

## **Influence of Teacher Resource Utilization on Students' Academic Performance in Public Secondary Schools in Makueni County, Kenya**

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### **Abstract**

Teacher resource utilisation is important in the functioning of schools. Performance in secondary schools is poor in Makueni County despite having teachers. The purpose of this study was to examine utilisation of teacher resources and its influence on academic performance in secondary schools in Makueni County. The objectives of this study were to establish teacher resource utilisation and its influence on academic performance in secondary schools in Makueni County. The study adopted mixed methods research design, specifically convergent parallel design, and was supported by Education Production Function Theory. Research instruments were questionnaires and interview schedules. Validity was achieved through expert judgment and reliability by the test-retest technique. Piloting was done in three schools. The target population was 1064 respondents, 60 principals, 1004 teachers, and 60 schools. Simple random, stratified and purposive sampling techniques were used to sample study subjects. The sample was 316 respondents, 30 principals, 286 teachers, and 30 schools. Analysis was done by descriptive and inferential statistics and thematic analysis. The findings showed utilisation of teacher resources moderately influenced students' academic performance ( $r=.518$ ,  $p\text{-value} < 0.05$ ). The null hypothesis was rejected as the  $p\text{-value}$  was less than 0.005. Qualitative data revealed that utilisation of teacher resources influenced students' academic performance. Major conclusion was that effective utilisation of teacher resources enhanced students' academic performance. Major recommendations included the Ministry (MoEST) to train teachers on utilisation of the institutional resources. This study provided information useful to education policymakers in formulating policies leading to the utilisation of resources in schools.

**Keywords:** *Teacher resources, utilization of teachers' resources, students' academic performance*

### **1.0 Introduction**

Chapter one begins by introducing the study on the utilisation of teacher resources and its influence on student's academic performance in secondary schools in Makueni County. It also presents the study background, problem statement, study purpose, study objectives, and research hypotheses. Education is globally acknowledged as a vital investment in human capital as it contributes to a nation's wealth and the well-being of its citizens. It makes educated

people make good decisions and is the cornerstone of both social and economic growth. Majority of developing nations have continued to experience myriads of challenges which are recognized by countries in striving to achieve Sustainable Development Goals and especially goal 4 in education. These challenges are as follows; insufficient school resources, low enrolments, poor standards of education, and contributing to the low academic performance of the learners (Clark, 2013). To put to an end the provision of low-quality education in Sub-Saharan African countries and the growing countries UNESCO (2014) advocates that, some procedures should be addressed which comprise; supplying sufficient instructional resources and making sure there is equity in access to satisfactorily trained instructors, better remuneration and retention, construction and improvement of physical facilities which should be done as fast as possible. The Sustainable Development Goal 4 UNESCO (2015) urges countries to make sure that their people attain education of good quality and the opportunity for lifelong learning, hence, the increased demand for secondary education is witnessed in many developing countries. For this reason, the issue of resource availability and utilization in relation to academic performance becomes vital (UNESCO, 2011).

Resource utilisation examines the effectiveness of the available resources within an institution and is expressed in a percentage (Kitowska, 2018). Resource utilisation is very important in the functioning of schools because it ensures the smooth running of operations and helps to reduce waste, it is key to ensuring projects' success, enhances better achievement of institutional goals, and is crucial in attaining quality students' school performance (Kapur, 2019). Resources-utilisation in educational institutions is justified by both economic and social returns reaped from investment in education (Woodhall, 2004). For resources to be used effectively in learning institutions, the issue of availability is very important.

The activities teacher resources do to attain learning goals and objectives in schools are described as teacher resource utilisation (Francis, 2018). Appropriate use of teacher resources is vital for institutions' growth and survival, especially during this time when there are myriads of problems such as insecurity, mismanagement of resources, and climate change which are experienced globally in schools. Teacher resource utilization plays a major role in the formulation and implementation of both school and government policies. In this study, teacher resources are expected to use all the other educational resources provided in public secondary schools as they execute their duties as without them the institutional operations would be deemed dormant. The manager of a school ensures coordination and supervision of all school matters so that everything runs smoothly (Egwu, 2016). Strategies are made, duties delegated to all the teacher resources, and work standards set and maintained to ensure available resources are effectively used through embracing management ideas for the schools to realize the set goals.

Students' academic performance is shown mostly by the grade achieved by learners after summative assessments, in this case, Kenya Certificate of Secondary Education. Students' academic performance ensures the attainment of learning (educational goals), The academic performance entails elements such as personality, the level of intellectual value, skills, own inherent rewards, study behaviors, interests, self-respect, or the relationship between teacher-student (Lamas, 2015).

In Brazil, Jordan, Argentina, the United Arab Emirates, Uruguay, and Kazakhstan, heads of secondary schools complained that limited school facilities prevented effective utilization to a lower extent than in the OECD countries. The inadequacy of these learning resources hindered their maximum utilisation and had a negative influence on learning. Therefore, effective use of institutional learning resources enhanced students' academic performance to above average

(OECD, 2013). Gamoran, Secada and Marrett (2006) concluded that what contributed most to improved learner grades was not the availing of resources, but their standard and how effectively and efficiently they are put into utilisation. For this reason, therefore the researcher was encouraged to determine how the use of selected institutional resources enhanced the academic performance of students in high schools in the selected locale.

A study conducted in Kisii County, Kenya to determine problems encountered by teachers when combining the use of computer hardware and software in educational applications in teaching Kiswahili, Omariba, Ondigi and Ayot (2016) found that even though educators recognized the full worth of the part played by teaching and learning using instructional technologies, they barely made use of the technologies available in their schools. The study further found that the sufficiency of computer hardware and software in schools did not automatically assume utilisation in instruction.

Kimeu (2015) did a study on instructional materials and their effect on learners' academic achievement in Makueni County secondary schools, in Kenya. The research study was conducted by use of the descriptive survey method and the results showed that the instructors' reference materials, learners and instructors' textbooks, charts, classes, maps, and equipment for science laboratory and reagents, as pedagogy resources positively influenced the academic performance of the students.

Secondary schools in the county produced K.C.S.E students' performance with a mean of 4.691. This proposed study was concerned with utilisation of selected resources and how it influences students' academic performance. The mean was benchmarked with a university entry grade which is a mean of 7.00, (C+), thus 4.691 (D+) is considered low and warranted an investigation. This low performance was linked to how the available institutional resources had been put into utilisation. Several studies have been done on utilisation of various institutional resources which had a notable influence on learner performance, such as the following:

A study by Kabazira (2010) on utilization of instructors and learners' academic scores in secondary schools in Kabarole District, Uganda, using a cross-sectional survey design, established that classes that had many students and further, the schools were understaffed produced students who had poor academic grades.

Another study by Okpa, Asibi, and Eruvwe, (2022) on library use and its impact on the academic performance of first-degree students in chosen high-level educational college libraries in South-South, Nigeria showed that investigation, studying, and examination preparation was advantaged by making use of libraries in university.

### ***Problem Statement***

Teacher resource utilisation is very crucial in schools as it makes them do the actual classroom teaching in schools and therefore implement the curriculum effectively. Teacher resources also facilitate the proper running of the operations and better achievement of institutional goals. County secondary schools in Makueni County have resources that if used effectively should produce desired students' academic performance. However, an average mean score of 4.691, considered as D+ has been achieved in Kenya Certificate of Secondary Education results from 2015-2019. This mean is benchmarked with the university entry grade, 7.00. C+. A mean of 4.691 is termed to be low when compared to the university entry grade, therefore the KCSE mean grade in county secondary schools would be considered low. Academic performance in these schools is caused by different elements among them the utilisation of resources, termed to be the main cause that hinders students from achieving good grades. Several studies have been conducted to provide recommendations for the cause of action of poor performance; yet,

the solution has not been fully achieved. The consequences included; many students would not go to university or further their education and losing good lifetime opportunities. Parents and the government also lose after spending a lot of money on educating them, these students would therefore fail to achieve vision 2030 goals.

From the background, many studies have been done on the utilisation of resources in different organisations and different locale, however, few were done on the utilisation of teacher resources and its influence on the academic performance of students in Makueni County, using mixed methods specifically (convergent parallel research design). Therefore, this study was conceptualized to determine how the utilisation of teacher resources influenced the academic performance of students in Makueni County secondary schools. The purpose of this study was to establish the utilisation of teacher resources and their influence on student's academic performance in county secondary schools in Makueni County to influence policy and practice on the utilisation of education resources in all secondary schools in Kenya.

### ***Study Objective***

To establish utilisation of teacher resources and its influence on students' academic performance in county secondary schools in Makueni County.

### ***Research Hypothesis***

H<sub>01</sub>. There is no significant relationship between utilisation of teacher resources and the academic performance of students in Makueni County secondary schools.

## **2.0 Literature Review**

This chapter shows the literature reviewed related to the study. The review of the literature was guided by study objectives: utilisation of teacher resources and academic performance of students.

### **Utilisation of teacher resources and academic performance of students**

Utilization of teacher resources is the effective and efficient use of teachers in schools to ensure optimum achievement of goals and objectives and evade wastage (Rafiei, 2015). Teachers commit their time to use all the other institutional resources in teaching, planning, marking exams, managing, and mentoring. Teacher resources consist of a very important part of all learning institutions. Their capability should be paramount to other forms of resources (Burke et al., 2013). If the teacher resources required in county schools in Makueni County was provided, their effective utilization would guarantee the successful attainment of institutional goals. Teachers should be pleased, motivated, well-managed, and well-paid for the success of an educational system and are very beneficial to society in the final analysis. This finding concurs with Kabazira (2010) who did a study on utilization of instructors and learners' academic scores in secondary schools in Kabarole District, Uganda, using a cross-sectional survey design and established that classes which had many students and the schools were understaffed, produced students who had poor academic grades. Blazar (2016) had the same opinion as this study that there is a strong relationship between the availability of teachers, and the way they apply their teaching strategies influences student learning. Further, the class arrangement by the instructors, their mastery of subject content, and learners' attitude towards learning lead to quality grades. Similarly, Kapur (2019) in his study on the impact of resource utilization in education in New Delhi, revealed that human resources are the employees who to discharge their duties effectively need to be getting in-service training every time to improve their competencies and capabilities. Another study by Iheonunekwu (2012) on the presence

and management of pedagogy resources and learners' achievement in Senior Secondary Schools in Abia and Imo States. The study found that effective use of instructors goes well with adequate and standard teaching and learning resources and that taking them to regular refresher courses on their teaching methodology is of paramount importance as their knowledge content is upgraded and also mastered.

The importance of teacher resource utilization is that they add value to the school and their collective efforts, conduct, and competencies contribute to desired performance (Burke et al, 2013). Their effective utilization of other institutional resources will determine the success or failure of the educational system. Teacher resource utilization is the way teachers are deployed for the optimal achievement of individual or collective school goals and objectives (Francis, 2018). They operate all the activities of the institution for it to achieve superior performance. The performance of a school relies on the instruction skills teachers had and how institutions developed them professionally. Academic results depended on the teacher resource growth and the increase of information on utilization of institution resources (Nwuche & Awa, 2011). Further, teachers' performance was greatly determined by their qualifications, motivation, attitude, and the educational facilities as well as staff professional development programmes (Ndugu, 2014). This finding agrees with Khan and Ghosh (2016) who showed that a low standard of teaching is associated with a drop in the performance of students. The tendency applies almost the same to all types and levels of learners. This finding has a similar opinion to Nassira (2016) who established that competent teachers who are highly trained had adequate abilities to effect positive student success.

Student academic performance is a measurement that helps to show whether an institution is achieving its mission and learning as evidenced by grades. These were the grade, cognitive knowledge, and skills learners achieved after internal or external examinations (Lamas, 2015).

### **3.0 Methodology**

The study adopted mixed methods research design, specifically a Convergent parallel research design (Creswell, Plano Clark, Guttman & Harrison, 2003, Tegan, 2021). Convergent research design entails collecting and analyzing data using qualitative and quantitative techniques at the same time in one study and analysis done separately. The research results are then compared, integrated, and interpreted to confirm, cross-validate, or corroborate findings within the study (Creswell, 2003). The purpose of using convergent parallel research design in the context of this study is, it yields distinct but complementary findings on that topic and gives a better understanding of solving the research problem. The main reason for using mixed methods research design was to corroborate and triangulate the study findings (Creswell & Clark, 2011, Tegan 2021). Qualitative data collection allows for collecting data using structured interviews. Quantitative data collection is the major method while the qualitative method is a minor method, however, both methods helped to collect useful data.

### **4.0 Results and Discussion**

This chapter presents the findings, interpretations, and discussions of the study, which are arranged according to the objective and research hypothesis of the study. The study investigated the influence of teacher resource utilisation on academic performance in public secondary schools in Makueni County. The study sample consisted of thirty (30) school principals and two hundred and eighty-six (286) teachers from thirty (30) secondary schools in the County. Data were collected using questionnaires and interview schedules. The collected

data were analysed and compiled into percentages and frequencies, then presented in graphs or tables.

### **KSCE Mean Scores for county secondary schools in Makueni County**

The study sought to determine the student's academic performance as the dependent variable. Students' performance is reflected in the schools' K.C.S.E. mean scores from county secondary schools in Makueni County. Principals were asked to give the mean scores for their schools in the last five years which formed the dependent variable of this study. Table 1 below shows the principals' feedback on the mean score of their schools in the years 2016, 2017, 2018, 2019, and 2020.

**Table 1: KCSE Mean Score for county secondary schools in Makueni County 2016, 2017, 2018, 2019 and 2020**

|           | 2016              | 2017              | 2018    | 2019    | 2020   | Overall mean      |
|-----------|-------------------|-------------------|---------|---------|--------|-------------------|
| Mean      | 3.9714            | 4.0036            | 4.3354  | 4.7930  | 4.9981 | 4.420             |
| Median    | 4.0050            | 3.9650            | 4.5200  | 4.9100  | 5.1150 | 4.0050            |
| Mode      | 1.65 <sup>a</sup> | 2.31 <sup>a</sup> | 4.98    | 5.40    | 5.30   | 1.65 <sup>a</sup> |
| Std. Dev. | 1.23437           | 1.06881           | 1.11209 | 1.14407 | .97789 | 1.23437           |
| Range     | 5.22              | 4.55              | 4.50    | 5.28    | 4.14   | 5.22              |
| Minimum   | 1.65              | 2.31              | 2.16    | 2.42    | 2.92   | 1.65              |
| Maximum   | 6.88              | 6.86              | 6.66    | 7.71    | 7.06   | 7.71              |

Source: County Education Office (2020).

Table 1 above indicates that Makueni county had an overall mean score of 4.420 and standard deviation of 1.2, 4.0 with a standard deviation of 1.1, 4.3 with a standard deviation of 1.1, 4.79 with a standard deviation of 1.1 and 4.998 with a standard deviation of 1.0 for the years 2016, 2017, 2018, 2019, and 2020 respectively. The overall mean score for the county was 4.420 with a standard deviation of 1.2 in the last five years. The small standard deviation implies that data is clustered around the mean hence the performance was neither very high nor very low.

This implies that the academic performance of students is low as is shown by an overall mean grade of 4.420, considered a D. The least mean grade for university entry in Kenya is a mean of 7, C+. This is according to Kenya Universities and Colleges Central Placement Service (KUCCPS, 2019). Therefore, many forms four school leavers do not succeed to get good grades to enable them to join middle colleges or pursue good courses in university.

### **Utilisation of teacher resources and students' academic performance**

Information from teachers and the principal on utilisation of teacher resources and student's academic performance in public secondary schools in Makueni County.

The objective of the study was to establish the utilisation of teacher resources and its influence on students' academic performance. The findings were used to address research hypothesis 1 that there is no significant relationship between utilisation of teacher resources and students' academic performance in public secondary schools in Makueni County. Data were collected using questionnaires for teachers and interview schedules for principals. Quantitative data were analysed using descriptive statistics such as means, percentages, and standard deviation while in inferential statistics, the chi-square was used in testing the hypothesis, ANOVA and multiple

regression were used to predict the influence between the independent variables (utilisation of institutional resources) and the dependent variable (students' academic performance). Qualitative data were analysed by creating themes that were interpreted.

### *Response on utilization of teacher resources*

The study sought to establish utilization of teacher resources and students' academic performance. This information was established by use of a Likert scale questionnaire which helped the teacher respondents rate the utilisation of teacher resources and students' academic performance. This 5-point Likert scale rating was used, 1-5, where 5- highest and 1 lowest, where - Always (A)5, Sometimes (S)4, Neutral (N)3, Rarely (R)2, and Never (N)1. The findings were presented in the table below.

**Table 2: Response to utilization of teacher resources**

|              |  | (5) Always |      | (4) Sometimes |      | (3) Neutral |      | (2) Rarely |      | (1) Never |      | Me<br>an | SD<br>Dev |
|--------------|--|------------|------|---------------|------|-------------|------|------------|------|-----------|------|----------|-----------|
| Statements   | on<br>utilization of teacher<br>resources  | N          | %    | N             | %    | N           | %    | N          | %    | N         | %    |          |           |
| <b>a</b>     | I use schemes of work, lesson plans, and lesson notes as required by TSC         | 106        | 42.4 | 66            | 26.4 | 24          | 9.6  | 53         | 21.2 | 1         | 0.4  | 3.89     | 1.182     |
| <b>b</b>     | As a teacher, I complete the syllabus per class before the set time              | 103        | 41.2 | 55            | 22.0 | 26          | 10.4 | 65         | 26.0 | 1         | 0.4  | 3.78     | 1.244     |
| <b>c</b>     | I attend the allocated classes on time   | 105        | 42.0 | 55            | 22.0 | 25          | 10.0 | 64         | 25.6 | 1         | 0.4  | 3.80     | 1.243     |
| <b>d</b>     | I guide and counsel students on academic matters                                 | 101        | 40.4 | 58            | 23.2 | 24          | 9.6  | 65         | 26.0 | 2         | 0.8  | 3.76     | 1.250     |
| <b>e</b>     | I mark exams and give the results at a specified time                            | 101        | 40.4 | 75            | 30.0 | 50          | 20.0 | 24         | 9.6  | 0         | 0.0  | 4.01     | 0.996     |
| <b>f</b>     | I teach for extra time   | 122        | 48.8 | 96            | 38.4 | 17          | 6.8  | 15         | 6.0  | 0         | 0.0  | 4.30     | 0.842     |
| <b>g</b>     | I use the needed instructional materials as per the subjects                     | 46         | 18.4 | 110           | 44.0 | 37          | 14.8 | 24         | 9.6  | 3         | 13.2 | 3.45     | 1.267     |
| <b>h</b>     | I complete the preparation of work plans before the beginning of the school term | 75         | 30.0 | 79            | 31.6 | 33          | 13.2 | 49         | 19.6 | 1         | 5.6  | 3.61     | 1.254     |
| Overall mean |  |            |      |               |      |             |      |            |      |           |      | 3.4      | 1.031     |

Source: Instruments

Table 2 above shows that majority of the teachers agreed that they use schemes of work, lesson plans, and lesson notes as required by TSC (68.8%, N=172). This indicates that teachers highly use the required professional documents which is likely to improve their effectiveness. Many of the respondents agreed that they attend the allocated classes on time (64%, N=160). This shows that teachers moderately attend classes as is required of them. More than three-quarters

of respondents agreed that the teachers complete the syllabus before the set time (63.2%, N=158). This indicates that teachers are committed to performing their duties effectively which is shown by the timely completion of the syllabus. From the interview schedule, one of the following words was said by a principal;

*Teachers attend classes very well, I don't follow to check whether all classes are being taught, however, what happens during the process of teaching and learning is what I do not understand because the performance is not very good. Is it the entry behaviour of the learners or is there another problem? Most of my teachers have the right qualifications except a few who are employed by the Board of Management (Principal-10).*

These sentiments by this principal show that teachers attend classes well and the academic performance of students is expected to be good. These findings concur with the study of Ndugu (2014) that teachers' performance was greatly determined by their qualifications, motivation, attitude, and the educational facilities as well as staff professional development programmes. Many respondents agreed that Teachers guide and counsel students on academic matters (63.3% N=159). This suggests that teachers have other duties to perform apart from the usual classroom teaching which they do effectively. Almost three-quarters of the respondents agreed that teachers mark exams and give the results at a specified time (70.4%, N=176). This implies that teachers adhere to all their duties promptly. Many teachers agreed that they use the needed instructional materials as per the subjects (58.4% N=156). This shows that teachers regularly use instructional materials which would facilitate fast attainment of subject concepts and contributes to the improvement of student's academic performance. The majority of the respondents agreed that teachers teach for extra time (87.2%, N=218). This shows that teachers highly teach extra time to recover the lost lessons, especially at this time when there are a lot of emerging issues causing numerous normal school routine breaking and shortening of the term dates.

Boliht (2009) stated that for teachers to be effective in the use of instructional materials, Principals must be effective in their supervisory roles. Effective schools need principals who are capable of planning, organizing, and managing all resources. A principal as a leader, therefore, occupies a central position at the school. He or she has a significant contribution to make in the establishment of an environment that is conducive- to teaching and learning. The importance of a principal's supervisory behaviour in secondary education cannot be overemphasized

The responses received from teachers on utilisation of institutional resources and students' academic performance show a mean of 3.4 (SD=1.031). (A mean of 1.0-3.4 shows most of the respondents disagreed while a mean of 3.5-5.0 indicates that most of the respondents agreed). Thus, most of the respondents disagreed with the statements presented, as shown in Table 2 above, that there is an effective utilisation of teacher resources. Therefore, teacher resources are ineffectively utilised in county secondary schools in Makueni County.

These words were said by one of the principals;

*I'm very strict when supervising teachers because the core mandate of my work is to oversee thorough curriculum implementation. My school is expected to produce excellent results, even according to our school vision and mission, we are expected*

*to fulfill what we have sworn we will do. Teachers are supposed to adhere to the TSC Regulations enlisted on the TPAD to thoroughly follow the seven teaching standards. So we are strict when we are performing our duties to maintain quality teaching in our school. Why the performance is a bit low, I cannot explain (Principal-30).*

These sentiments show that the principals, as teachers do their duties well to ensure effective teacher resource utilisation. This is meant to improve the academic performance of students. This finding was on par with that of (Mugambi, 2015) that school managers made use of various strategies in overseeing the teaching and learning practices in their schools. Several methods they employ include selecting some spy learners to observe instructors' attendance of classes, involving their deputies to observe teachers doing the actual teaching in class, and including some teachers in making administrative decisions. There was a similar agreement with (Okoth, 2019) who showed that heads of schools who excelled academically were those who supervised and provided direction to all the administrative and teaching activities within their institutions like providing seminars, observing lessons as teachers teach, and inspecting if they had all the necessary professional documents.

#### ***Principals' response on utilization of the teacher resources***

The study sought to determine principals' responses to utilization of the teacher resources, the table was arrived at by counting the number of 'Yes' against the number of 'No's' as noted down from the principals' interview schedule. The results are presented in the table below.

**Table 3: Principals' response to utilization of the teacher resources**

|   | Yes       | No        | Yes           | No           |
|---|-----------|-----------|---------------|--------------|
| <b>A</b> The teachers attend classes in a timely manner | 22        | 8         | 73.33%        | 26.67%       |
| <b>B</b> Teacher's coverage of the syllabus             | 18        | 12        | 60%           | 40%          |
| <b>Average</b>  | <b>20</b> | <b>10</b> | <b>66.67%</b> | <b>33.3%</b> |

Source: Data collection instruments

Table 3 above shows that (73.33 %, N=22) of school principals, agreed that teachers within the locale are punctual and attend classes on time, however, it was reported that only (66.67%, N=20), manage to cover the syllabus within the stipulated time. This may imply that timely attendance of classes would contribute to early syllabus coverage and adequate content delivery. However, only 66.67% of the teachers work tirelessly to cover the syllabus. This suggests that there may be other factors delaying syllabus coverage despite timely attendance of classes. Regarding responses from the principals, the percentage of those who had agreed effective use of teachers against those who had denied was (66.67%, N=20), and (33.33%, N=10) respectively. Therefore, the principals have shown that teachers in their schools are moderately used. The same finding was indicated by the responses of teachers who had got a mean of 3.4, indicating that teachers are ineffectively utilised. This finding would explain why the overall K.C.S.E mean from 2016-2020 is very low. (Mean is 4.420, SD= 1.2), refer to table 3).

From the principal's interview, these words were recorded in that

*"Due to the 100 percent transition, we are facing a lot of challenges with adequate staffing, the teacher-pupil ratio is very high, in addition, students are being admitted with*

*very poor grades. Further, we are forced to employ BoM teachers who are not trained, have little content mastery, and do not have work ethics. Supervision of teachers is thorough, however covering the syllabus is a major problem, though we are having extra classes in the morning and evenings, during preps time. I have requested teachers numerous times but it takes some time to be given one". (Principal 16).*

This information reveals that many schools are understaffed, which may give the reason why the syllabi are not adequately covered despite teachers' class attendance being good. This may affect proper pedagogy by teachers and influence students' academic performance negatively. This finding concurs with Mwaniki (2011) that the inadequacy of teachers led to high teacher-student ratios, contributing to low teacher-learner contact hours and underutilization leading to poor academic results.

#### ***Principals' response on other ways of using teacher resources***

The study sought to determine the principals' responses on other ways in which teachers can be utilized in an institution. The findings were obtained from the principal's interview. One of the principals said the following words;

*"There are very many ways in which teachers are used in schools like allocating reasonable workloads where they will be able to teach with ease. Teachers can be given extra duties like preparation of the block timetable, the preparing the weekly duty roaster and preparing subject target charts and displaying them on the staffroom notice board" (Principal 18).*

Another principal said,

*"Apart from the usual duty of teachers to implement the curriculum, they are given other duties like checking their clocking in and out times, having a structural program to monitor and supervise them as they carry out their duties, and involving them in co-curriculum activities like games and clubs" (Principal 23).*

This information from the principals shows that there are many ways in which teacher resources are utilized in an institution to enhance academic performance. Duties like giving teachers reasonable workloads give them ample time to prepare their professional documents well and encourage them to be more effective in teaching. This finding expresses the same with Usman (2016) who revealed that the quality, quantity, and effective operations of teacher resources should be put into consideration if desired students' academic performance was expected. Teacher productivity was reflected in student academic grades achieved at a specified time.

#### ***Relationship between utilization of teacher resources and students' academic performance***

*H0. There is no significant relationship between utilization of teacher resources and students' academic performance in public secondary schools in Makueni County.*

The objective was to establish the utilization of teacher resources and its influence on students' academic performance in public secondary schools in Makueni County.

To investigate the relationship between utilization of teacher resources and students' academic performance, the null hypothesis was determined by a Chi-square ( $\chi^2$ ) test, at 0.05 level of significance and 1 degree of freedom. The findings were shown in the table below.

**Table 4: Results of hypothesis**

| Independent variable             | Hypothesis | Chi-sq. value | df | Chi-sq. p-value | Sig. Value | Result     | Decision     |
|----------------------------------|------------|---------------|----|-----------------|------------|------------|--------------|
| Utilization of teacher resources | H0         | 46.01         | 12 | 0.000           | 0.05       | 0.000<0.05 | H0: Rejected |

Source: Data collection instruments

Table 4 above indicates that a chi-square test of independence was computed comparing the frequencies of teacher resource utilisation and students' academic performance in public secondary schools in Makueni County. A significant interaction was found ( $X^2(12) = 46.01$ ,  $p < 0.05$ ). If the p-value achieved is less than 0.05, the null hypothesis is rejected and the inference is arrived at that there exists a significant difference. If the p-value is larger than 0.05, a firm decision is made that there does not exist a significant difference. The p-value (0.000) is less than the significant level of 0.05. The null hypothesis is rejected and the alternative is accepted.

Table 4 shows that there is a significant relationship between teacher resource utilisation and students' academic performance in public secondary schools in Makueni County. This implies that students' academic performance in public secondary schools in Makueni County was statistically influenced by utilization of teacher resources multiple Linear regression was conducted and the results are shown in the model summary in table 5 below.

**Table 5: Model Summary for utilization of teacher resources and Students' Academic Performance**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .518 <sup>a</sup> | .268     | .244              | .940843                    |

Source: Instruments

From table 5 above, the R-value was 0.518 represents the correlation coefficient. It indicated a relatively strong degree of correlation. The explanation with correlation is 0.1-0.3 refers to a low degree of correlation, 0.31-0.5 means a moderate degree of correlation, and 0.51- 1.00 means a strong degree of a correlation coefficient. The adjusted R Square value of 0.268 indicated how much of the dependent variable, "students' performance", could be explained by the utilisation of teacher resources. In this case, 26.8% of student performance variability could be explained to be a result of utilisation of teacher resources. The R square and adjusted R squared had a minimal difference, implying that the utilisation of teacher resources is predicated on students' performance. That meant that 73.2% of the variation in student performance could not be explained by the utilisation of teacher resources. This infers that there are other factors other than the utilisation of teacher resources affecting the academic performance of students. To check how well the sample data fitted in the regression model, the *F* value was obtained. The model summary of ANOVA was shown in Table 6 below.

**Table 6: Goodness of Fit Summary for the influence of utilization of teacher resources**

| ANOVA |            |                |     |             |        |                   |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
| 1     | Regression | 84.810         | 5   | 16.962      | 20.022 | .000 <sup>b</sup> |
|       | Residual   | 206.707        | 244 | .847        |        |                   |
|       | Total      | 291.516        | 249 |             |        |                   |

a. Dependent Variable: Academic Performance

b. Predictors: (Constant), the influence of utilization of teacher resources

Table 6 above showed that the utilisation of teacher resources helped to explain variation in student performance. This was demonstrated by  $F$  value  $F(54\ 241) = 20.022$ ,  $p < .05$  indicating that the model was justifiable for the regression equation. Accordingly,  $R^2$  which was 29.1% was significant. A multiple regression check was done to examine the effect of the utilization of teacher resources on student performance in Makueni County. This was shown in Table 7 below.

**Table 7: Multiple Regressions on utilization of instructional materials and students' academic performance**

| Model   | Unstandardized Coefficients |            | Standardized Coefficients |  | t      | Sig. |
|---|-----------------------------|------------|---------------------------|--|--------|------|
|   | B                           | Std. Error | Beta                      |  |        |      |
| (Constant)  | 2.927                       | .232       |                           |  | 12.631 | .000 |
| As a teacher, I properly use the science laboratory when teaching | .122                        | .055       | .143                      |  | 2.206  | .028 |
| I frequently use maps when teaching specific subjects             | -.261                       | .067       | -.302                     |  | -3.892 | .000 |
| I properly use computers when teaching                            | .351                        | .108       | .375                      |  | 3.259  | .001 |
| I regularly use reference materials when teaching                 | -.024                       | .107       | -.027                     |  | -.228  | .820 |
| I frequently use the science laboratory equipment when teaching   | .243                        | .087       | .279                      |  | 2.780  | .006 |

a. Dependent Variable: Academic Performance

The standard beta coefficients in Table 7 indicated that using the science laboratory properly explained 14.3% of variation in student performance holding the other factors constant. Frequent use of maps explained 30.2% of variation in student performance holding the other factors constant. Proper use of the computers explained 37.5% of variation in student performance holding the other factors constant. Regular use of reference materials explained 2.7% of the variation in student performance holding the other factors constant. Frequent use of the science laboratory equipment explained 27.9% of variation in student performance holding the other factors constant.

The Y-intercept of the regression line was  $Y = 2.927 + 0.122x_1 - 0.261x_2 + 0.351x_3 + 0.024x_4 + 0.243x_5$

When the lab utilization ( $x_1$ ) increased by 1 unit, the academic performance ( $Y$ ) increased by 3.049 units ( $2.927 + 0.122$ ). When the utilization of maps ( $x_2$ ) increased by 1 unit, the academic

performance (Y) increased by 2.666 units ( $2.927-0.261$ ). When the utilization of computers (x3) increased by 1 unit, the academic performance (Y) increased by 3.278 units ( $2.927+0.351$ ). When the utilization of reference materials (x4) increased by 1 unit, the academic performance (Y) increased by 2.903 units ( $2.927-0.024$ ). When the utilization of science laboratory equipment (x5) increased by 1 unit, the academic performance (Y) increased by 3.17 units ( $2.927+0.243$ ).

The results show that an increase in each of the different ways of utilizing teacher resources also would improve the academic performance of students at KCSE.

This study adopted Education on Production Function theory by Bowles (1970) which relates school inputs to the measure of outputs produced in terms of test scores. The theory explains how the 'student's academic performance is dependent on the utilisation of the teacher's resources. The variables here included the utilisation of teacher resources and the 's'student's academic performance which are related to the amount and quality of teachers and teaching services and the period the student is exposed to these inputs. In the model, a certain transformation takes place in schools, that by using the teacher resources through certain processes and activities in teaching and learning, and achievement in academic results was expected. From the results of hypothesis 2, the utilisation of teacher resources had a positive influence on students' academic performance. A significant interaction was found ( $X^2(12) = 46.01, p < 0.05$ ). That there was a positive significant relationship between teacher resource utilisation and students' academic performance in public secondary schools in Makueni County.

## 5.0 Conclusion

From the summary of the findings found in the foregoing study, the following conclusions were deduced as per the objective. The findings confirmed that utilization of teacher resources in public secondary schools in Makueni County had a statistically significant influence on students' performance. The conclusion is that utilization of teacher resources was not effectively done in public secondary schools in Makueni County despite the fact that teachers attend classes in a timely manner and more than half of them complete the syllabus in time. This was concluded by both teachers and principals.

## 6.0 Recommendations

In this section recommendations are made according to the findings and conclusions from the analysis of the data collected in the study, the following recommendations are suggested:

- i. There was a need for public secondary schools to ensure improved and effective utilization of teacher resources for students' performance at KCSE to improve in Makueni County.

### *Recommendations for Further Research*

- i. A similar study is to be conducted in private schools to investigate the same objective.
- ii. A similar study should be done using a different methodology from mixed methods on utilisation of teacher resources in other categories of schools, national schools, extra-county, and day secondary schools.

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