



**VARIETY OF LEARNING RESOURCES USED IN THE TEACHING  
AND LEARNING OF GEOGRAPHY IN PUBLIC SCHOOLS IN  
MAKUENI COUNTY AND THEIR EFFECT ON PERFORMANCE IN  
THE KENYA CERTIFICATE OF SECONDARY EDUCATION  
IN THE SUBJECT IN THE COUNTY**

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**Abstract:**

This study investigated the relationship between variety of learning resources and students' academic performance. The objective of the study was to assess the influence that access to a variety of learning resources has on students' academic performance in geography in the Kenya Certificate of Secondary Education (KCSE) in public secondary schools in Makueni County. The study was guided by the Classroom Instruction Theory using the descriptive survey design. Both stratified and simple random sampling methods were applied in drawing a sample. Data was collected from 422 respondents who included 29 principals, 30 teachers of geography and 363 Form Three students. Data was collected using questionnaires and an observation checklist. Questionnaires were used to collect data from principals, teachers and students. The observation checklist was used in observing geography lessons. Both descriptive and inferential statistics were used to analyse collected data and included means frequencies, cross-tabulations, percentages, correlation and regression analysis. Qualitative data analysis was done using a mixed method of case by case analysis as well as cross case analysis. The findings of the study showed that there was a correlation between variety of learning resources and performance in geography at 0.196. The null hypothesis on variety was rejected. The study therefore concluded that access to variety of learning resources promoted academic performance in geography in

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KCSE in public secondary schools in Makueni County. It was recommended that teachers should be encouraged to use a variety of learning resources in the teaching process in Makueni County.

**Keywords:** learning resources, academic performance, public secondary schools

## 1. Introduction

### 1.1 Background of the Study

#### 1.1.1 Education as a Valuable Good

Education involves the transfer of knowledge, skills and attitudes from one generation to the next (Pellegrino and Hilton, 2012) and is essential for every child. World governments emphasize on the provision of formal education for all children (UNICEF/UNESCO, 2007). Kezar, Frank, Lester and Yang (2007) argue that education is the best tool for creating wealth and happiness. Cirindi (2004) says that the Universal Declaration of Human Rights (1948), the World Conference on Education for All (EFA) that was held in Jomtien, in Thailand (1990) and World Education Forum in Dakar, Senegal (2000) are manifestations of global realization that education can play a strategic role towards the achievement of elimination of poverty, promotion of human rights and attainment of sustainable development. Thus, there is need for education to play this role well, a situation that demands that resources that promote learning among learners must be exploited to deliver the curriculum to learners.

The government of Kenya adopted the EFA goals of education as a means of ensuring provision of quality education to all its youth. This was done by introducing Free Primary Education (FPE) in 2003 (Ogola, 2010) and Free Day Secondary Education (FDSE) in 2008 (Republic of Kenya, 2013). It was envisaged that the provision of quality education to the Kenyan youth would be achieved by lessening the burden to parents in educating their children. It was hoped that through reduced burdens, retention rates in school and transition rates from class to class and from primary to secondary education would rise (Glennerster, Kremer, Mbiti and Takavarasha, 2011). That was why a report earlier on by the Ministry of Education Science and Technology (MOEST) (2005) observed that the NARC government saw the implementation of FPE in 2003 as necessary in enabling the country to attain the Universal Primary Education (UPE) goal of education.

According to the Ministry of Education (2007), EFA Goal Number 6 aims at improving every aspect of education while at the same time ensuring excellence among

all education beneficiaries so that recognized and measurable learning outcomes are achieved in literacy, numeracy and essential life skills. According to the World Health Organization (WHO) (1997), life skills are abilities for adaptive and positive behaviour that enable human beings to effectively deal with day-to-day demands and challenges. WHO has identified the important life skills to include: ability to make decision; ability to solve problem; ability for [creative thinking/lateral thinking](#); [critical thinking/perspicacity](#); ability to communicate effectively; ability to start and sustain interpersonal relationships; [self awareness/mindfulness](#); ability to be [assertive](#); ability to [empathise](#) with others; ability to practice equanimity; ability to cope with stress, trauma and loss; and finally, in being [resilient](#) in life.

In 2002, the new National Rainbow Coalition (NARC) administration introduced the Free Primary Education (FPE) policy. The FPE policy aims at attaining EFA and in particular, UPE education policies. The key concerns of FPE are access to education opportunities, retention in the education system, equity in the provision of education between male and female learners, quality and relevance of education as well as achieving internal and external efficiencies within the education system (MOEST, 2005). All these efforts by the international community as well as by the Government of Kenya show the importance of education as a human right (UNICEF/UNESCO, 2007). Education has been described as a valuable good and it has been proved that spending on education is an investment with a return (The World Bank Group, 2014).

## **1.2 Students' Academic Performance in Geography**

The importance of academic performance to a learner cannot be gainsaid. Aremu (2001), in emphasizing the significance of performance in education has the opinion that it is one of the basic criteria for measuring the acquisition of learning. He said that the use of standards of excellence and acquisition of examinations grades is a measure of the ability of a candidate's mastery of content's mastery and skills necessary to apply knowledge acquired in a particular situation (Aremu, 2001). Going by this knowledge on the importance of academic performance therefore, it is only logical that effort should be made to promote learners' performance in examinations.

Performance that is good for both internal and external examinations is an incentive in creating academic discipline, commitment and desire in pursuing various subject to higher level for career purposes (Kojweke, 2013). However, the performance of geography in KCSE has not been very good. For example, while releasing the KCSE results for 2013, the Minister for Education noted that geography, together with such subjects as English, mathematics, chemistry and Agriculture had recorded a drop in

performance (Republic of Kenya, 2014). From the results released in that year, geography posted a mean score of 42.41% and stood at position 19 out of 31 subjects (Kenya National Examinations Council, 2014). It dropped from the performance of the previous year where the mean score had been 46.58% and at position 19 out of 30 subjects done that year (Kenya National Examinations Council, 2013). This performance is weak, both in terms of percentage score and in improvement.

Considering Makueni County, a scrutiny of students' performance shows that performance in the subject has similarly not been good. Analysed KCSE results of the 17 subjects offered in the county were presented in Table 1.1.

**Table 1.1:** Makueni County KCSE subject performance in 2011

Subject	Mean Score			Av.	Pos.
	2011	2012	2013		
German*	11.00	11.00	10.80	10.33	1
Art & Design	7.17	8.56	8.13	7.95	2
H/Science	7.14	6.32	7.73	7.06	3
Computer Studies	6.05	7.22	6.78	6.68	4
French	6.19	6.77	7.02	6.66	5
Music	6.52	6.14	7.11	6.59	6
CRE	6.18	5.80	6.50	6.16	7
Agriculture	5.73	5.58	6.56	5.96	8
B/Studies	5.80	6.07	5.67	5.85	9
Physics	5.89	5.64	5.33	5.62	10
His. & Govt.	5.16	5.68	5.76	5.53	11
Geography	5.09	5.72	5.26	5.36	12
English	4.53	5.55	5.57	5.22	13
Kiswahili	5.21	4.53	5.55	5.10	14
Biology	4.28	4.73	4.01	4.34	15
Chemistry	3.44	4.26	4.88	4.19	16
Mathematics	2.93	1.00	2.37	2.10	17

**Source:** Makueni County KCSE results analysis report for three years

It is revealed from information presented in Table 1.1 that performance of geography in KCSE from 2011 to 2013 has been low, occupying position 12 out of 17 subjects. Performance in the subject is lower than that in the other humanities, which are Christian Religious Education (CRE) and history and government. For three years that data on performance for Makueni County was analysed as presented in Table 1.1 geography scored a mean score of below 6 points out of a possible maximum of 12 points (Grade A).

The poor performance of students in the subject country-wide and in the county calls for adoption of proper teaching methods in delivering the curriculum. The use of learning resources could be one such solution.

### **1.3 Statement of the Problem**

When children enroll at school, the aspiration of many of them, that of their parents/guardians as well as that of people in government is academic success. So far, one of the tools of measuring academic success is performance in examinations (York, Gibson and Rankin, 2015).

Performance of the geography subject in the KCSE examination both nationally and in Makueni County has not been good. For example, nationally in Kenya, while performance in the subject has been low at 46.58% and 42.41% for years 2012 and 2013 respectively (Kenya National Examinations Council, 2013; Kenya National Examinations Council, 2014) it has also been characterized by drop in performance at times (see appendices 8 and 9). In results presented in this study on KCSE performance in secondary schools in Makueni County for the period between 2011 and 2013, geography attained an average score of 5.36 which is a score of Grade C-. The implication is that many candidates in the county performed poorly in geography between 2011 and 2013. Out of 17 subjects offered to candidates in the county within that period, geography occupied position 12.

The poor performance in the subject calls for a concerted effort to ensure academic success among students who opt to pursue the subject in Forms Three and Four. Owing to possible challenges in the learning of geography including a wide syllabus as well as teaching of topics from all continents of the world, it is imperative that teachers must deliver the geography curriculum using the appropriate methodology. An important method could be the application of learning resources in delivering the geography curriculum to the learner. The teaching/learning of geography could be more successfully conducted if learning resources form part of the classroom experience. This could raise the academic performance of students. This is because learning resources can enable learners to interact with the content being taught, thus making the information being provided familiar to them. It was as a result of the poor performance in geography in KCSE in Makueni County that this study was conceived with a view to assessing the relationship between learning resources and students' academic performance in geography in KCSE in the county.

## **2. Purpose of the Study**

Investigated in this study was the relationship that exists between variety of learning resources and students' academic performance in geography in KCSE in public secondary schools in Makueni County.

### **2.1 Objective of the Study**

The objective of this study was to assess the relationship between access to a variety of learning resources in the teaching and learning of geography in public secondary schools in Makueni County and students' academic performance in the subject in the county.

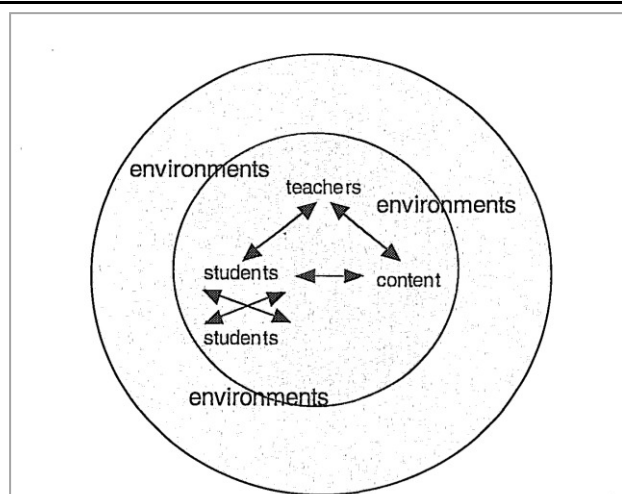
### **2.2 Research Hypothesis**

To interrogate the relationship between variety of learning resources and performance of students in geography in KCSE in public schools in Makueni County, the following null hypothesis was formulated and tested.

Ho. There is no relationship between variety of learning resources used in the teaching and learning of geography in public schools in Makueni County and KCSE performance in the subject in the county.

### **2.3 Theoretical Framework**

For the purpose of guiding the study the Classroom Instruction Theory that was advanced by Cohen, Raudenbush and Ball (2003) was selected. Cohen et al. (2003) have advanced the theory for the purpose of presenting instruction and learning as a system of interactions. In these interactions, learners interact with fellow learners, learners interact with their teachers, the teacher interacts with content, and learners interact with content. According to Kurdziolek (2011), this model therefore helps in conceptualizing learning resources not just as physical things, but as including systems composed of objects, relationships, actors, and environments. Cohen's et al. (2003) conceptualization of the Classroom Instruction theory is presented in Figure 1.1.



**Figure 1.1:** Instruction as interaction

According to Cohen et al. (2003), educational resources include teachers' formal qualifications, books, libraries, and buildings among others and can be used as valid measures of educational quality. They point out that access to education itself does not cause learning. They say that research reports have shown that teachers and schools having similar resources are able to do different things with the resources, leading to different results in learning. They attribute this to different uses of learning resources. According to Cohen et al. (2003), researchers have discerned what makes instruction work. Results of the studies have shown that resources that helped students learn were deployed by the more effective teachers. In this scheme of things, teaching is presented as activities aimed at enabling students use materials, tasks, and other resources well. Resources are significant in that, their access, use and teacher preparation create educational quality (Cohen et al. 2003).

These proponents of the theory foresee instruction as consisting of teachers and students interacting among themselves and around the content in environments. To them, interaction refers to the connected work between teachers' and students' which may extend for days, weeks, and months. According to Lampert (2001), as tasks develop, instruction evolves, in turn leading to other tasks, and as students take part in the learning process, their understanding waxes and wanes. In the designing of lessons, setting learning tasks, interpretation of students' work and in managing time and activity, learning resources are important. To accomplish their tasks, teachers and learners must therefore operate in several domains, including use of knowledge, coordination of instruction, mobilization of incentives for performance, and management of learning environments (Cohen et al. 2003).

Coordination in instruction also determines the use of resources. Teachers' and students' work on content is one dimension of coordination concerns. Cohen et al. (2003) are of the view that because instruction consists of complex interactions among teachers, learners, and the content, then there are many opportunities for un-coordination. They say that the coordination of instruction is dependent on the making of connections of teachers' and learners' ideas, over time, and with elements in the environment. This coordination depends on the knowledge teachers have on content, how it should be presented, learners' understanding, agents in the environment, as well as having a will to make connections that are fruitful. Coordination also depends on applying social resources that build trust and support the collection and analysis of evidence. An equally important instruction domain involves managing elements of the learning environment. When teachers and students deal with problems of coordination, resource use, and incentives, they do so in and within learning environments (Cohen et al., 2003).

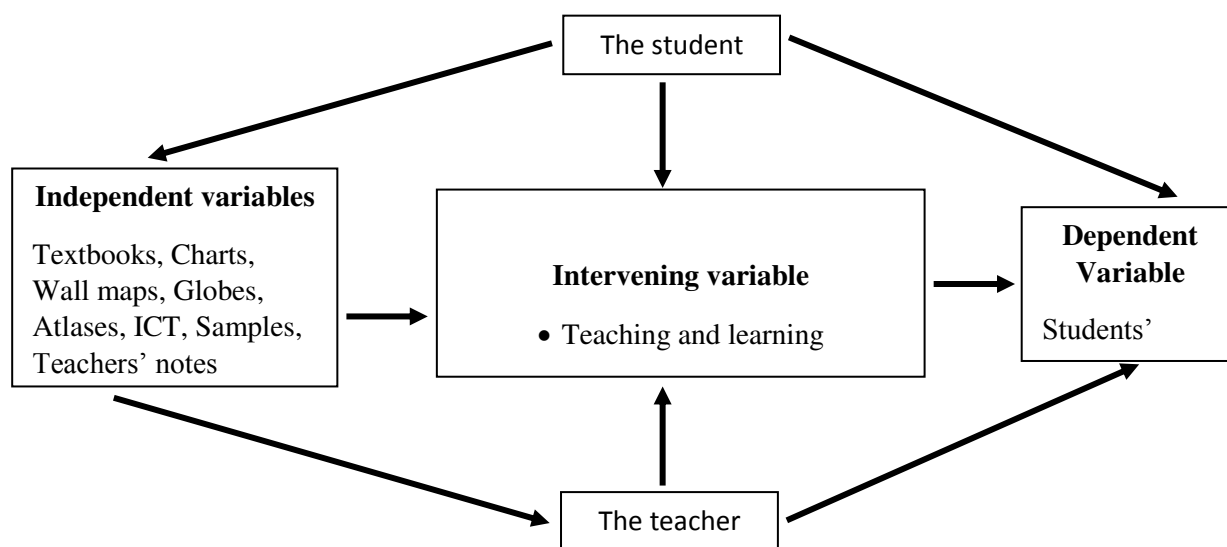
Cohen et al. (2003) in their analysis have offered a view of causality in the important role that learning resources contribute in learning. They point out that the crucial research question cannot be "*Do resources matter*"? They say that this is because no valid effort can be made in learning or teaching that can be conceived in the absence of resources. Further, they say that adequate evidence exists that resources are causally related to learning. Instead, they say that the crucial question must be: "*What resources matter, how, and under what circumstances?*" they point out that one key circumstance is the desired result.

Cohen et al. (2003) have concluded that the desired result of learning resources should be school improvement. On her part, Kurdziolek (2011) has pointed out that the Classroom Instruction Theory is useful for understanding how learning is achieved through successful student-resource interactions. The author adds that the theory is also useful in understanding the impacts of learning resources on important factors such as student academic outcomes. The current study therefore sought to assess the relationship that exists between learning resources and students' academic performance in geography in Makueni County, Kenya.

## **2.4 Conceptual Framework**

In this study, a framework relating to the use of learning resources and academic performance was conceptualized as displayed in Figure 1.2.





**Figure 1.2:** Conceptual framework on the relationship between learning resources and students' academic performance

In the conceptual framework presented in Fig. 1.2, it is shown that the independent variables of the study are textbooks, charts, wall maps, globes, atlases, ICT resources, samples and teachers' notes. Teaching and learning is the intervening variable of the study. Through teaching, interactions play an important role. In these interactions, students interact with learning resources. Teachers also interact with learning resources. Further, teachers facilitate the interaction process when they enable learners, learning resources and the teachers themselves to interact. Interaction is promoted when teachers adopt a variety of resources in the teaching/learning process, when they take advantage of the available resources in the teaching/learning process including innovating and collecting other resources. Teachers also facilitate interaction when they actually use learning resources in delivering the curriculum to the learners. All these are made possible when teachers apply the skills they learned on the use of learning resources in the teaching/learning process. Teachers promote the right learning environment and coordinate the learning activity. This ensures effective teaching and learning. The results are students' academic performance. Students' academic performance is the dependent variable of the study.

### **3. Review of Related Literature**

#### **3.1 Theoretical Literature Review**

##### **3.1.1 Academic performance as a measure of learning**

Academic performance or academic achievement is an important element of learning (Ward, Stoker and Murray-Ward, 1996). Ward et al. (1996) contend that a common measure of academic achievement is examination or continuous assessment. Thus, performance in examinations can be seen as evidence that learning has taken place. According to Newman (2015), presenting evidence of learning should be an important landmark in the journey towards lifelong learning and capabilities.

According to Abolmaali, Rashedi, and Ajilchi (2014), academic performance among learners is considered as a criterion for deciding the effectiveness of educational programmes. They add that that is why in the evaluation of an education system, researchers often consider academic achievement and search for factors affecting academic achievement. Abolmaali et al. (2014) point out that identified factors by researchers include: intelligence, processing of information, as well as the use of cognitive and meta-cognitive strategies, thinking styles and learning, and creativity; motivational factors (like goal orientation and motivational beliefs), and internal and external motivation; quality of instruction in schools, classroom structure, feeling of belonging and perceptions of classroom environment; family factors such as family environment perception, family support, socio-economic status such as parent's education and their occupation; non-cognitive factors such as personality traits, identity styles, self-concept and self-esteem; and a combination of different factors including cognitive, emotional, behavioral, academic engagement and resiliency.

The relationship between learning and academic achievement among high school students is mediated by cognitive engagement (Pintrich and Garcia, 1991; Newman, Wehlage and Lamborn, 1992). Elliott, McGregor and Gable (1999) have argued that there is a positive relationship between deep cognitive engagement and academic performance.

#### **3.2 Empirical Literature Review**

For a long time the textbook has been the basic tool in curriculum delivery in our schools. But in this era of unprecedented advancement in technological development, an over-reliance on the textbook is unacceptable. O'Neill (1990) says that textbooks make it possible for students to review and prepare their lessons, are efficient in terms of time and money, and they can and should allow for adaptation and improvisation.

However, from Allwright and Faize's (1990) point of view, textbooks cannot be used directly as instructional material for they are too inflexible. This therefore has made educationists to advocate for teachers to diversify on use of learning resources.

Ozturk (2003) conducted an assessment of the implementation of the high school biology curriculum in the Anatolia region of Turkey. The study had two objectives: establishing how the new biology curriculum intentions were being implemented in biology classes, and to identify what local, school and classroom level factors influenced the implementation process of the new high school biology curriculum. The study was designed as a survey and data collection was done by the use of a questionnaire. A sample of 600 teachers of biology was selected through random sampling. Both descriptive and inferential statistics were used to analyse the collected data. The study established that the use of learning resources as well as the variety of sources of the learning resources influenced learning environment and curriculum implementation.

Ozturk (2003) made recommendations, among them being that for a successful curriculum implementation, schools should have all the necessary means, while resources in each school should be examined to see if they allow the curricula to be implemented in the ways intended, teachers should enrich their knowledge and learn new behaviours and be supported professionally, and finally that teachers should also be encouraged to read and to continue to learn about diverse approaches in their profession and to develop effective classroom strategies. Ozturk (2003) examined the role that learning resources play in curriculum implementation in the biology subject area. This was very relevant to the current study. However, the study did not assess the impact of curriculum implementation on academic performance. This gap was filled in the current study.

Ruthiri (2009) conducted a study on the availability, acquisition and utilization of learning resources of English language. The study was conducted in Buuri Division of Imenti North District, Kenya. The research mainly focused on whether learning resources of English language were available, how they were acquired and whether they were actually utilized in the learning process. To identify the study sample, the research employed stratified random sampling techniques. Six head teachers, 12 teachers and 120 pupils in Classes Seven and Eight were involved. For the purpose of collecting data, two sets of questionnaires – one for teachers and the other for pupils were used. To collect data for school heads, an interview was used while an observation checklist for schools was used. Data was analyzed by tallying, coding, tabulation and use of frequency tables and results reported in percentages. The study findings showed that textbooks were the major learning resource that was available in primary schools.

Although other learning resources were available in the Kenya National Library Service and Teacher Advisory Centres, as well as the availability of Resource Persons, their use in the teaching and learning of English language in Buuri Division was rare.

Ruthiri (2009) also found out that acquisition of other teaching and learning resources was a challenge to most schools. This was because of lack of finances, understaffing, limited time and heavy workload that hindered effective improvisation of learning resources. The researcher made the following recommendations: urgent measures to be taken to acquire varieties of learning resources of English language other than textbooks, all stakeholders to be involved in their acquisition, and finally, urgent steps be taken to create more awareness among teachers of English language on the importance of learning resources in the teaching and learning process through regular workshops, seminars or in-service courses dealing with learning resources. Ruthiri's (2009) study however did not investigate varieties of learning resources used in teaching and learning. Instead, the researcher made a recommendation that urgent measures should be taken to acquire varieties of learning resources for use in teaching and learning English language. This gap was filled in the current study. The second gap filled was the effect that learning resources have on performance in examinations. This was not done in Ruthiri's (2009) study.

In 1992, Ogechi conducted a study in Nyamira District to determine the availability, utilization and management of teaching and learning resources in geography in secondary schools in the district. Three research instruments were used for data collection: questionnaires, checklists and classroom observation schedules. Data was procured from 31 teachers of geography through questionnaires and classroom observation schedules. The respondents of the study were drawn from twenty different secondary schools in the district – four government-maintained, four private and 12 government schools. 20 head teacher's questionnaires were filled. 400 Forms Two and Three students of geography participated in answering student's questionnaires. Responses were presented in table forms and repeated in descriptive form. The findings of the study indicated that there was no difference in the utilization of resources between trained teachers and the untrained ones as the majority were mildly enthusiastic about using the available resources; the most available resources for teaching and learning geography in the district were printed aids with few audio-visual resources available in few schools while projected and audio aids were non-existent; there was low utilization of the available resources in teaching and learning due to high enrolment in geography classes which inhibited their effective use; of the few resources used, a greater number were purchased of which decisions for their acquisition were

made by the geography teachers and schools heads; whereas the major determining criteria for selection of resources for use by teachers were lesson objectives and nature of the topic and that teachers made much use of the chalkboards while teaching; most of the teaching and learning resources were provided by the parents with the government and the schools playing a minimal role. However, Ogechi (1992) did not relate learning resources to performance in examinations which was done in the current study.

#### **4. Research Methodology**

##### **4.1 Research Design**

The study adopted a descriptive survey design. Wiersma (1985) points out that the survey design allows researchers to determine the *status quo* as well as gather facts rather than manipulate variables. Thus the descriptive survey design enables the researcher to secure evidence concerning an existing situation or a current condition. Further, the design enables the researcher to identify standards or norms with which to compare present conditions in order to plan the next step (Lave and March, 1975). The descriptive design was therefore appropriate for this study since the researcher was interested in establishing the facts as they were with regard to the relationship between learning resources and students' performance in geography in KCSE in Makueni County. As Lockesh (1984) points out, surveys enable the researcher to draw valid general conclusions from the facts discovered.

##### **4.2 Study Locale**

The study was conducted in Makueni County and it focused on learning resources and their use in teaching/learning of geography. The county was selected because of poor performance by students in the subject in KCSE. The aim was to establish the contribution of the use of resources in the academic performance of candidates in the subject in the KCSE.

##### **4.3 Sampling Technique and Sample Size**

A two-tier sampling was adopted in this study to identify samples from among principals, teachers and students. This involved both stratified sampling and simple random sampling. These two sampling techniques were justified because of their suitability in enabling selection of a sample which after data analysis would provide credible results.

The number of respondents from each category was identified through stratified sampling. Barreiro and Albadoz (2001) identified stratified sampling as one type of probability sampling, adding that probability sampling is a technique in which each element of the population has an equal chance of being selected for the study. Cauvery, Nayak, Girija, and Meenakshi (2003) have pointed out that stratified random sampling is a combination of random sampling and purposive sampling. The study population was heterogeneous – comprising of principals, teachers of geography and Form Three students of geography. Their inclusion in this study therefore involved purposive sampling.

In turn, the respondents in each portion of the population were identified through simple random sampling. Simple random sampling was adopted to give all the members in each category a chance to participate in the study.

Gay (1992) recommended that if the population is large, a minimum of 10% is adequate for the sample. According to Brock (2013) any population bigger than 100 is a large population. Since academic performance is the dependent variable in this study, Form Three students who already had opted to do geography in KCSE were sampled to take part in the study. Following Gay’s (1992) recommendation on a sample of 10% of the population, 32 principals, 39 teachers as well as 437 students were sampled as respondents for the study. The sample size for the study was therefore 508 respondents. Information on population and sample sizes was presented in Table 3.1.

**Table 3.1:** Population and sample sizes of the study

Group	Population	Sample Size	Percentage
Principals	324	32	10
Teachers	385	39	10
Students	4,372	437	10
<b>Total</b>	<b>5,081</b>	<b>508</b>	<b>10</b>

In addition to the respondents, schools were also sampled to take part in this study. Following Gay’s sample of 10% for a sample, out of the 324 schools, 32 schools were sampled to take part in the study. The 32 schools of the participating principals were purposively selected to take part in the study.

For the purpose of sampling in this study, the nine former districts in the county were treated as sub-counties. To ensure that the samples were selected from all parts of the county, respondents were sampled from all the nine sub-counties. The number of public schools in Makueni County was distributed in the following manner: Makueni 34, Mukaa 36, Mbooni East 41, Mbooni West 35, Kilungu 20, Nzauzi 47, Kibwezi 59,

Makindu 18 and Kathonzwani 34. Based on the number of schools in the sub-counties, a formula was devised to choose representatives from each sub-county.

#### **4.4 Research Instruments**

Two research instruments were used to collect data in this study. These were questionnaires and an observation checklist for schools. Three sets of questionnaires formed the main research instrument in the study and were used to collect data from principals, teachers of geography and students. This is because the respondents were all literate and capable of reading and answering the items adequately. The use of the questionnaire was justified because the study area is large. Thus, to reduce time used in collecting data and the cost of data collection, this instrument was adopted.

The questionnaires for principals and teachers of geography were used to collect data on variety of learning resources used in the teaching of geography. Other information collected included availability of the resources and use of resources in the teaching and learning process. Finally, these questionnaires collected data on the training of teachers on learning resources.

The questionnaire for students of geography was used to collect data on variety of learning resources as well as availability of learning resources for the teaching/learning resources. Finally, the questionnaire for students collected data on the use of learning resources by teaching while delivering lessons to the students.

The observation checklist for schools was used to collect data in one geography lesson lasting for 40 minutes. Data collected was on class being taught, geography topic being covered, if learning resources were in use, and if in use, their identity.

The researcher used the observation checklist for the purpose of corroborating data collected using the questionnaire method. Using the observation checklist, the researcher was able to collect data on how learning resources were transported to class, availability of an assistant to assist teachers in handling the resources, whether students had placed atlases on the desk and the presence of wall maps and wall charts in the class, the number of questions and answers when learning resources were used. The presence of power sockets in classes was also sought.

The questionnaires for all the categories of respondents were pre-tested with the principal, two teachers and 20 students of geography from one public secondary school in Makueni County. The purpose of piloting the instruments was to test the appropriateness of the items to gather useful information as well as the time required to fill each questionnaire. As a result of the pre-testing, the items of the questionnaire were

improved through revision, thus enhancing their quality and efficiency. The pilot school as well as respondents in the pilot school was not involved in the main study.

The validity of the questionnaires was arrived at through expert judgment. The researcher consulted university lecturers and other experts in the fields of educational research and Curriculum Studies. Through their input, the questionnaires were improved to a level where they were appropriate for the collection of data relevant to the study objectives of this study.

To test for reliability, the split-half technique of reliability testing was employed. According to Oregon Department of Education (2010), split-half reliability is a common method to determine the reliability of a test. They add that although it is mostly used for multiple choice tests, it can be used on any test that can be divided in half and scored consistently. Reliability test was done by administering the three questionnaires to the pilot groups in the pilot school who filled the entire questionnaire. To test for reliability, the odd-numbered item formed one instrument of measurement while the even numbered items formed another instrument of measurement.

The responses provided in the three sets of questionnaires were scored by giving a mark for relevant responses and a zero for a blank or an irrelevant response. The researcher then computed the correlation of the obtained scores between the two halves using the Pearson Product-Moment correlation Coefficient (Pearson's  $r$ ) formula. The three sets of questionnaires yielded the following correlation coefficients: principals' 0.74, teachers' 0.78 and students' 0.71. Thus, all questionnaires yielded a reliability coefficient of above 0.70. Slavin (1984) says that a reliability coefficient of above 0.70 is a reasonable minimum in education. Therefore, because all the questionnaires posted high correlation coefficients, the researcher felt that they were likely to collect reliable data during the main study.

#### **4.4 Data Collection Procedures**

Data was collected using the questionnaires and the observation checklist. Three stages were followed in collecting the data.

**A. First stage:** Thirty-three questionnaires were distributed to sampled principals while 39 questionnaires were distributed to sampled teachers of geography in Makueni County. The sampled principals and teachers of geography were given a period of two weeks within which to fill the questionnaires. It was felt that because these categories of respondents had a lot of responsibilities and functions to perform, they had to be given more time to fill their questionnaires. After this period, the questionnaires were



collected. Effort was made during the time of collection to ensure that the questionnaires did not contain errors. This was done to ensure credible results. At the time of collection, 29 questionnaires were collected from principals while 31 questionnaires were collected from teachers of geography.

**B. Second stage:** This stage involved administering questionnaires to the sampled Form Three students of geography. Administering the questionnaires involved students filling the questionnaires in the presence of the researcher. The students filled their questionnaires during school days with each student filling the questionnaire individually in the classroom in the presence of the researcher. Data from students was collected in a total of 23 days. At this stage, data was collected from 363 students.

**C. Third stage:** The classroom teaching process was observed for the purpose of corroborating data collected through the questionnaire method. Data collection through the observation checklist was done by the researcher attending class sessions. The researcher recorded the activities taking place in the observation checklist for schools designed for this study. Observation was done in 30 schools.

#### **4.7 Data Analysis Methods**

Both quantitative and qualitative data was collected in this study. Quantitative data was collected using open-ended questions and was collected in numeric form. Qualitative data was collected using closed questions in the form of descriptive data. The two types of data were collected using the questionnaires and observation checklist designed for the study. After the collection of data, the questionnaires were gathered for cleaning, editing and coding. As Frankfort-Nachmias and Nachmias (1996) says, data cleaning helps catching and correcting errors and inconsistent codes.

To analyse qualitative data, thematic categories for commonalities were identified and coding assigned. The qualitative data were then coded under the identified thematic categories and converted to frequencies and percentages that helped the researcher towards understanding the use of learning resources in teaching and learning of geography in Makueni County. The log frame was employed in organizing qualitative data. According to Mugenda and Mugenda (2003), the log frame involves creating a factual code which serves the purpose of identifying a fact, a feeling or an attitude from the text. To analyse qualitative data, a mixed method of case by case analysis as well as cross case analysis was used. Case by case analysis was carried out to enable an understanding of the status of each case. Cross case analysis was done to

enable conclusions to be made on the influence of various issues on academic performance in geography.

Quantitative data on the other hand was analysed using the Statistical Package for Social Sciences (SPSS) computer programme. Both descriptive and inferential statistics were used to analyse quantitative data. The aim of using descriptive statistics was to enable the researcher have an understanding about the sample of the study. Using descriptive statistics, summaries about the sample were calculated in the form of means, frequencies, cross-tabulations and percentages.

The use of inferential statistics was adopted to enable the researcher make conclusions on the target population of the study who included principals, teachers of geography, students of geography and the schools in the entire county. Inferential statistics were therefore adopted to test for the relationship between learning resources and their possible effect on academic performance. As Howell (2002) pointed out, inferential statistics allow one to make predictions across an entire population when given data from a certain sample of that population. The inferential statistics applied in analysing data were correlation and regression analysis.

In correlating data, variety of learning resources, the availability of learning resources, the use of learning resources and teacher training on use of learning resources were correlated with performance of students in geography in KCSE in Makueni County. To test for correlation between the variables, a 2-tailed Pearson's Product Moment Correlation was calculated. To test the hypotheses of the study, regression analysis was carried out. Hypotheses were rejected at 0.05 level of significance ( $\alpha=0.05$ ). Analysed data were presented using figures and tables.

## **5. Research Findings and Discussions**

The task in this study was to establish the variety of learning resources used in the teaching and learning of geography in public schools in Makueni County and their effect on KCSE performance in the county. Data was analysed on various issues dealing with variety of learning resources in the county.

Data collected showed that learning resources found among the participating schools were globes, wall maps, charts, atlases, ICT and teachers' notes. Wall maps were found in 13 schools (43.3%), charts in 13 schools (43.3%), globes in 10 schools (33.3%), atlases in five schools (16.7%), while ICT resources were found in four schools (13.3%).

Teacher-prepared notes are of great importance in teaching and learning. While they were prepared in 26 schools (86.7%), in four schools (13.3%) they were not prepared. Information on the extent of collection of samples was also sought in this study. It was found that while in 22 schools (73.3%) teachers had collected samples, in eight schools (26.7%) they had not.

The collected samples among the participating schools were identified. They were found to include plants, soil samples, and rock samples. In 17 out of 30 schools (56.7%) rock samples were collected. Five out of 30 schools (16.7%) had collected soil samples. Only three out of 30 schools (10.0%) had collected plant samples. It is however noteworthy that in some schools, more than one type of sample was collected.

The study has identified the sources of the learning resources. First, it was found out that 20 teachers of geography (66.7%) in addition to purchased resources by their schools also depended on collecting resources as well as improvising. In turn, in eight schools (26.7%) teachers relied only on school purchased teaching resources. Finally, in two schools (6.6%), teachers relied on other sources including borrowing from other schools. One teacher said she also purchased some resources using her own finances whenever she could.

The access to a variety of resources among some of the participating schools was compared against the schools' KCSE geography performance for the year 2014. Six out of 13 schools (46%) which had access to wall maps in teaching and learning geography posted mean scores of 6.01 and above. This is a good performance as it represents Grade C and above and assures one of training opportunities in colleges and beyond. Of schools using charts, again six out of 13 schools (46%) had mean scores of 6.01 and above. Four out of 10 schools (40%) which had access to globes in teaching and learning geography scored 6.01 and above. Two out of five schools (40%) with atlases scored mean scores of 6.01 and above. On ICT, two out of four schools with this teaching resource scored 6.01 and above. 12 out of 26 schools (46%) where teachers' notes were prepared for the teaching of geography posted mean scores of 6.01. Finally, on collection of samples, 10 out of 22 schools (45%) had mean scores of 6.01 and above. This information was presented in Table 4.1.

VARIETY OF LEARNING RESOURCES USED IN THE TEACHING AND LEARNING OF GEOGRAPHY IN  
PUBLIC SCHOOLS IN MAKUENI COUNTY AND THEIR EFFECT ON PERFORMANCE IN THE KENYA  
CERTIFICATE OF SECONDARY EDUCATION IN THE SUBJECT IN THE COUNTY

**Table 4.1:** Variety of learning resources and KCSE geography results

KCSE Geography results 2014	<4.00	4.01 – 6.00	6.01 – 8.00	8.01>	Total
Wall maps	2	5	4	2	13
Charts	3	4	3	3	13
Globes	2	4	3	1	10
Atlases	1	2	1	1	5
ICT	0	2	1	1	4
Teaching notes	6	8	7	5	26
Samples	3	9	7	3	22

Further, to establish which schools performed better in KCSE in terms of access to variety of resources, data on access to variety of resources and KCSE performance in geography in Makueni County in 2014 was cross-tabulated. The result of the cross-tabulation was presented in Table 4.2.

**Table 4.2:** Variety of resources and KCSE geography results  
variety of resources used in teaching

Count		KCSE geography results				Total
		4.00 and below	4.01 - 6.00	6.01 - 8.00	8.01 and above	
Variety of resources used in teaching	high variety	4	6	1	2	13
	no variety	0	6	8	3	17
Total		4	12	9	5	30

\* KCSE geography results Crosstabulation

Results of the cross-tabulation showed that 13 schools had access to a variety of resources in their teaching/learning activities while 17 schools did not have access to variety of resources. Of the 13 schools which had access to a variety of resources three (23%) had good performance of 6.01 and above. The rest in this category, that is 10 schools out of 13 (77%) performed poorly by attaining mean scores of 6.01 and below. On the other hand, 11 out of 17 schools (65%) which did not have access to variety of resources performed well because their candidates attained mean scores of 6.01 and above. Only six out of 17 (35%) of schools not having access to variety of learning resources performed poorly by scoring 6.00 and below. It was therefore concluded from these results that there was not a big difference in performance in geography between the high performing schools and the low performing schools in terms of access to variety of learning resources in public schools in Makueni County.

The variety of learning resources used in the teaching and learning of geography in public schools in Makueni County was correlated against KCSE performance in the subject. This was done by comparing data on variety of resources in the participating schools against the schools' KCSE performance in geography in 2014. For the purpose of using the SPSS programme, data was coded. Teachers' views on variety of resources accessible to them were collected as either 'high variety' or 'no variety'. "High variety" was given Code 1 while "no variety" was given Code 2. Schools' performance in geography for 2014 was also coded. Mean scores of 4.00 and below was given Code 1. Mean scores of between 4.01 and 6.00 was given Code 2. Mean scores of between 6.01 and 8.00 was given code 3 while mean scores of 8.01 and above was given code 4. The data on the variety of resources found in schools was then correlated against KCSE performance in geography in Makueni County in 2014. The result of the calculation is presented in Table 4.4.

**Table 4.4:** Correlation of variety of resources against KCSE geography results

Correlations		KCSE geography results 2014
Variety of resources used in teaching	Pearson Correlation	.401*
	Sig. (2-tailed)	.028
	N	30
*. Correlation is significant at the 0.05 level (2-tailed).		

The calculation yielded a Pearson's Product Moment Correlation coefficient of 0.401. This means that there is a moderate relationship between access to a variety of resources in the teaching of geography and students' performance in the subject in the county.

Further, to test for the ability of the independent variable (variety of resources) to predict the dependent variable (KCSE performance in geography), a regression analysis was performed. A p-value to establish how variety of resources promotes good performance in geography was calculated. A value of 0.028 was realized on the relationship between access to variety of resources in the participating schools against the schools' KCSE performance in 2014. The result of the calculation was presented in Table 4.5.

**Table 4.5:** p-value on variety of resources and KCSE results in geography

Coefficients <sup>a</sup>								
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		
	B	Std. Error	Beta			Lower Bound	Upper Bound	
(Constant)	1.330	.529		2.514	.018	.246	2.414	
1 variety of resources used in teaching	.747	.322	.401	2.318	.028	.087	1.406	

a. Dependent Variable: KCSE geography results

The calculated significance level (0.028) is below the cut-off value, which is 0.05. Therefore, the null hypothesis that: *“There is no relationship between variety of learning resources used in the teaching and learning of geography in public schools in Makueni County and KCSE performance in the subject in the county”* was rejected. Instead, the alternative hypothesis: *“There is a relationship between variety of learning resources used in the teaching and learning of geography in public schools in Makueni County and KCSE performance in the subject in the county”* was adopted. Thus, access to a variety of resources for the teaching of geography is a good predictor of academic performance in the subject in Makueni County. This means that access to a variety of resources promotes academic performance of students in geography in Makueni County.

This study finding is consistent with Ozturk’s (2003) finding that the usage of a variety of learning resources influenced the learning environment and curriculum implementation. When he conducted a study on high school biology curriculum implementation in the Anatolia region of Turkey, the study established that variety in learning resources influenced the implementation of the new biology curriculum. The finding is also consistent with Ruthiri (2009) who in a study conducted in Buuri Division of Imenti North District, Kenya, had recommended that urgent measures should be taken to acquire varieties of learning resources for use in teaching and learning of English language. This recommendation was inspired by the findings of the study which had indicated that textbooks were the major learning resource that was available in primary schools. And although other learning resources were available in the Kenya National Library Service and Teacher Advisory Centres, as well as availability of Resource Persons, they were rarely used in the teaching and learning of English language in the division.

The relatively lower correlation between variety of learning resources and academic performance of students in geography in KCSE seems to be supported by Ogechi (1992) who found that the mere presence of learning resources may not mean

their use in teaching and learning. Ogechi (1992) had found that there was low utilization of the available resources in teaching and learning due to high enrolment in geography classes which inhibited their effective use in Nyamira District.

The finding of this study that access to a variety of learning resources promotes academic performance in geography in Makueni County is in tandem with Cohen et al. (2003) in the Classroom Instruction Theory. Cohen et al (2003) are of the view that there is the need for teachers to use a variety of resources in the teaching/learning process. Cohen et al (2003) recognized the importance of a variety of resources when they posed this question: "*What resources matter, how, and under what circumstances?*" The circumstances here mean that for teaching the different areas of the curriculum (for example different chapters in geography) there is the need to use different types of resources.

## **6. Conclusion and Recommendations**

The results of this study, in conjunction with findings of other previous similar studies, suggest that access to variety of learning resources for the teaching and learning process has promoted academic performance in geography in KCSE in public secondary schools in Makueni County. Based on the findings, specific key recommendations of this study which apply to all public schools in Makueni County are:

1. There is the need to sensitize teachers to be innovative in their work particularly on the use of the cell phone which they widely use in their day to day activities. The cell phone can be a very versatile tool for accessing internet information. Indeed, this tool can be used with ease for classroom instruction. Through the cell phone, teachers can acquire information which may not be readily available through other sources. Teachers can also access latest information using the cell phone. The cell phone can be very useful to those teachers who say that they cannot adopt ICT in teaching because ICT resources are missing or there is lack of power in their schools. A good thing with cell phones is that internet charges via these phones are very low. Teachers can easily bear the cost as the information they access is beneficial first and foremost to them as it equips them with information they can use to assist them in their work. The information can also assist them to raise their competence in their professional life.
2. Because it has been established in this study that learning resources promote academic performance in Makueni County, teachers should be encouraged to use a variety of learning resources as well as increase the frequency of use of the

resources in teaching and learning. The Ministry of Education can take the role of sensitizing teachers on the need to use learning resources when delivering the curriculum to learners. One forum that the ministry can use is through organizing subject symposia and workshops in geography which can also be used to equip teachers with skills on the use of learning resources in geography classes.

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