used in selecting and distributing 138 teachers. The stratification factors were day and day and boarding. Due to possibilities of non-responses, the study targeted a participation scale of 138 teachers from 36 schools, which was 40% of the total

population. 40% of the teachers in each of the 36 schools were randomly chosen for the study which summed to 138 teachers.

This study used questionnaires to gather information from principals, teachers, and observation checklist and document analysis guide. Questionnaires were recommended because the data gathered allowed measurement for and against a particular view point. Questionnaires were also considered ideal for collecting data from Head teachers and teachers because they could individually read, interpret and fill them. They allowed information to be collected from a large number of respondents within a short time and ensure anonymity and also eliminated interviewer's bias (Orodho, 2009). Both open-ended and closed-ended questions were used. The study employed two different sets of questionnaires for both principals and teachers.

Face and content validity of the instruments was determined by experts in planning and economics of education and their inputs were considered in making the necessary revisions on the final version of the instruments that were used to collect data. A pilot study involving four public mixed schools which represented 10% of the population was done to ascertain the reliability of the instruments and the weaknesses noted were corrected to make the instruments more reliable.

Conversion of data into meaningful information was undertaken on two dimensions, one involving quantitative/metric data (nominal, ordinal and interval forms of data) and the other involving qualitative/non-metric data (textual open-ended data). The refined and organized quantitative data was analyzed using descriptive and inferential statistics involving percentages, mean scores and regression analysis to determine varying degrees of response-concentration. According to Hair *et al.* (2010) this statistical approach was essential when finding a way of condensing the information contained in a number of original variables into a smaller set of factors with a minimum loss of information. The statistics was generated with aid of the computer software, Statistical Package for Social Sciences (SPSS) Version 20.0.

The study's non-metric, open-ended responses were analyzed using content analysis procedure, whereby the pool of diverse responses was reduced to a handful of key issues in a reliable manner. This was achieved through a stepwise process that involved two broad phases: firstly, taking each person's response in turn and marking in them any distinct content elements, substantive statements or key points; and secondly, forming broader categories to describe the content of the response in a way that allowed for comparisons with other responses. The categories obtained in second phase was numerically coded and then entered into the data file to be treated as quantitative data.

4. DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1. Student / Textbook Ratio

The research sought to establish the student to textbook ratio in the common subjects offered in the sampled schools and the findings are summarized in Table 2.

Table 2 reveals that due to government affirmative action of providing textbooks to schools from 2018; English, Kiswahili, Mathematics, Biology, Chemistry and Physics had student to textbook ratio of 1:1 in all schools in form one. In form two,18 (50%) of the schools sampled had the recommended STR in Kiswahili and Agriculture, 6 (17%) had the recommended STR in Biology and CRE. In form three, 24 (67%) had the recommended STR in Physics and 5(14%) in CRE. In form four, 24(67%) schools had the recommended STR in Physics, 18(50%) schools in English, Kiswahili, Mathematics, Geography and Agriculture. Thus 50% of the schools sampled had the recommended ratio of student to textbook ratio of either 1:1 or 1:2.

Table-2. Student to textbook ratio.

Department	No. of pupils per text book							
Form	**1**		**2**		**3**		**4**	
Subject	STR	F (%)	STR	F (%)	STR	F(%)	STR	F(%)
English	1:1	100	1:1,2	42	1:1,2	33	1:1,2	50
Kiswahili	1:1	100	1:1,2	50	1:1,2	33	1:1,2	50
Mathematics	1:1	100	1:1,2	42	1:1,2	33	1:1,2	50
Biology	1:1	100	1:1,2	17	1:1,2	21	1:1,2	25
Chemistry	1:1	100	1:1,2	18	1:1,2	23	1:1,2	17
Physics	1:1	100	1:1,2	42	1:1,2	67	1:1,2	67
History	1:1,2	33	1:1,2	33	1:1,2	33	1:1,2	33
Geography	1:1,2	33	1:1,2	42	1:1,2	42	1:1,2	50
CRE	1:1,2	50	1:1,2	17	1:1,2	14	1:1,2	17
Agriculture	1:1,2	33	1:1,2	50	1:1,2	42	1:1,2	50
B/Studies	1:1,2	33	1:1,2	42	1:1,2	33	1:1,2	42

Note: 1:1 and 1:2 STR were used for analysis since they are considered adequate according to the recommendations of MOE.

In some schools, certain subjects recorded a student to textbook ratio of 1:10. This indicates to a high degree a deplorable situation of lack of textbooks as instruction materials in most schools thus resulting to low academic performance.

Table-3. Teachers' responses on levels of adequacy of teaching and learning resources.

Levels of adequacy of teaching and learning resources	Frequency (Teachers)					
	5	**4**	**3**	**2**	**1**	**Mean**
1.The number of reference books in the school are adequate	9	51	49	27	2	3.28
2.The number of teachers guide in the school are adequate	23	48	34	27	4	3.38
3.Teaching resources such as manilas, dusters, plasticine, chalk, models, charts, are adequate	44	44	30	13	6	3.75
4.Use of resource persons in the school was thrice in a term	9	22	33	48	23	2.54
5.Use of field trips/excursions in the school was at least once in a term	9	30	41	27	30	2.70
6.Use of computers in teaching and learning was common	4	19	23	41	49	2.14
7.Students have adequate number of calculators	26	34	36	32	9	3.23
8.Books and equipment storage facilities in the school are adequate	26	36	34	36	6	3.29
Overall mean						3.04
Use of professional documents in the school						
9.I always prepare schemes of work for subject that I am allocated	98	34	6	0	0	4.67
10.I always make use of lessons plans in my teaching	57	46	23	12	0	4.07
11.I always keep updated students records for my subject	79	50	10	0	0	4.53
12.I always keep updated lesson notes for my subject	102	30	6	0	0	4.70
13.I always keep updated class register for the students in my class	90	36	6	3	4	4.51
14. I always make use of practical/experiments for the teaching of my subject	57	46	23	9	12	4.12
Overall mean						4.43

Source: Secondary school teachers in Kuria East and Kuria West Sub-counties, Kenya.

4.2. Teachers' Responses on Adequacy of Teaching and Learning Resources

The study sought the teachers' opinion on the adequacy of teaching and learning resources. Teachers were served with statement on a scale of 1 to 5, where 1 represented strongly disagree, 2 disagree, 3 moderately agree, 4 agree and 5 strongly agree. The statements were meant to assess the levels of adequacy of teaching and learning

resources in schools. Average mean scores corresponding to each response based on the scale was calculated and presented in Table 3.

Table 3 shows that teachers agreed that they always use professional documents in teaching with an overall mean of 4.43 and moderately agreed that teaching and learning resources are adequate with an overall mean of 3.04. They moderately agreed that students have adequate number of calculators, books and equipment storage facilities in the school are adequate , number of reference books in the school are adequate , number of teachers guide in the school are adequate with a mean score of 3. They disagreed that use of resource persons in the school was thrice in a term; use of field trips/excursions in the school was at least once in a term with a mean score of 2. This indicates resources were not adequately available for teachers' usage.

4.3. Adequacy of Teaching and Learning Resources as Observed by the Researcher

The researcher visited all the schools and while principals and teachers were filling the questionnaire, he observed selected immovable infrastructure which directly influence learning and summarized the findings as indicated in Table 4.

Table-4. Teaching resources.

Teaching & learning resource	Frequency	% Frequency
Adequate classrooms	30	83
Standard classroom size	27	75
Computer room	2	6
Library	15	42
Storage facilities	13	36

Source: Principals.

From Table 4, 30(83%) schools sampled had adequate classrooms, 16 schools had some classes in laboratories, dining hall and libraries. On the other hand less than half of the total schools sampled indicated inadequate facilities such as computer room at 6%, library at 42%, storage facilities at 36%.
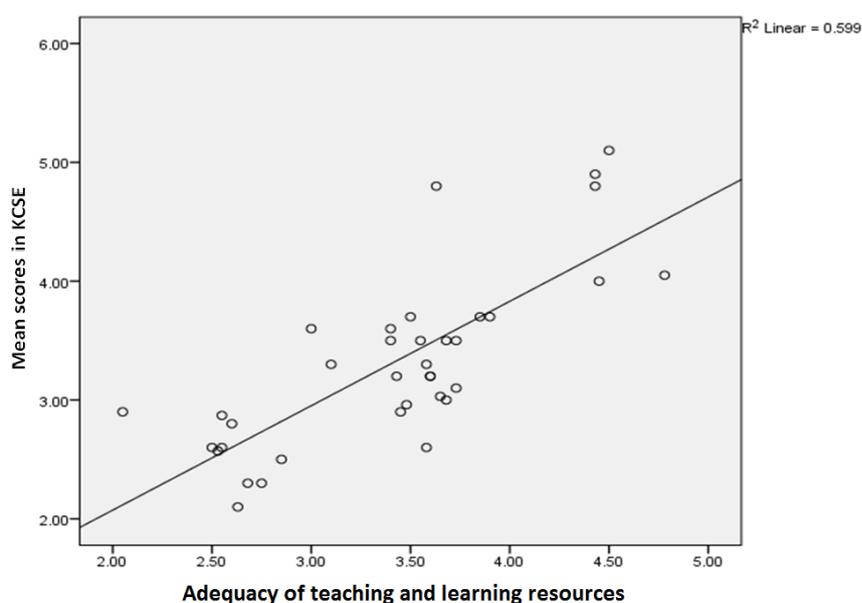

Figure-2. Scatterplot of adequacy of teaching and learning resources.
Source: Principals.

4.4. Influence of Levels of Adequacy of Teaching and Learning Resources on Academic Performance

Regression analysis was done with the dependent variable being mean KCSE performance in various schools sampled. The independent variable was arrived at by considering the mean STR together with the average scores from the likert scale. The observed STRs in different schools were then assigned conventional values. For example STR of 5 was assigned the value 1, 4 was assigned 2, 3 assigned 3,2 assigned 4 and 1 assigned 5. This was then added to the mean scores from likert scale to obtain the overall score for each school for the purposes of regression in an attempt to establish the influence of adequacy of teaching and learning resources on academic performance. The results are shown in Figure 2 and Table 5.

It was established that there was a positive relationship between schools mean scores and the adequacy of teaching and learning resources. This is because the more adequate the resources, the better the academic performance. The level of significance is indicated by linear regression model in Table 5.

Table-5. Influence of adequacy of teaching and learning resources.

Model	Unstandardized Coefficients		Standardized coefficients	T	Sig.
	B	Std. error	Beta		
(Constant)	.316	.428		.740	.465
Adequacy of teaching and learning resources	.879	.123	.774	7.131	.000

a. Dependent variable: Mean scores in KCSE.

The table shows that adequacy of teaching and learning resources influences the performance positively with a regression coefficient of 0.879.This meant that academic performance improved when the teaching and learning materials are made available for teachers' use. This result support the findings of researchers who have argued that teacher or school resource inputs do not explain a large portion of student academic achievement. For instance, Momoh (2010) conducted a research on the effects of instructional resources on students' performance in West Africa School Certificate Examinations (WASCE) and concluded that teaching and learning resources have a significant effect on students' performance in each of the subjects. Many research reports abound on the inevitability of instructional materials and resources on educational outcomes. When instructional materials and resources are lacking or are inadequate education was compromised and this inevitably was reflected in low academic performance, high dropout rates, problem behaviours, poor teacher motivation and unmet educational goals. This leads to wastage of resources devoted to education.

4.5. Teachers' Responses on Utilization of Teaching and Learning Resources

The study also sought the teachers' opinions on the utilization of teaching and learning resources. Teachers were served with statement on a scale of 1 to5, where 1 represented strongly disagree, 2 disagree, 3 moderately agree, 4 agree and 5 strongly agree. The statements were meant to assess the levels of utilization of teaching and learning resources in schools. Their responses are provided in Table 6.

According to Table 6, teachers agreed that they make use of the facilities in library in teaching, make use of the discussion groups teaching, make use of the teacher's guide in teaching, make use of the text books in the teaching of subjects and that they make use of the reference books in teaching.

On the contrary, they disagreed that they make use of the computer room in teaching and that they make use of the excursions/field trips in teaching.

On the overall, teachers agreed that they make use of available teaching and learning materials with an overall mean of 3.6, except computers which are unavailable in most schools and that very few schools participate in field trips.

Table-6. Teachers' response on utilization of teaching and learning resource.

No.	Levels of utilization of teaching and learning resources	5	4	3	2	1	Mean
1	I make use of the facilities in the laboratory in teaching	45	25	25	17	26	3.33
2	I make use of the facilities library in teaching	45	58	30	0	4	4.00
3	I make use of the computer room in teaching	17	26	29	30	36	2.70
4	I make use of the reference books in teaching	83	39	10	0	8	4.41
5	I make use of the set books in my teaching	62	17	4	12	42	3.30
6	I make use of the text books in the teaching of subjects	96	32	2	5	2	4.53
7	I make use of the teacher's guide in teaching	66	40	18	5	8	4.07
8	I make use of the models in teaching	40	44	36	10	8	3.71
9	I make use of the resource persons in teaching	22	29	45	26	16	3.11
10	I make use of the excursions/field trips in teaching	18	25	34	35	26	2.8
11	I make use of the calculators in teaching	34	34	28	16	26	3.24
12	I make use of the internet in teaching	24	34	35	20	24	3.08
13	I make use of the charts in teaching	34	52	40	5	5	3.72
14	I make use of the discussion groups teaching	80	34	18	0	5	4.31
	Overall mean						3.60

Source: Secondary school teachers in Kuria East and Kuria West Sub-counties, Kenya.

4.6. Influence of Levels of Utilization of Teaching and Learning Resources on Academic Performance

Regression analysis was done in an attempt to establish the influence of utilization of teaching and learning resources on academic performance by taking the perceptions of teachers provided in the Likert scale on the levels of utilization of teaching and learning resources against mean performance in KCSE. The results are indicated in Figure 3 and Table 7.
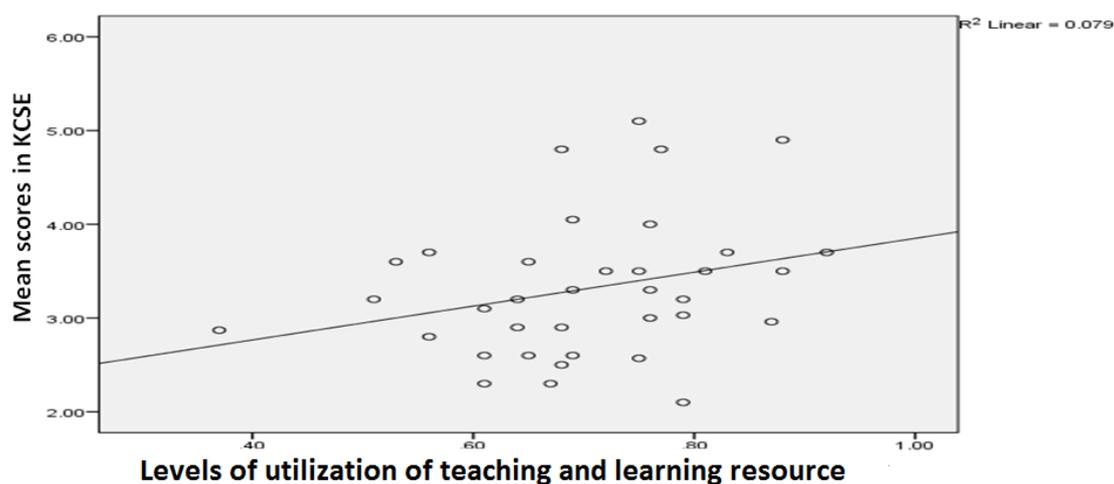

Figure-3. Scatterplot showing relationship between levels of utilization of teaching and learning resources against academic performance.
Source: Principals.

Figure 3 shows a weak positive relationship between utilization of teaching and learning resources and performance in KCSE. The strength of the relationship is shown in Table 7.

Table-7. Influence of utilization of teaching and learning materials on academic performance.

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	Std. error	Beta		
(Constant)	2.044	.751		2.720	.010
Levels of utilization of teaching and learning resources	1.807	1.055	.282	1.712	.096

a. Dependent variable: Mean scores in KCSE.

The model shows that there is a positive correlation between the levels of utilization of teaching and learning resources with the mean performance in KCSE with a Pearson's correlation coefficient of 0.283 and regression coefficient of 1.807. This means the level of utilization of teaching and learning resources influences the performance by upto 18.07%. This findings concurred with that of Olendo (2008) observed that some well-equipped schools perform dismally due to underutilization of resources while less equipped schools performed relatively well due to proper utilization of resources. Olel (2000) in her research on optimal utilization of educational resources in Kisumu District concluded that the levels of utilization of teaching and learning resources correlate highly with the academic performance. However, the findings of this research reveals overutilization of the few teaching and learning resources available indicated by high STR thereby interfering with the overall outcome of the learning process in form of low academic performance.

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Influence of Adequacy and Utilization of Teaching and Learning Resources on Learners' Academic Performance

Adequacy of teaching and learning resources was analyzed by assessing student to textbook ratio and views of teachers. This had a positive significant with a regression coefficient of 0.879 as in Table 5. This meant that the more the teaching and learning resources the better the academic performance.

Teaching and learning resources utilization correlated positively with academic performance with a regression coefficient of 1.807 as in Table 7. This indicates that when the available teaching and learning resources are optimally utilized the results become better. However, when the teaching and learning resources are underutilized or over utilized, the academic results worsen. This study therefore found out that the teaching and learning materials were over utilized and some teaching and learning materials were completely unavailable in most schools like the use of field trips and computers which resulted to low academic performance.

5.2. Conclusion

The adequacy of teaching and learning resources also had influence on academic performance. The higher the number of students per textbook, the lower the school academic performance. The other teaching and learning resources also correlated highly with academic performance.

There was also positive influence of the level of teaching and learning resource utilization on academic performance whereby in schools where these resources were optimally used posted better academic performance.

5.3. Recommendations

- The government should avail adequate teaching and learning resources in schools in order to realize quality academic performance.
- The school management to foster optimal utilization of teaching and learning resources. Underutilization or over utilization of the said resources should be discouraged.

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