LEARNING RESOURCES AND STUDENTS' ACADEMIC PERFORMANCE IN GEOGRAPHY IN MAKUENI COUNTY, KENYA

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E83/CE/15561/2008

A Thesis Submitted in Partial Fulfillment of the Requirements for the Award of the Degree of Doctor of Philosophy (PhD) (Curriculum Studies), Kenyatta University

July, 2016

DECLARATION

This thesis is my original work and has been complemented by referenced sources duly acknowledged. Where text data (including spoken data) graphics, pictures or tables have been borrowed from other sources including the internet these are specifically accredited. This thesis has not been presented in any other university for consideration for any other award.

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DEDICATION

This academic work is dedicated to the precious memory of my late mother Mrs. Esther Ngilu Kisimbii who bade me goodbye on 3/4/2012. Earlier on in my childhood, she had pointed to me the direction to education. I have never looked back. God rest her Great Soul in eternal peace.

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ACKNOWLEDGEMENT

I have profited immensely from many dedicated people whose interest must have been my success. I would like to thank my sincere and unreserved gratitude.

I am greatly thankful to my supervisors, Prof. John Aluko Orodho and Dr. Levy I. Libese of the Department of Educational Management, Policy, and Curriculum Studies, School of Education, Kenyatta University, for tirelessly reading my write-ups for the purpose of correcting and guiding me. Their effort has to a large extent culminated in this work.

I would like to thank Dr. John Nderitu for the invaluable contribution he made towards my studies – first for being a Reader for my proposal and later for facilitating my successful completion of my studies after he assumed chairmanship of the department. Special thanks are extended to the department's support staff – Jane Waweru and Vanessa Mwikali. Their kind-heartedness enabled me to sail through my studies smoothly. They are two angels walking on Earth.

I thank the principals, teachers and students in the sampled schools who cooperated in filling the questionnaires as well as any other help that they provided to me when I was collecting data which culminated in this report.

I would further wish to acknowledge the help extended by Mr. Onesmus M. Mulinge, former Principal Makueni Boys' High School gave me help in terms of time peace of mind and material support which enabled me to see the success of this work when I worked with them at Makueni Boys' High School. I am grateful to Ms. Anastasia Ngina Nzioka, a teacher of English at Molemuni Secondary School for editing this document.

Finally, I cannot fail to acknowledge the assistance extended by my family, who through understanding freed me to attend class and carry on the research that led to this work. I therefore take this opportunity to recognize my wife – Peninna Ngonyo, sons Oliver Kioko and Lucky Mwendwa and daughters Samantha Wayua and Prudence Nduku.

To all these Great People in my life, I wish them God's favour in their endeavours.

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ABBREVIATIONS AND ACRONYMS

ASAL	: Arid and Semi-arid Land
CDE	: County Director of Education
CSAE	: Centre for the Study of African Economies
CRE	: Christian Religious Education
DFID	: Department for International Development
EFA	: Education for All
EP	: Education Project
EPRC	: Economic Policy Research Centre
FDSE	: Free Day Secondary Education
FPE	: Free Primary Education
GIS	: Geographical Information System
ICT	: Information and Communication Technology
KCSE	: Kenya Certificate of Secondary Education
KNEC	: Kenya National Examinations Council
KIE	: Kenya Institute of Education
MOEST	: Ministry of Education Science and Technology
NACOSTI	: National Commission for Science, Technology and Innovation
NARC	: National Rainbow Coalition
PLE	: Primary Leaving Examination
SEE	: Social Education and Ethics
SMC	: School Management Committee
SPSS	: Statistical Package for Social Sciences
TSC	: Teachers Service Commission
TTC	: Teacher Training College
TIQET	: Totally Integrated Quality Education and Training
UBoS	: Uganda Bureau of Statistics
UN	: United Nations
UNESCO	: United Nations Educational, Scientific and Cultural Organization

UPE	: Universal Primary Education
USAID	: United States Agency for International Development
WASC	: West African School Certificate
WHO	: World Health Organization

ABSTRACT

This study investigated the relationship between learning resources and students' academic performance in geography in KCSE in public secondary schools in Makueni County. The objectives of the study sought: 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 subject in the county; to find out the availability of learning resources for the teaching and learning of geography in public schools in Makueni County and its effect on KCSE performance in the subject in the county; to establish the use of learning resources in the teaching and learning of geography in public schools in Makueni County and its effect on KCSE performance in the subject in the county; and to find out the relationship between teacher training on learning resources and its effect on KCSE performance in geography in public 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 quantitative 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 were: correlation between availability of learning resources and performance in geography at 0.401; correlation between the use of learning resources and geography performance at 0.631; correlation between variety of learning resources and performance in geography at 0.196 and finally, correlation between training of teachers and KCSE performance in geography at 0.197. Null hypotheses on variety, availability and use of resources were rejected while null hypothesis on training of teachers was adopted. The study therefore concluded that while access to variety of learning resources, availability of learning resources and use of resources in the teaching and learning process promoted academic performance in geography in KCSE in public secondary schools in Makueni County, pre-service teacher training on learning resources did not. Recommendations made were: to sensitize teachers to be innovative; teachers to use a variety of learning resources in teaching; school heads to encourage their teachers to attend in-service training; MOE and TSC to ensure further training opportunities to teachers; the content of training opportunities like symposia and workshops to be scrutinized and areas of weakness identified and strengthened; and finally, the use of emerging technology, especially ICT given more consideration in teaching/learning geography. Recommendations for further research were: duplicating the research to probably cover all of Kenya; establishing the content of the symposia and workshops, their usefulness to teachers, what can be done to improve their usefulness; and finally, conducting a multivariate study relating performance in geography with entry behaviour of learners into secondary school and use of learning resources in teaching/ learning be conducted

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter presented the background of the study, problem statement, purpose of the study, objectives, research questions, significance of the study, delimitations, limitations, research assumptions, theoretical framework, conceptual framework and definition of significant terms used in the study.

1.2 Background of the Study

This subsection presents the following subtopics: education as a valuable good; geography in the school curriculum and in the world of work; students' academic performance; general objectives of the geography syllabus in Kenya; and, learning resources and the teaching/learning of geography.

1.2.1. 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-today 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).

1.2.2 Geography in the School Curriculum and in the World of Work

In Kenya, the secondary school curriculum is organized on the basis of the subject-centered curriculum design. According to Shiundu and Omulando (1992), this design involves the organization of the curriculum in terms of separate subjects. Consequently, in Kenyan secondary schools, the content of the curriculum is arranged according to

specific subjects representing a specialized body of common knowledge. One of the subjects taught in secondary schools in Kenya is geography.

In recognition that the subject can play an important role in meeting national goals of education, the Ominde Commission (Republic of Kenya, 1964) in its report recommended that the geography syllabus should proceed from a study of the immediate environment of the schools to the rest of the country, to Africa and to the rest of the World.

Later, the Mackay Report (Republic of Kenya, 1981) stressed the important role of geography in the curriculum by declaring that one of the main aims of the proposed education system would be producing graduates well informed on issues about the environment. The import of these two commissions is that geography was given a lot of emphasis in the 8-4-4 system of education. Indeed from the time of the introduction the 8-4-4 system of education up to 1992, geography was a compulsory (core) subject for all secondary school students in Kenya from Form One to Form Four. However, the Kamunge Report (Republic of Kenya, 1988) noted that curriculum aims and objectives for secondary school were not fully attained because of a loaded curriculum. The commission recommended reducing the number of subjects offered in primary and secondary school levels. This led to the first curriculum review of the new system of education which took place in 1992 (Ministry of Education, Science and Technology, 2001). After the review, geography remained a core subject only in Forms One and Two. In Forms Three and Four it became an elective subject.

To address the challenges faced by the 8-4-4 curriculum, the Koech Report (Republic of Kenya, 1999) came up with quite a number of recommendations. They included: the curriculum for secondary schools in Forms One and Two to be based on a wide range of eleven compulsory subjects with a broad-based general education. The curriculum for secondary schools in Forms Three and Four was in turn made more flexible to allow students start specialization through their subjects of choice.

The current curriculum at the secondary school level includes a minimum of seven subjects selected from four groups of subjects (Kinuthia, 2009). Subjects in Group One are core to all students up to the Kenya Certificate of Secondary Education (KCSE) and include Kiswahili, English and mathematics. Group Two are the sciences where students must choose at least two subjects. In Group Three we have the humanities, which include geography. Students must choose at least one subject in this group. Group Four and Five are the Technical and Creative Arts subjects and students must choose at least one subject to sit for during KCSE examination (Kinuthia, 2009).

Geography is an important subject in one's life. The subject helps people to make sense of the fast changing, highly interconnected and interdependent world in which they live (Hampshire County Council, 2014). By its very nature, geography is the subject that can help students unravel some of the mysteries that surround them and the environment in which they live (Nchebere, 2014). Its main focus is the Earth and it occupies a distinctive place in the world of learning (Matthews and Herbert, 2004). It integrates the study of human societies and the Earth's physical components.

Geography aims at helping learners understand the world, and as such, the views of the National Council of Geography Education (1994) are that the subject contributes to international understanding and helping learners understand their own country. Through the study of geography at secondary school, the learner acquires employable skills and is prepared for future careers. The subject prepares learners by equipping them with skills that they can utilize later as adults in building the nation. Geography is a requirement for one to work with agencies that deal with development or provision of aid, environmental work, Geographical Information Systems (GIS), as well as working in human population careers and in tourism and travels. The subject is also a requirement for one to pursue a career in agriculture, forestry, cartography and surveying. According to Talbot and Mansell (2007), the close affinity that exists between geography and the world of work is because geographers are exposed to a wide curriculum involving the transmission of many skills. Because of the importance of geography in the curriculum and as a career subject, effort should be made to improve its teaching in secondary schools. Improving the teaching of geography will in turn improve the performance of students who choose the subject for their KCSE Examination.

1.2.3 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) (see appendices 8 and 9 for KCSE subject performance in Kenya for years 2012 and 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 Sore			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	9
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

* The German subject was offered in one school only

Source: Makueni County KCSE results analysis report

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.

1.2.4 General Objectives of the Geography Syllabus in Kenya

The secondary school geography syllabus in Kenya has 14 general objectives (Republic of Kenya, 2002). The objectives are meant to enable the learner in: appreciating the importance of the study of geography; recognizing types of environments and also manage them for individual, national and international development; identifying and explaining weather phenomena and their influence on the physical environment and human activities; explaining landforming processes and appreciate the resultant features and their influence on human activities; acquiring knowledge of available natural resources and demonstrate ability and willingness to utilize them sustainably; identifying and comparing economic activities in Kenya and the rest of the world; stating, interpreting, analysing and using geographical principles and methods in solving problems of national development; applying field-work techniques in the study geography; acquiring knowledge and skills necessary for analyzing population issues of Kenya and the world; appreciating the importance of interdependence among people and among nations; identifying, assessing and having respect for different ways of life influencing development at local, national and international levels; demonstrating the acquisition of positive attitudes, values and skills for self reliance; acquiring appropriate knowledge, skills and attitudes as a basis for technological and industrial development; and finally, promoting patriotism and national unity.

The stated 14 general objectives of the geography syllabus have specified the knowledge, skills, attitudes and values expected of the learner who undergoes the course up to Form Four. The successful teaching of geography so that the stated objectives are achieved can only be possible if teaching is done following a teaching methodology which involves the use of learning resources. So far, from findings of the current study, learning resources have not been well integrated in the teaching process in geography in Makueni County. This has resulted in poor learners' grades in the subject. Poor academic performance in the subject means that its stated 14 objectives were not achieved. The design of the study therefore aimed at investigating the relationship between use of learning resources in teaching and learning geography and students' performance in the subject in KCSE in public secondary schools in Makueni County.

1.2.5 Learning Resources and the Teaching/Learning of Geography

Campbell, Flageolle, Griffith and Wojcik (2009) say that use of learning resources in teaching/learning process is called *resource-based learning*. These authors point out that learning resources are used to augment more instructivistic teaching approaches. The authors add that resource-based learning is an educational model which is adopted in teaching and learning to enable learners to be actively engaged with a variety of resources in print as well as in non-print format.

According to Farmer (1999), resource-based learning is anchored on the principle that each learner is attracted to the learning resource and content best suited to the information processing skills and styles they possess. The significance of learning

resources in teaching and learning has been aptly captured by Campbell et al. (2009). They say that in the use of resource, learners' self-sufficiency in the learning process is enhanced. This is because they ask productive questions, they synthesize information, analyse issues as well as interpret and evaluate information at their disposal.

Simsek (2003) in Saglam (2011) sees learning resources as including educational materials and resources that are used for developing the desired knowledge, skills, attitudes and values in learners. Dahar and Faize (2011) categorized learning resources into either print or non-print materials designed to pass content to learners in the learning process. They identified learning resources as including kits, textbooks, magazines, newspapers, pictures, recordings, slides, transparencies, videos, video discs, workbooks, and electronic media including music, movies, radio, software, CD-ROMs, and online services. On its part, USAID (2006) views learning resources as broadly comprising instructional guides, audio-visual materials, textbooks, workbooks, practice exercises, activities, tests, and supplementary readers. USAID (2006) identified the textbook as the classroom instruction input most commonly utilized, studied, and documented.

The significance of learning resources is firmly recognized in teaching and leaning. For example, the UNESCO (2012) says apart from qualification of teachers and school facilities, quality education is determined by learning resources in teaching and learning**.** On his part, Oluoch (1982) points out that the formulation of a new curriculum project incorporates selecting and developing learning resources and equipment. Incorporation shows the important role that learning resources play in teaching and

learning. The UNESCO (2012) further strengthens this view by concluding that for effective support in teaching and learning, the much needed quality learning resources should be made available to teachers and students in adequate quantities. From a study conducted by Onsongo (2001) in Nairobi schools, it was established that instructional resources are critical in the learning process.

Saskatchewan Ministry of Education (2013) has provided the indicators of quality learning resources. The six indicators presented are as follows: physical quality (they are durable and thus have high physical and technical quality and appealing to users); content/format indicator (should be well organized and their artistic/literary quality should be high and with current and authenticated information); social considerations (should be fair and of equitable considerations on age of learners, their ability, their culture, their gender, their socio-economic status, their religion, and sexual orientation); design (they are user-friendly, for example extensive in-service training before use is not necessary and they are consistent with the philosophy of the curriculum); developer qualifications (it is imperative that they are developed and validated by people who are qualified and of high reputation; and finally there is an indicator on cost (they are reasonable on cost).

Given the wide range of available learning resources, Saglam (2011) holds that in the process of teaching and learning, teachers must use the required materials and methods. Saglam (2011) adds that instructional resources conveniently promote the ability of a teacher to pass a message to learners in a manner that is accurate, proper, clear and

understandable. This is by making knowledge that is abstract to become concrete and also enable students to comprehend ideas that were complex by making them simple.

According to UNESCO (1997), training of teachers in the use of learning resources is important and this must not be ignored. This is because the effectiveness of available learning resources will depend on the ability of teachers to use them as intended. Therefore, any designed curriculum and textbook development programme should also involve development of teachers' manuals as well as additional teaching resources (UNESCO, 1997). These resources, According to UNESCO (1997) in-service training opportunities should be used to introduce learning resources to teachers. Adeyanju (2003) conducted a study among 80 professionally trained teachers in Ghana from both primary and secondary schools. The study findings showed that although the participants had received professional training, only 12 of them had received specialized training on the production and use of learning resources for effective curriculum delivery.

Despite the importance of a diversity of learning materials in teaching and learning, in poor countries, with untrained teachers, the textbook becomes the most important, if not the only vehicle for delivering the curriculum (UNESCO, 1997). UNESCO (1997) further points out that because textbooks and other learning resources directly impact on what teachers teach and how it is taught, the process of curriculum development and curriculum materials are not only sensitive matters but significant for learning.

To raise education quality therefore, the government, school administrators, parents, and donors among other education stakeholders must ensure that teachers have an

appropriate working environment which has the relevant learning resources for use that enables curriculum delivery to the learner. This will ensure that the huge investments made by the government and donors alike do not go to waste. There is thus the need for a study aimed at examining the relationship between learning resources used in teaching and learning geography with regard to variety, availability, use, and teachers' training vis-à-vis students' academic performance.

Mundulia (2012) conducted a study in Eldoret Municipality on availability of teaching/learning resources and performance in science subjects in secondary schools. The study related the availability of human and non-human resources to performance in the sciences in KCSE. From the study findings, it was established that textbooks' availability, availability of revision books, availability of laboratory chemicals and equipment in the high performing schools was higher than it was in those schools whose performance was low. It was also established that of the seven low performing schools, two lacked a laboratory. Five schools with low performance which possessed a laboratory in turn did not have laboratory technicians. Also, one laboratory in the low performing schools was fully equipped. Further, in the low performing schools, libraries were missing. Therefore, the availability of learning resources differed between high performing and low performing schools. From these differences in performance based on teaching/learning resources, the researcher in the current study felt that there was a need to examine the relationship between learning resources and learners' performance in KCSE in geography in Makueni County.

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, 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 characterised 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.

1.4 Purpose of the Study

Investigated in this study was the relationship that exists between learning resources and students' academic performance in geography in KCSE in public schools in Makueni County. The study therefore generated information on the influence that learning resources have in promoting students' academic performance in geography in public secondary schools in Makueni County.

1.5 Objectives of the Study

The general objective of this study was to assess the relationship between 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. In turn, the study had the following four specific objectives:

i. 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 subject in the county.

ii. to find out the availability of learning resources for the teaching and learning of geography in public schools in Makueni County and its effect on KCSE performance in the subject in the county.

iii. to establish the use of learning resources in the teaching and learning of geography in public schools in Makueni County and its effect on KCSE performance in the subject in the county.

iv. to find out the relationship between teacher training on learning resources and its effect on KCSE performance in geography in public schools in Makueni County.

1.6 Research Hypotheses

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

Ho1. 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.

Ho2. There is no relationship between availability of learning resources for the teaching and learning of geography in public schools in Makueni County and KCSE performance in the subject in the county.

Ho3. There is no relationship between the use of learning resources in the teaching and learning of geography in public schools in Makueni County and KCSE performance in the subject in the county.

Ho4. There is no relationship between teacher training on learning resources and KCSE performance in geography in public schools in Makueni County.

1.7 Significance of the Study

This study was designed to generate information on the relationship between learning resources and academic performance in KCSE in public schools in Makueni County. It was expected that the study findings would be important in the improvement the academic performance of learners in geography in the county as follows:

i). The study would contribute to the understanding of academic performance in geography particularly in public schools in Makueni County. It is expected that teachers, teacher trainers, principals, School Management Committees (SMCs) and Ministry of Education (MoE) officials who will come across this research report will be guided by its findings and recommendations to concentrate effort in the direction of improving academic performance in geography by putting in place mitigating measures that ensure that this is possible. This will include formulating policies for improving the teaching of the subject through provision of appropriate learning resources nationally, at county and school levels.

ii). Since not many studies on the relationship between academic performance vis-à-vis access to variety of learning resources, availability of learning resources, use of learning resources, and teacher training have been conducted, the current study filled this gap by adding new knowledge in the area. The study, therefore, will provide teachers, teacher trainers, principals, SMCs and Ministry of Education officials with useful information that can be used to improve

academic performance through enabling the deployment of learning resources in the teaching process.

iii). The study has revealed the need for in-servicing teachers of geography in Makueni County in the deployment of learning resources in public secondary schools. When done, this can improve performance of geography in the county. The TSC and MOE can do this by organizing training opportunities including symposia and workshops. Principals can facilitate the attendance of these training opportunities by providing attending teachers with subsistence, travel and night-out allowances where applicable.

1.8 Limitation of the Study

There was a lot of unwillingness to provide responses in this study. Some principals felt that giving a true picture of the state of affairs in their schools would amount to exposing weakness in their leadership. This, they felt could attract scrutiny and possible punishment from their seniors in the Ministry of Education and the TSC. Teachers in turn saw an attempt to answer truthfully to the items of their questionnaire as likely to similarly attract the wrath of their principals as it could be interpreted to imply disloyalty and betrayal to their work station's heads – the principals. The fear of higher authorities spiraled down to the learners who viewed truthfulness in their answers as likely to attract punishment from their teachers. However, this limitation was overcome, first by assuring the respondents that their anonymity was assured as they were not asked to write their names anywhere in the questionnaire. Secondly, the researcher informed the respondents that their responses were confidential as their answers were for collective analysis.

1.9 Delimitations of the Study

The study was delimited as follows:

i) The study was conducted in public schools in Makueni County to assess the relationship that exists between the use of learning resources and KCSE performance in geography in the county. Thus, although many factors might have been responsible in influencing academic performance of learners in the subject, only the influence of learning resources was examined. The influence of learning resources was selected so that if weakness in their use was discovered in the study, they can be corrected for improved performance in the subject.

ii) Only public secondary schools in Makueni County were involved in the study. Public schools operate in environments different from those of the private schools. For example, private schools have better learning resources compared to the public schools. Therefore, the private schools were left out in this study.

iii) The respondents for the study comprised of secondary school principals, teachers of geography and Form Three students taking geography in public schools in Makueni County. Principals source and purchase many of the learning resources used in schools. Where possible, teachers innovate in order to augment resources provided by their schools. Teachers also use learning resources to deliver the curriculum to the learner. Finally, students are the beneficiaries when learning resources are used in the teaching/learning process. Students are also the losers when poor teaching methods are adopted by their teachers, such as failure to use learning resources. The researcher therefore felt that these groups would provide adequate data if included in this study.

1.10 Assumptions of the Study

Three assumptions guided the study:

i. That public schools in schools in Makueni County had learning resources and which were used in the teaching/learning process.

ii. That the respondents would be accurate and honest in providing responses.

iii. That the sampled schools completed their syllabuses before sitting the KCSE since the KCSE is an accepted instrument for judging students academic performance.

1.11 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.

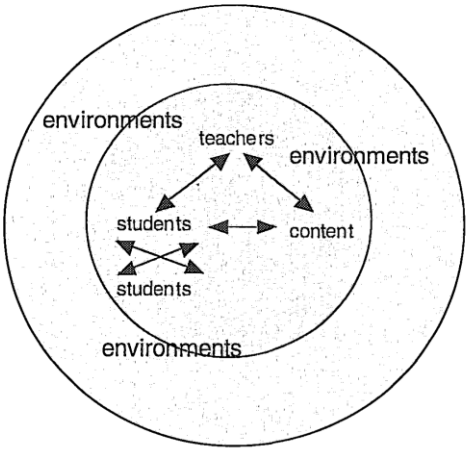

Fig. 1.1. Instruction as interaction

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 uncoordination. 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.

1.12 Conceptual Framework

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

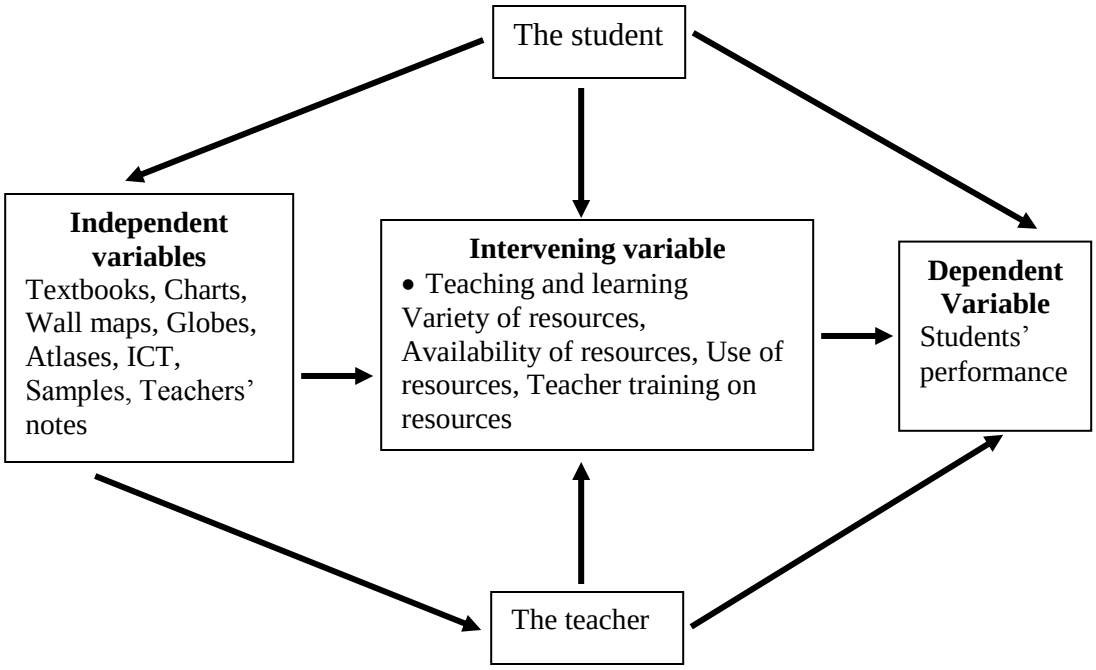

Fig. 1.2. Conceptual framework on the relationship between learning resources and students' academic performance

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.

1.13 Definition of Significant Terms

In order to clarify issues in this research work, the following significant terms were defined as they apply to the study.

Academic performance: students' and schools' scores in examinations.

Curriculum: all learning opportunities that learners are exposed to by their schools whether in class or out of class, in school or out of school – including fieldwork and homework.

Elective school subject: a school subject which students are free to choose for study. Elective subjects include geography, history and government, biology, physics, chemistry, agriculture, and Business Studies.

Gender: the differentiation between male and female based on their sex.

Learning resources: aids and devices used to facilitate teaching and learning, including textbooks, charts, visual, samples, resource persons and the internet.

Low performing schools: schools whose mean scores are 6.00 and below. A mean score of 6.00 is half-way the maximum mean of 12, which is grade A.

High performing schools: schools whose mean scores are 6.01 and above.

Secondary education: education provided in a secondary school. A secondary school in turn is a school for providing education after primary school level. Secondary education prepares students for admission to tertiary institutions of learning.

Public schools: schools established by the government and funded through cost-sharing between the government and parents and whose management is closely monitored by government agencies.

Relationship: the state of interconnectedness that exists between learning resources and examination results.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter presents a review of the literature that is related to the relationship between learning resources and students' academic performance. Two main approaches were adopted in conducting the literature review. They were theoretical and empirical review approaches.

2.2 Theoretical Review

In this section was discussed issues related to the theory relevant to the study. The review was done on the basis of various topics related to the theory and this study. These were: academic performance as a measure of learning; students' relationships with content, with teachers, and with each other; the learning environment and its role in promoting academic performance; and challenges inherent in the use of instructional resources.

2.2.1 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.

2.2.2 Students' relationships with content, with teachers, and with each other

Goodman (2015) talks of the importance of teaching through relationships. He

says that teaching through relationships is a complex social environment of conversing, sharing experiences, and participating in activities that make for engaged learning between students and teachers. On her part, Zimmerman **(**2012) has noted that interaction is critical in the learning process.

Ali and Ahmad (2011) and Alshare, Freeze, Lane and Wen (2011) say that to enhance learning, the concepts and objectives of the course need to be presented clearly and in a lively manner to enable learners to spend more time engaged with the content. On her part, Zimmerman **(**2012) has established that the amount of time spent by students in interacting with content determines their weekly quiz grades. She concluded that there was higher performance among students who spent more time interacting with course content than the lot that spent less. Factors influencing performance have been identified as including mode of delivering course materials (Abrami, Bernard, Bures, Borokhovski and Tamim, 2010). Another factor identified is time allocated to particular tasks (Lam and Bordia, 2008). A final factor identified is relevant, up-to-date, and easy to understand information (Alshare et al., 2011).

Another important interaction that students have is with their teachers. Rimm-Kaufman and Sandilos (2016) say that improvement of the relationship between students and teachers is important and positively affects students' academic and social development. They say that where students and teachers have a close, positive and supportive relationship, students have better academic attainment. However, students with more conflict in their relationships with teachers have poor academic attainment. The main focus in classroom interactions centres on practices of teachers in the classroom. These

practices include asking questions, correcting errors, teacher's speech, the explanations teachers give and the time teachers wait for students to make responses (Brown and Rodgers, 2002). According to Cornelius-White (2007) and Thijs and Koomen (2008), when students have good relationships with their teachers, they benefit through motivation and academic achievement. Therefore, for meaningful learning to take place there has to be a positive relationship between students and their teachers. In those classes where knowledge is treated as something fixed and that is only for passing in"one way traffic" from teacher to the learner, teacher's behaviour may become the primary activity. In such situations, learners may see their role as the passive memorisation of facts, algorithms and formulas (Cohen, et al., 2002). This is contrary to situations where students are allowed freehand in expressing ideas on their own terms. This fosters a culture of interpreting knowledge as something to discover and reinvent. This enables learners view their activities in the classroom as the discovery of relationships and application of knowledge to the real world (Kurdziolek, 2011).

On students' interaction with each other, there are three basic ways that this happens as they learn. These involve competing among themselves to see who is "best," or they can work individually toward a goal without paying attention to fellow students, or they can work cooperatively with a vested interest in other students' learning as well as their own. Of the three interaction patterns, competition is the most dominant among learners (Roger and Johnson, 1994).

From the above presentation, we can therefore see the relationship between learners and content, teachers, and with each other. That is why The Center for innovation in

teaching and learning (2015) says that learning involves interacting between what students know, the new information they encounter, and learning activities. In the process of learning, students construct own understanding through experience, interacting with content and with other students, and reflection. They advise that teachers should play their role by providing opportunities that enable students to connect with course content in a variety of ways that are meaningful like using cooperative learning, interactive lectures, engaging assignments, hands-on laboratory and field experiences, as well as other active learning approaches (The Center for innovation in teaching and learning, 2015).

2.2.3 The learning environment and its role in promoting academic performance

The Glossary of Educational Reform (2014) points out that learning environment is the diverse physical locations, contexts and cultures in which learning by students take place. The publication says that learning may take place in a variety of settings which include outside-of-school locations, and outdoor environments. The publication further points out that the term also encompasses the ethos and characteristics of a school or class. This includes the interaction of individuals in the teaching/learning process and how they treat one another as well as the ways in which teachers may organize a learning session to facilitate learning.

Byoung-suk (2012) says that the educational process occurs in a physical, social, cultural and psychological environment and adds that it is necessary to provide a proper and adequate environment for children's' fruitful learning. According to Arul (2012), a

stimulus for learning experiences is provided by a favourable school environment. This is because children spend a lot of time in school whose environment is capable of influencing performance through curricular activities, teaching techniques and relationships (Arul, 2012).

Bates (2015) has identified the components of an effective learning environment. The first is developing a total learning environment, which he has identified possibly the most creative part in teaching. He says that there is an existing tendency in focusing on either physical institutional learning environments (such as classrooms, lecture theatres and laboratories) or on the technologies used to create online Personal Learning Environments (PLEs). But Bates (2015) says that learning environments are broader than just these identified physical components. This is because they also include the learner characteristics, goals that exist for teaching and learning, activities best supporting learning, and finally, the strategies for best measuring and driving learning.

The learning environment has been shown to promote learning (Parrett and Budge, 2012). This is because to learn, students need to feel safe and supported. Parrett and Budge (2012) say that in the absence of these conditions, the human mind reverts to focusing on survival. These authors add that educators in high-performing, high-poverty schools have long recognized that it is of critical importance to provide a healthy, safe, and supportive classroom and school environment. Schaps (2005) argues that a supportive school environment is important in promoting academic success as it broadly influences students' learning and growth, which includes a significant aspect of their development – socially, emotionally and ethical development. He concludes by saying

that in school environments that are supportive and caring, students become more motivated and engage in learning.

2.2.4 Challenges inherent in the use of instructional resources

Although learning resources are critical to the learning process, the factors that raise difficulties in their use in teaching are many. However, some of them stand out as relevant to the current study.

An important limiting factor as identified by Afolabi Adeyanju, Adedapo, and Falade (2006) is inadequacy of resources. Inadequacy of resources can seriously compromise the deployment of resources in teaching. These authors argue that effective teaching is only possible when learning resources that are adequate and relevant are used. Afolabi (2008) indicates that the availability of learning resources and ability of teachers of mathematics to use them are vital determinants in the selection of the teaching methods to in teaching and consequently, mathematics achievements.

According to Zhao, Pugh, Sheldon and Byers (2002), factors that pose a challenge to computer use among others are related first, to the school environment or the context in which technology will be implemented, secondly, factors associated with the students and thirdly, the teacher who serves as the instructor. Groff and Mouza (2008) have identified such challenges as including organizational culture that does not support the effective use of technologies, lack of human support and infrastructure, and inadequate physical setup and structure for technologies. On factors associated with students who are the operators of technology, Groff and Mouza (2008) have identified challenges to technology use as including comfort level with technology, project distance from prior

technology experiences and student attitudes, beliefs and engagement with the project scope. Finally on teachers who are the implementers, challenges identified in interfering with technology use include inadequate teacher training, insufficient technology skills and proficiency, attitudes and beliefs which are misaligned with educational technology pedagogy and inability to access/utilize school resources (Groff and Mouza, 2008).

2.3 Empirical Review

Reviewed in this section were the findings of studies related to the current study. The review was done on the basis of the four objectives of the study.

2.3.1 Variety of Learning Resources Used in Teaching and Learning

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.

2.3.2 The Availability of Learning Resources Used in Teaching and Learning

Killen (2006) has made the observation on the shortage of learning resources in schools by indicating that:

> "the issue of resources may not be easy to resolve, but the important thing is that teachers should not use lack of resources as an excuse for not teaching well." (p.276)

According to Killen (2006), alternatives are out there and teachers need to desist from entirely depending on ready-made resources. They should thus reach out for local materials and improvise wherever possible.

Onwu (1999) conducted a study on the availability and use of learning resources in Grade 12 science classes in selected schools from Northern Province of South Africa. The three objectives of the study were aimed at: identifying representative schools in the Northern Province with Grade 12 science classes and select 10 schools with a range of performance pass rate (0-100%) in the matriculation physical science examination; undertaking a survey of resources/facilities and materials checklist and finally, to infer the role of learning materials in student achievement in science. The study used a survey design. Questionnaire and observation schedule were used as instruments in data

collection. To draw a sample, a multi-stage and purposive stratified sampling was adopted. The study population comprised all Grade 12 science classes and involved ten sample schools representing high, medium and low performing schools. Data collection was done through the use of self-completed questionnaires by Grade 12 science teachers and head teachers, individual discussions, interview sessions and classroom observations of Grade 12 science lessons. Analysis of data involved determining the effects of the availability, quality and use of materials on the processes of teaching and learning. Among the finding were that in general, in all the sampled ten schools in their Grade 12 classes, great variations in availability existed in the resources and facilities for the teaching and learning of science. Secondly, the availability and quality of the resources varied according to the schools' performance category. High performing schools had good/adequate availability of resources while low performing schools had fair/poor/inadequate resources.

Onwu (1999) recommended improvement in equity in the provision and distribution of learning resources and educational facilities for the teaching and learning of science in South Africa. The study also recommended the formulation of a policy on the funding of science, mathematics and technical subjects in secondary schools in the country so that no one school could be unduly disadvantaged. Although the study reviewed the issue of availability and use of teaching resources in relation to student achievement, it nevertheless did not look at the issues of the variety of learning resources used in teaching and learning as well as training of teachers on use, production and care of learning resources. These are two gaps that the current study filled.

Guloba, Wokadala and Bategeka (2010) conducted a study on how the availability of learning resources influences pupils' academic performance in Primary Leaving Examination (PLE) in Uganda. The study focused on four districts: Apac, Iganga, Hoima and Kiboga. The two objectives of the study were: to examine the relationship between teaching methods and pupil performance, and to determine the relationship between teaching resources and pupil performance. The study utilized the baseline survey data collected in 2008 with support from the Uganda Bureau of Statistics (UBoS). Data was collected using the questionnaire and interview methods. Random sampling was used to select a sample. In each of the selected district, 25 schools were randomly sampled bringing the total to 100. At the individual level, data was collected from head teachers, teachers, parents and SMC members. Data analysis was done using descriptive statistics and correlation.

The major findings of the study were: the supply of teaching resources in public schools seemed to be done at the expense of effective teaching and that primary school teachers in public schools employed teacher-centred methods of teaching which were less effective in delivering the curriculum. Finally, the study recommended an urgent need for the Ministry of Education to focus more on teacher supervision to compel teachers to attend to their duties.

Although Guloba's et al. (2010) study related learning resources to academic performance, nevertheless, the study did not examine first, the role of using varieties of learning resources in teaching and learning, and secondly, the role of training of

teachers on learning resources on academic performance. These gaps were filled in the current study.

Andambi and Kariuki (2013) conducted a study on learning resources used for teaching Social Education and Ethics (SEE) in secondary schools in Bungoma District, Kenya. The objectives of the study sought to find out the types of learning resources available, their adequacy and the effects of their use in teaching. To carry out the research, a field survey design was used. Questionnaires, interview schedules and observation checklists were utilized in data collection. The respondents included the personnel in charge of the district learning resource centre, 1,920 SEE students in Forms Three and Four classes, 120 SEE teachers and 80 heads of Humanities Department. Descriptive statistics were used to analyze data. Results of the study showed that the types of learning resources available in schools included: life periodicals, recommended textbooks, newspapers, visual aids like models, pictorial materials, globes, and maps, audio-visual aids like television, audio aids like radio, and printed aids. On adequacy, the study established that learning resources in the district were adequate. Finally, on effects of resources use, more than half of the students (55%) agreed that the types of learning resources used made knowledge in SEE more lifelike and interesting. Of the respondents 30% of them were undecided while 15% strongly believed that the learning resources used made no impact on the learning of the subject.

In the light of the findings, Andambi and Kariuki (2013) made the following recommendations: Firstly, if carefully selected and used, learning resources were important tools which, could be used to bring about achievements of objectives of any

subject. Secondly, the researchers recommended provision of trained teachers with skills in SEE who could make use of the available resources and if possible create others in order to have the realization of SEE objectives. Andambi and Kariuki's (2013) study is very relevant to the current study because of its examination of types (variety) of learning resources, their adequacy (availability) and their effectiveness. Nevertheless, the current study goes a step further to link the use of learning resources in teaching and learning with effect on performance in KCSE. This was not done in Andambi and Kariuki's (2013) study.

Reche, Bundi, Riungu and Mbugua (2012) conducted a study on the adequacy of learning resources like text books, library books, wall maps and exercise books in Maara District, Kenya. The study was conducted in primary schools in the area and the objectives of the study were aimed at examining the role of school factors, teacher factors, community factors and pupil factors in promoting poor performance in KCPE. The study utilized the descriptive survey design. Those who participated in the study were 51 teachers and 146 Class Eight pupils. Collected data was analysed using descriptive statistics.

Findings showed that among factors contributing to poor performance in primary schools were learning resources which were inadequate. The study recommendations were: employment of more teachers to reduce teaching workloads; MoE to organize induction courses to equip school heads with managerial skills; educating parents on necessity of providing basic education to their children; and establishing a rewarding scheme for teachers. Reche et al's (2012) study was on adequacy of learning materials.

However, the current study linked academic performance to variety of learning resources, availability of learning resources, use of learning resources and teacher training on learning resources.

Nzabihimana (2010) conducted a study with the purpose of establishing how the nature of schools related to pupils' academic performance in primary schools in Gasabo District Rwanda. The three objectives of the study aimed at comparing the academic performance of pupils in public and private primary schools; establishing the effect of availability of school facilities on pupils' academic performance; and finally establishing the effect of teacher quality on pupils' academic performance. The study design adopted was the descriptive cross-sectional survey design. The study sample included 40 teachers and 10 head teachers. Instruments for collecting data included questionnaires and an interview guide. Further, data on PLE results for 300 pupils who participated in the study was obtained and used to compare pupils' performance.

From Nzabihimana's (2010) study, a difference was noticed in pupils' performance in public and private schools. Also, it was established that pupils in private schools performed better than their counterparts in public schools. Finally, it was found out that among factors found to affect academic performance included school facilities and teacher quality.

Nzabihimana (2010) in his study made the following recommendations: the required facilities to be provided by the government in public and subsidized private primary schools to enable them in creating an environment that is welcoming for the teaching

and learning process; public schools be allowed to diversify their sources of funding through the Ministry of education reducing bureaucracy in the administration of schools; making decision in favour of all citizens of Rwanda on education by politicians and other officials and to keep monitoring and evaluating the quality of public education in primary schools; honouring and compensating the value of a teacher's quality in connection to experience, qualification, ability to prepare for lessons which can be done by motivating them to adequately do their jobs including supporting pupils to learn and improve on their performance.

Nzabihimana (2010) in his study nevertheless failed to examine the effects of learning resources on academic performance in secondary schools. This is because it was conducted in primary schools. The study also did not examine the role of learning resources on students' academic performance in geography subject area. These two gaps were filled in this study.

2.3.3 The Use of Learning Resources in Teaching and Learning

UNESCO (2004) says that although learning resources plainly make a difference to the quality of teaching and learning, research is scarce on how teachers for example use textbooks in classrooms.

Kurdziolek **(**2011) conducted a study on classroom resources and their impact on learning. The study was conducted in the state of Texas, USA and examined the use of computational technologies such as SimCalc in the teaching/learning process. The study had three objectives which were: to find out how different classrooms instantiate

SimCalc in terms of enacted resources; to establish the consequences the use of computational technologies has for student access to learning resources; and finally to determine the possible effects on student learning and other outcomes. The study was designed as a case study with observation as the method of data collection. Data was collected from both students and teachers who were selected purposively. The study findings were that: interaction by both students and teachers with SimCalc resources is possible with students still achieving learning gains; description of resource use by students and teachers and the mutually constructed socio-physical resource richness of classrooms and explaining how, when and why students accessed resources; finally, it was also found out that some other classroom factors, like the overall classroom culture and the degree of interaction between students and technological resources were affected by the different physical and social properties of the resources.

Kurdziolek **(**2011) made two recommendations. The first one was the need to identify the investments to make including training of teacher training and resource funding in order to help promote positive classroom environments in terms of resource use and socio-physical resource richness. The second one was the need to find out the effects of socio-physical resource-rich classrooms and the use of the resource among teachers and students on outcomes like students' preparation for being future knowledge workers. However, while Kurdziolek's study was solely on the use of computers in teaching, the current study provided data on the use of variety of learning resources like textbooks, globes, among others in addition to computers in the teaching and learning process. The current study further provided information on the use of learning resources on performance in examinations. This link is missing from Kurdziolek's work.

Yara and Otieno (2010) conducted a study on learning resources and their influence on academic performance in mathematics in secondary schools in Bondo District, Kenya. The study sought to answer three questions related to the effects of teaching/learning resources and academic performance in mathematics, effects of teaching/learning resources and academic performance in mathematics, and finally, the teaching/learning resources that would predict academic performance in mathematics. The study design adopted was the descriptive survey. Through random sampling, a total of 242 study respondents who were students were selected from nine schools in the three divisions of Bondo District. Data was collected using one student questionnaire. The analysis of collected data was done using multiple regression analysis. The main finding of the study was that students' academic performance in mathematics was positively influenced by financial support from parents/guardians, financial support from the government, inadequacy of trained teachers, classroom/laboratories, stationeries/teaching aids, textbooks, students' attitude and personal extra time.

On the strength of the findings, Yara and Otieno's (2010) study recommended that in order to improve performance in mathematics, the government and all education stakeholders should seriously consider the following factors: a review of the curriculum, providing in-service training to already trained teachers, employing more competent teachers, motivating learners, improving government support to education, applying good teaching methods, improved students-book ratio and ensuring improved pay to teachers. Yara and Otieno's (2010) study was conducted on mathematics. The current study in turn was concerned with geography. This is a gap that the current study filled.

Njiiri (2000) conducted a survey on the availability, utilization and acquisition of resources in the teaching of English Language in primary schools in Kiambaa Division, Kiambu District, Kenya. The objectives of the study were: to establish which of the resources were available and accessible to the pupils and teachers; their selection and use; how they were acquired, whether teachers were in-serviced in the use of resources; and whether there were problems in usage. The study design was a survey. Out of 47 schools in the district, six were randomly selected for a detailed study. From these schools 12 teachers and six head teachers were involved in the study. Research instruments used to collect data included questionnaires, and an observation schedule. Data analysis was done through coding, tabulation and tallying and reported in descriptive form.

In Njiiri's (2000) study, lack of finances and materials for improvisation of resources contributed to inaccessibility of resources to the pupils. Topic of study, lesson objectives, age of the learners, teachers guides and availability of resources were some of the criteria teachers cited for selection of teaching and learning resources. The study also found that resources were bought by the school and parents and that teachers also improvised while some were donations. Some teachers attended in-service courses which they found helpful in showing them how to use the resources. Majority of teachers relied heavily on the teachers' guides and the chalkboard. Njiiri's (2000) study is very similar to the current study. Just like the current study, Njiiri's (2000) study examined the availability and utilization of learning resources. But the study did not show relationship between learning resources and academic performance in

examinations. Secondly, Njiiri's (2000) study was conducted in primary schools. Therefore, the study did not provide information on use of learning resources in secondary schools. These gaps were filled in the current study.

2.3.4 The Influence of Teacher Training on Learning Resources

According to Odhiambo (2005), teacher professional training is important because it enables some teachers to impart knowledge to learners more efficiently than teachers without such training. Odhiambo (2005) further points out that teacher quality in any school system is an important educational resources and determines school outcomes. The author adds that where learning resources are limited, the teacher is required to carry extra responsibilities of supplementing the difficulties of the school system. This teacher has the double task of providing what home background and school system do not offer (Odhiambo, 2005).

Kadzera (2006) conducted a study on use of instructional technologies in teacher training colleges in Malawi. Technologies studied in the study were chalkboards, flip charts, overhead projectors, videos, computers, and local resources from the environment. The study sought to answer five research questions which dealt with: tutors' frequency of use of instructional technologies in the teaching process; reasons tutors gave for either using or not using instructional technologies; tutors' perception of their own competence in using instructional technologies; tutors' attitudes to the use of instructional technologies; factors considered as important by college tutors that influenced their use of instructional technologies. The study sample consisted of tutors from Karonga, Lilongwe, St. Joseph's, Blantyre, and Montfort teacher training colleges.

All the 95 tutors in the five colleges were sampled to take part in the study. However, 80 tutors participated in the study, representing a participation rate of 84.2%. The survey design was adopted for the study. Data was collected using questionnaires and an inventory sheet. Data analysis was done by calculating frequencies and percentages.

The results of Kadzera's study revealed that there was infrequent use of higher order instructional technologies which were overhead projectors, videos, and computers. Reasons given were lack of teacher training, unavailability of the technologies, and lack of maintenance. The failure to use the locally available resources by some of the tutors was attributed to lack of creative thinking as well as lack of initiative to use the local environment in their teaching. A conclusion relevant to this study was that the government and teacher training colleges could collaborate to maximize training on use of instructional technologies in the teaching and learning process for prospective teachers. However, Kadzera's study was conducted in teacher training colleges and not in secondary schools. This gap was filled in this study.

Blankenship (1998) conducted a study in the Virginia State of USA on factors related to computer use by teachers in classroom instruction. The study was conducted in grades pre–school to K-12 equivalent to the Kenyan pre-school to Form Four. The objectives of the study were: to determine the extent of teachers' attitudes toward computers in the classroom; accessibility of computers by teachers and students; teacher training in computer use, support of teachers support in computer use; teachers' age; grade level the teacher taught, curriculum area the teacher taught, teachers' gender, and number of years the teacher was from retirement and how these factors could predict the use of

computers by teachers for classroom instruction. The study adopted the survey design. To identify the sample, stratified sampling technique was used. 241 teachers and 3,800 students were sampled for the study. The teachers taught using computers as a learning resource while the students were from pre-school through grade 12. Data was analysed using measures of central tendency (mean and median), standard deviations and multiple regression.

On teacher training, results of the study indicated that the total population of classroom teachers reported an average of 10.28 hours of computer-related in-service training and 2.69 computer-related college classes. Only 8% of the survey participants had not received this training. School based training to teachers appeared to bring out difference to teachers in both their self-perception and use of computers in classroom instruction. The researcher made three recommendations: a repeat of the study after an intervention of intensive training of teachers to determine if there was any increase in computer use, development of an accurate instrument to measure computer use, and finally, the development of a training model that could be duplicated in other school districts, regions, states, and the nation. However, Blankenship's (1998) study failed to examine the relationship between training of teachers on computer use and students' performance in examinations. This gap was filled in the current study.

Ugbe and Agim (2009) conducted a study that investigated the influence of teachers' competence on students' academic performance in senior secondary school chemistry in Yala Local Government Area of Cross River State, Nigeria. Indicators of teacher competence examined in this study were: teacher qualification; teaching experience;

and knowledge of the subject matter. The study aimed at examining first, the relationship between teachers' competence and students' academic performance in chemistry. Secondly, the study aimed at establishing the influence of teachers' experience on students' academic performance in chemistry. The study adopted the survey study design. A random sampling technique was used to select the study sample. Respondents were drawn from six secondary schools out of 12 secondary schools in Yala Local Government Area of Cross River State. In turn, 200 students, 20 teachers and six principals were involved in the study. Three researcher-made instruments were used to collect data. They were: School Principal Questionnaire (SPQ), Teachers Competence Questionnaire (TCQ) and Chemistry Achievement Test (CAT). Data were analyzed using the Pearson Product Moment Correlation (PPMC) and t-test. Results revealed that there is significant relationship between teachers' competence and students' academic performance in Chemistry. Chemistry students taught by qualified teachers performed significantly better than those taught by unqualified teachers.

The study results showed that a significant relationship existed between teachers' competence and academic performance by students in the chemistry subject. This was because a significant better performance in chemistry was realized from students taught by teachers who were qualified. Similarly, a significant better performance in the subject was realized from students taught by experienced teachers than those taught the subject by inexperienced teachers. Although Ugbe and Agim's (2009) study linked teachers' competence on student's performance, it did not examine the role that teacher training on learning resources plays in promoting students' performance. This gap was filled by the current study.

2.4 Summary of Literature Reviewed

In this study were conducted two types of literature review. They were theoretical review and empirical review. A summary of the reviews is presented in this section.

2.4.1 Summary of the theoretical review

Academic performance as a measure of learning has been established in the theoretical review. This review has shown that in the field of education, we cannot do away with being concerned with students' academic performance. This is because academic achievement in examinations can be seen as evidence that learning has taken place (Ward, Stoker and Murray-Ward, 1996). Indeed, academic performance among learners is considered as a criterion for deciding the effectiveness of educational programmes (Abolmaali et al., 2014). And that is why researchers evaluating an education system often take notice of academic achievement and look for factors that affect academic achievement (Abolmaali et al., 2014). However, in order for students to do well academically, there is the need to involve learners in deep cognitive engagement (Elliott et al., 1999). One way of doing this is to use proper teaching methods, including the use of learning resources.

Various factors and approaches to teaching have been shown to influence students' academic performance. They revolve around interactions. Learning is the interactions between what students know, the new information they encounter, and the activities they engage in as they learn (Center for innovation in teaching and learning, 2015). Interaction plays a critical role in the learning process (Zimmerman, 2012). To enhance learning, the concepts and objectives of the course need to be presented clearly and in a

lively manner to enable learners to spend more time engaged with the content (Ali and Ahmad, 2011; Alshare et al., 2011). Indeed, there is a significant relationship between the amount of time students spend with the content and weekly quiz grades (Zimmerman, 2012). Factors influencing performance have been identified as: mode of delivering course materials, time allocated particular tasks, and relevant, up-to-date, and easy to understand information (Abrami, et al., 2010, Lam and Bordia, 2008) and Alshare et al., 2011). The content that students interact with is contained in learning resources.

Students also learn by interacting with their teachers. Improving students' relationships with teachers is important and has positive and long-lasting implications for students' academic and social development (Rimm-Kaufman and Sandilos, 2016). Therefore, good relationships between teachers and students are beneficial to students for their motivation and academic achievement (Cornelius-White, 2007 and Thijs and Koomen, 2008). Consequently, good relationship between teachers and students is one way of enhancing the use of learning resources in the teaching/learning process (Luz, 2015).

Finally, there are three basic ways that students interact among themselves. These involve competing among themselves, as they work individually toward a goal without paying attention to fellow students, or they can work cooperatively with a vested interest in other students' learning as well as their own (Roger and Johnson, 1994). These interactions also promote learning.

The learning environment includes how individuals in the teaching/learning process interact with and treat one as well as the ways in which teachers may organize a

learning session to facilitate learning (The Glossary of Educational Reform, 2014). A favourable school environment provides the necessary stimulus for learning experiences (Arul, 2012). Learning environments are broad and include: the characteristics of the concerned learners, the goals that exist for teaching and learning, the activities that best supports learning, and finally, the assessment strategies that will best measure and drive learning (Bates, 2015).

In the teaching and learning process, there are challenges inherent in the use of learning resources. An important factor is inadequacy of resources (Afolabi et al., 2006). For example, the availability of instructional materials and ability of mathematics teachers to use them are vital determinants in achievement in mathematics (Afolabi, 2008). On computers and technology, factors that pose a challenge to computer use among others are associated with firstly, the school environment or the context in which technology will be implemented, secondly, factors associated with the students and thirdly, the teacher who serves as the instructor (Zhao et al.; 2002, Groff and Mouza, 2008).

2.4.2 Summary of the empirical review

The review of empirical literature carried out in turn has endeavoured to highlight findings of studies conducted on learning resource and academic performance. The review has revealed the significance of using learning resources in the teaching and learning process. The variety, availability, use, and training of teachers in relation to learning resources has been examined. In clear terms, the review has revealed that there is need for teachers to adopt learning resources in teaching. However, important gaps

have been revealed between some research findings and the current study. The gaps were summarized in this section.

On variety of learning resources, studies examined were by Ozturk (2003), Ruthiri (2009) and Ogechi (1992). Ozturk (2003) examined the role that learning resources play in curriculum implementation in biology curriculum in Turkey. Although the study is very relevant to the current study, Ozturk (2003) did not assess the impact of curriculum implementation on academic performance. Ruthiri's (2009) study on availability, acquisition and utilization of learning resources of English language in Buuri Division of Imenti North District did not investigate varieties of learning resources used in teaching and learning. Secondly, the researcher did not identify the effect that learning resources have on performance in KCSE. Ogechi's 1992 study was on the availability, utilization and management of teaching and learning resources in geography in secondary schools in Nyamira District. However, the researcher failed to correlate the relationship between learning resources and performance in examinations.

Concerning the availability of learning resources, Onwu's (1999) study on the availability and use of learning materials in Grade 12 science classes in South Africa reviewed the issue of availability and use of teaching resources in relation to student achievement. The study nevertheless failed to look at issues relating to variety of learning resources used in teaching and learning as well as training of teachers on learning resources. The study by Guloba et al. (2010) on the availability of learning resources and their influence on pupils' academic performance in PLE in Uganda related learning resources to academic performance. However, the study did not

examine the role played by the use of varied learning resources in teaching and learning, as well as the role of training of teachers on learning resources on academic performance.

Andambi and Kariuki's (2013) study on learning resources used for teaching SEE in secondary schools in Bungoma District examined the variety of learning resources used, their adequacy (availability) and their effectiveness. However, the study failed to link the utilization of learning resources with performance in KCSE. Similarly, Reche's et al. (2012) study on the adequacy of learning resources in primary schools in Mwimbi Division, Maara District did not link academic performance to learning resources.

Of the reviewed studies on the use of learning resources in teaching and learning, Kurdziolek's **(**2011**)** study on classroom resources and their impact on learning in the state of Texas, USA only examined the use of computers in teaching. The study thus did not look at the influence of other resources like textbooks, maps and globes. The study further failed to examine the influence of learning resources on performance in examinations. Yara and Otieno's (2010) study on teaching/learning resources and academic performance in mathematics in secondary schools in Bondo District of Kenya was conducted on mathematics and not on geography.

Njiiri's (2000) study was on the availability, utilization and acquisition of resources in the teaching of English Language in primary schools in Kiambaa Division, Kiambu District. But the study did not show relationship between learning resources and academic performance in examinations. Secondly, Njiiri's study was conducted in

primary schools. Therefore, the study did not provide information on learning resources in secondary schools.

The competence of teachers who conduct learning at school is of great importance and depends on teacher training. Kadzera's (2006) study was conducted in teacher training colleges and not in secondary schools. Blankenship's (1998) study in the state of Virginia in USA on factors related to computer use by teachers in classroom instruction also failed to examine the relationship between training of teachers on computer use and students' performance in examinations. Similarly, Ugbe and Agim's (2009) study on the influence of teachers' competence linked teachers' competence with student's performance. However, the study did not examine the role that teacher training on learning resources plays in promoting students' performance in examinations.

The identified gaps have revealed the need for further studies on how the use of learning resources affects academic performance among learners. The current study focused on the relationship between learning resources and students' performance in geography in the KCSE in Makueni County. This helped in filling the gaps identified in earlier empirical researches.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presented the research methodology adopted for the study. The subtopics covered were: research design, target population, sample size and sampling technique, research instruments, a brief description of the research questionnaire, instrument validity, reliability of the questionnaire, data collection procedures, data analysis techniques and logistical and ethical consideration.

3.2 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.

3.3 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.

3.4 Target Population

In this study, the target population was from public secondary schools in Makueni County and included principals, teachers of geography and Form Three secondary school students studying the subject. Records available from the Makueni County Director of Education's (CDE) office showed that in 2013 there were 324 public secondary schools in Makueni County. Of these schools, 54 were girls' schools, 75 were boys' while 195 were mixed schools.

The public schools were headed by 324 principals. At the same time, there were 385 teachers teaching geography and 4,372 Form Three students taking geography. The target population therefore added up to 5,081.

The researcher felt that principals, teachers and students would provide adequate data on learning resources in the county. This is because principals are in charge of acquisition of learning resources and their overall management. Classroom teachers make, prepare, care and use the learning resources. Finally, students may be the primary beneficiaries or losers when learning resources are used or not used in the teaching/learning process.

3.5 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
Total	**5,081**	**508**	**10**

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, Nzaui 47, Kibwezi 59, Makindu 18 and Kathonzweni 34. Based on the number of schools in the sub-counties, a formula was devised to choose representatives from each sub-county. The formula was as follows:

$$\frac{\text{No. of schools in a sub-county}}{\text{No. of schools in Makueni County}} \quad \text{X Sample size in a sex group}$$

3.6 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.

3.7 Pilot Study

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 were not involved in the main study.

3.7.1 Validity of the Research Instruments

The validity of the questionnaires was arrived at through expert judgement. 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.

3.7.2 Reliability of the Research Instruments

Orodho (2009) says that reliability of measurement concerns the degree to which a particular measuring procedure gives equivalent results over a number of repeated trials. The author adds that there will always be some small inconsistency in measuring a concept from one time to the next.

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.

To test for reliability, the three sets of questionnaires were administered 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 as given below:

$$r = \frac{n(\Sigma xy)-(\Sigma x)(\Sigma y)}{\sqrt{[n(\Sigma x^2)-(\Sigma x)^2]\,[n(\Sigma y^2)-(\Sigma y)^2]}}$$

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.

3.8 Data Collection Procedures

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

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.

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.

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.

3.9 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 (α=0.05). Analysed data were presented using figures and tables.

3.10 Logistical and Ethical Considerations

Data collection began with the researcher seeking and obtaining a research permit from the National Commission for Science, Technology and Innovation (NACOSTI) (see Appendix 6). NACOSTI also granted authority to conduct research (see Appendix 7). Permission was also sought from the CDE, Makueni County. After permission was granted, the researcher piloted and revised the questionnaires used to collect part of the data in this study. The researcher next visited the sampled schools to make appointment with principals for data collection in their schools.

After securing permission and fixing dates to collect data from schools, the researcher then visited the sampled schools on the appointed days to collect data. At the time of collecting data, the researcher introduced himself and explained to the respondents the purpose and importance of the study. To protect respondents with sensitive information, respondents were not required to provide their identity in the questionnaires. This was to ensure their anonymity as only the collective data from the respondents was analyzed without revealing the names and schools of those who provided the responses. Data collection was done solely by the researcher.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

As stated earlier in Chapter One (Section 1.4) the primarily concern of this study was to examine the relationship that exists between learning resources and students' academic performance in geography in KCSE in Makueni County.

The study therefore addressed itself to the following four objectives:

i. 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 subject in the county.
ii. To find out the availability of learning resources for the teaching and learning of geography in public schools in Makueni County and its effect on KCSE performance in the subject in the county.
iii. To establish the use of learning resources in the teaching and learning of geography in public schools in Makueni County and its effect on KCSE performance in the subject in the county.
iv. To find out the relationship between teacher training on learning resources and its effect on KCSE performance in geography in public schools in Makueni County.

4.2 General and Demographic Information

Provided in this section is information on questionnaires return rate, background

information of the participating schools, and KCSE results of the participating schools.

4.2.1 Questionnaire Return Rate

To satisfy the objectives of the study, data was collected from respondents through questionnaires. The questionnaires were administered as designed in the sampling design (section 3.5). As per the sampling design, 32 principals, 39 teachers of geography and 437 students of geography were sampled to take part in the study. However, 29 principals (90.6%) and 31 teachers (79.5%) returned their questionnaires. The rest of the principals and teachers did not wish to take part in the study. Due to factors like absenteeism and participation in games activities, all the sampled students were not available for the data collection exercise. Therefore, data was collected from 363 students (88.9%). The researcher felt that these return rates were adequate for data analysis. According to Treece and Treece (1977) a questionnaire that produces 75% response rate is sufficient for analysis. The entire respondent size for this study was therefore 423. Results of the questionnaires return rate are summarized in Table 4.1.

Table 4. 1. Questionnaires Return Rate

Respondents	No. of respondents sampled	No. of questionnaires distributed	No. of questionnaires filled	Percentage
Principals	32	32	29	90.6
Teachers	39	39	31	79.5
Students	437	437	363	88.9
Total	**508**	**508**	**423**	**83.1**

4.2.2 Background Information of the Participating Schools

Schools participating in this study came from all the nine sub-counties in Makueni County. From Makueni, five schools were represented. Three sub-counties each had four schools (Nzaui, Mukaa and Kibwezi). Three sub-counties each had three schools (Mbooni East, Makindu and Kilungu). Finally, two sub-counties were each represented by two schools (Kathonzweni and Mboni West). The distribution of schools that participated in the study is presented in Table 4.2.

Table. 4.2. Distribution of participating schools in Makueni County

Sub-county	Frequency (N)	Percentage
Makueni	5	16.7
Nzaui	4	13.3
Kibwezi	4	13.3
Mukaa	4	13.3
Mbooni East	3	10.0
Kilungu	3	10.0
Makindu	3	10.0
Mboni West	2	6.7
Kathonzweni	2	6.7
Total	**30**	**100.0**

4.2.3 KCSE Geography Results of the Participating Schools

The students who provided information in this study were in Form Three in 2013. Thus they sat for KCSE in 2014. Therefore data on KCSE performance in geography among the participating schools for 2014 was collected from the schools for analysis in this

study. Geography mean scores of the participating schools for year 2014 were presented in Table 4.3.

Table 4.3. Geography Mean Scores for Year 2014

School No.	Sub-County	2014 KCSE Performance
1.	Mukaa	4.67
2.	Nzaui	4.75
3.	Kibwezi	9.04
4.	Makueni	6.90
5.	Kathozweni	4.18
6.	Makueni	4.21
7.	Makueni	6.25
8.	Mbooni west	2.82
9.	Kilungu	9.43
10.	Kibwezi	5.32
11.	Makueni	3.96
12.	Mbooni East	7.50
13.	Makueni	8.41
14.	Makueni	8.47
15.	Mbooni west	7.01
16.	Kibwezi	7.11
17.	Kibwezi	5.56
18.	Kilungu	4.03
19.	Mbooni East	6.01
20.	Makueni	8.53
21.	Kilungu	5.83
22.	Mbooni East	3.83
23.	Nzaui	5.74
24.	Mbooni East	6.83
25.	Kibwezi	7.86
26.	Mbooni East	5.01
27.	Kibwezi	5.34
28.	Mukaa	3.08
29.	Nzaui	4.78
30.	Kilungu	4.74

4.3. Testing the research hypotheses

The four null hypotheses of the study were tested in this section. These hypotheses were

formulated in Section 1.7 as follows:

Ho1. 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.

Ho2. There is no relationship between availability of learning resources for the teaching and learning of geography in public schools in Makueni County and KCSE performance in the subject in the county.

Ho3. There is no relationship between the use of learning resources in the teaching and learning of geography in public schools in Makueni County and KCSE performance in the subject in the county.

Ho4. There is no relationship between teacher training on learning resources and KCSE performance in geography in public schools in Makueni County.

4.3.1 Variety of Learning Resources and Students' Academic Performance in Geography

The first 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%). Information on type of resources used in the teaching and learning of geography was presented in Figure 4.1.

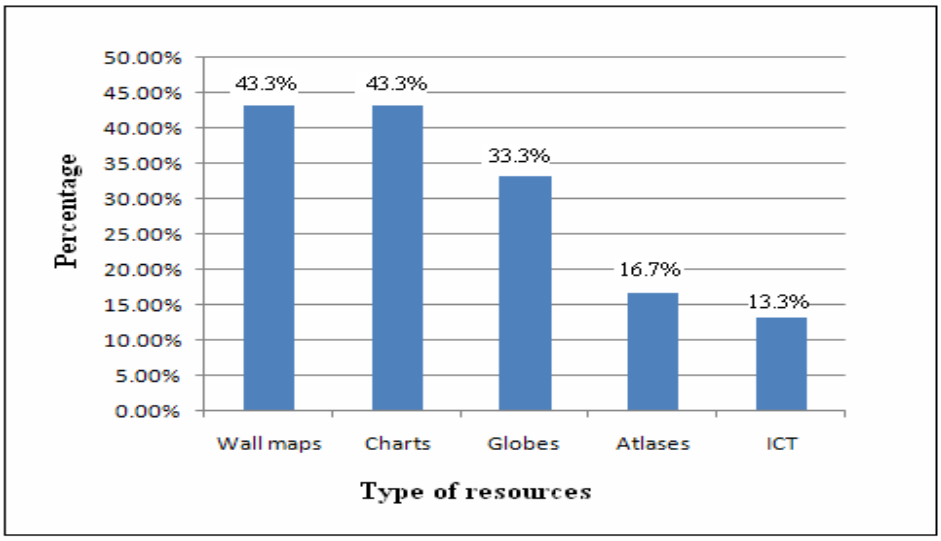

Fig. 4.1. Types of resources used in the participating schools

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 preparation of teachers' notes was presented in Figure 4.2.

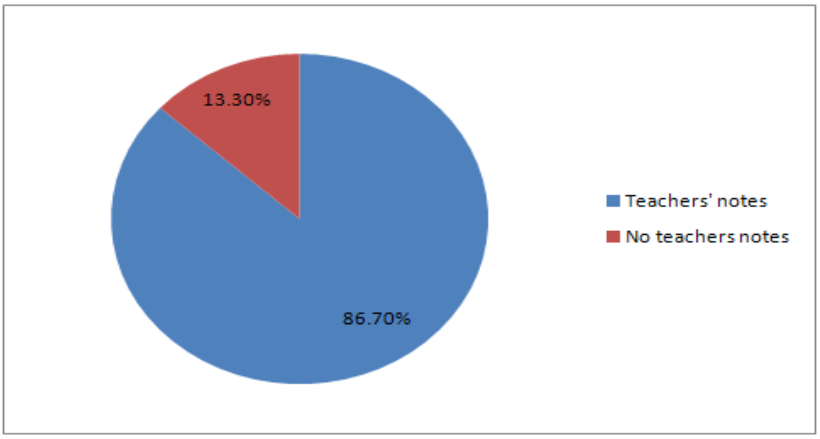

Fig. 4.2. Preparation of teaching notes

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. Information on collection of samples was presented in Figure 4.3.

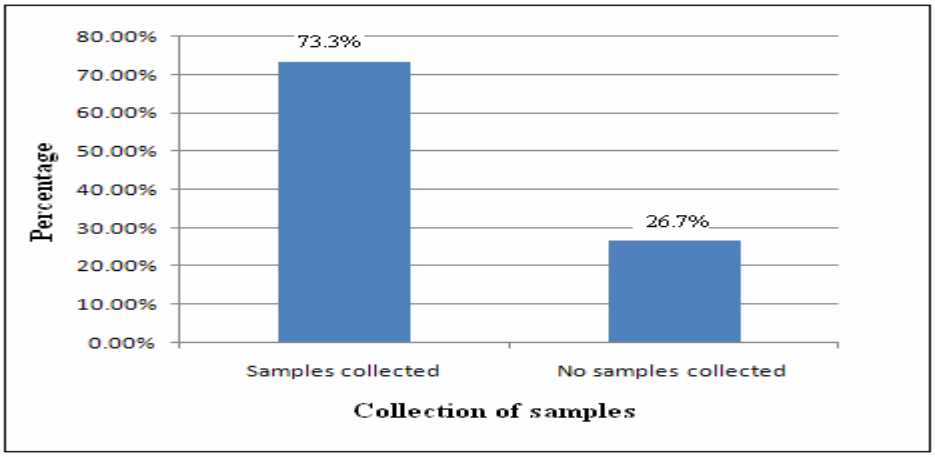

Fig. 4.3. Collection of samples among participating schools

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. Information on collection of samples was presented in Table 4.4.

Table 4.4. Type of samples collected among participating schools

Type of sample	Frequency	Percentage
Plants	3	10.0
Soils	5	16.7
Rocks	17	56.7

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. Information on source of learning resources was presented in figure 4.4.

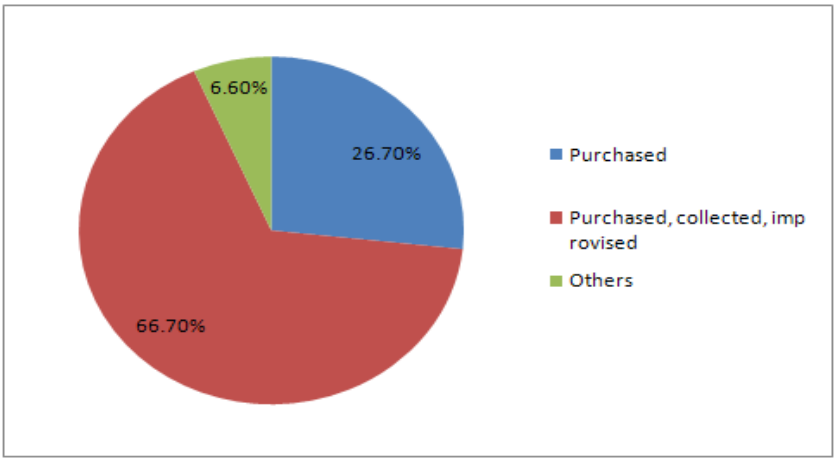

Fig. 4.4. Sources of resources used in teaching geography

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 4.5.

Table 4.5. 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**

A careful examination of the information presented in Table 4.5 reveals that there is some relationship between access to variety of resources and KCSE performance. This is because a significant number of schools with access to the resources scored 6.01 and above in the subject. This prompted the researcher to conclude that there is a relationship between access to a variety of resources and students' academic performance in geography in Makueni County.

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 4.6.

Table 4.6. Variety of resources and KCSE geography results

variety of resources used in teaching * KCSE geography results Crosstabulation

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

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. Information on teachers' perceptions on variety of resources in the participating schools against the schools' KCSE performance in geography was presented in Table 4.7.

Table 4.7. Variety of resources and 2014 KCSE geography results

Sc. No.	Variety of resources	2014 geography results	Sc. No.	Variety of resources	2014 KCSE results
1.	2 (No variety)	2 (4.01 – 6.00)	16.	2 (No variety)	3 (6.01 – 8.00)
2.	2 (No variety)	2 (4.01 – 6.00)	17.	1 (High variety)	2 (4.01 – 6.00)
3.	1 (High variety)	4 (8.01 and above)	18.	1 (High variety)	2 (4.01 – 6.00)
4.	2 (No variety)	3 (6.01 – 8.00)	19.	2 (No variety)	3 (6.01 – 8.00)
5.	2 (No variety)	2 (4.01 – 6.00)	20.	2 (No variety)	4 (8.01 and above)
6.	1 (High variety)	2 (4.01 – 6.00)	21.	1 (High variety)	2 (4.01 – 6.00)
7.	2 (No variety)	3 (6.01 – 8.00)	22.	1 (High variety)	1 (4.00 and below)
8.	1 (High variety)	1 (4.00 and below)	23.	2 (No variety)	2 (4.01 – 6.00)
9.	2 (No variety)	4 (8.01 and above)	24.	2 (No variety)	3 (6.01 – 8.00)
10.	2 (No variety)	2 (4.01 – 6.00)	25.	1 (High variety)	3 (6.01 – 8.00)
11.	1 (High variety)	1 (4.00 and below)	26.	2 (No variety)	3 (6.01 – 8.00)
12.	2 (No variety)	3 (6.01 – 8.00)	27.	1 (High variety)	2 (4.01 – 6.00)
13.	1 (High variety)	4 (8.01 and above)	28.	1 (High variety)	1 (4.00 and below)
14.	2 (No variety)	4 (8.01 and above)	29.	2 (No variety)	2 (4.01 – 6.00)
15.	2 (No variety)	3 (6.01 – 8.00)	30.	1 (High variety)	2 (4.01 – 6.00)

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 4.8.

Table 4.8. 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. This was done by comparing the variety of resources in the participating schools against the schools' KCSE performance in geography in 2014. First, an F-test was conducted. The result of the test provided a figure of 5.373. This figure showed that the independent variable is a reasonable predictor of the dependent variable. Results of the F-test were presented in Table 4.9.

Table 4.9. F-test on variety of resources and KCSE results in geography

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.106	1	4.106	5.374	.028[b]
	Residual	21.394	28	.764		
	Total	25.500	29			

a. Dependent Variable: KCSE geography results

b. Predictors: (Constant), variety of resources used in teaching

To establish that variety of resources promotes good performance in geography, a p-value was calculated. A p-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 4.10.

Table 4.10. p-value on variety of resources and KCSE results in geography

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.330	.529		2.514	.018	.246	2.414
	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 0.005. Therefore, the null hypothesis that: "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 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.

4.3.2 Availability of Learning Resources and Students' Academic Performance in Geography

The second task in this study examined the availability of learning resources for the teaching and learning of geography in public schools in Makueni County. This was in connection with the availability of learning resources and its effect on KCSE performance in geography in the county.

The study has found out that 22 schools (73.3%) relied only on the textbook for the teaching of geography. In turn, only eight schools (26.7%) relied on other resources in addition to textbooks. Information on the availability of resources for the teaching and learning of geography was presented in Figure 4.5.

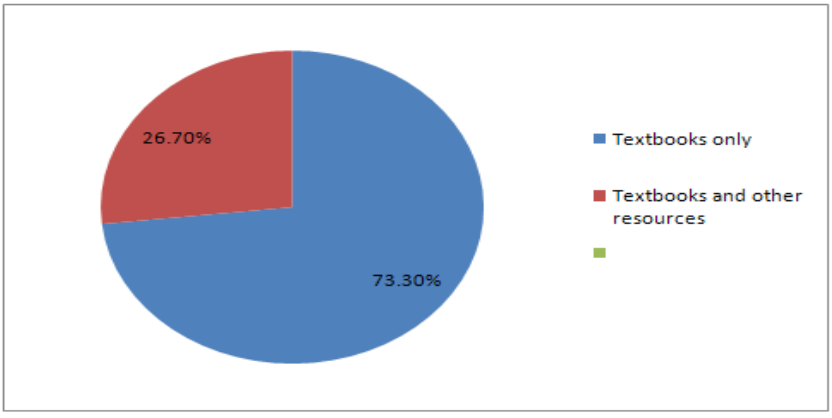

Fig. 4.5. Availability of learning resources for the teaching of geography

The availability of resources for the teaching of geography was compared with KCSE performance in geography in 2014. The result of the comparison was presented in Table 4.11.

Table 4.11. Availability of resources and KCSE results in geography

KCSE Geography results 2014	<4.00	4.01 – 6.00	6.01 – 8.00	8.01>	**Total** Textbook
only	9	6	5	2	**22**
Textbook and others	1	2	3	2	**8**
Total	10	9	7	4	30

Schools that relied on the textbook only did not perform well. This is because only eight out of 22 schools (32%) where the textbook was the only available resource had a mean score of 6.01 and above. In turn, in the eight schools where other learning resources were available in addition to the textbook, five of them (63%) had a mean score of 6.01 and above. This led to a conclusion that the availability of resources promotes academic performance in geography in Makueni County.

To show the seriousness given to the teaching of geography, the study sought information on the presence of a specialized geography room. Among the participating schools, this room was available only in one school (3.3%). This room was missing in the other 29 schools (96.7%). The school that had a geography room used it for demonstration and storage of resources used for teaching and learning geography. Information on the availability of a geography room in Makueni County was presented in figure 4.6.

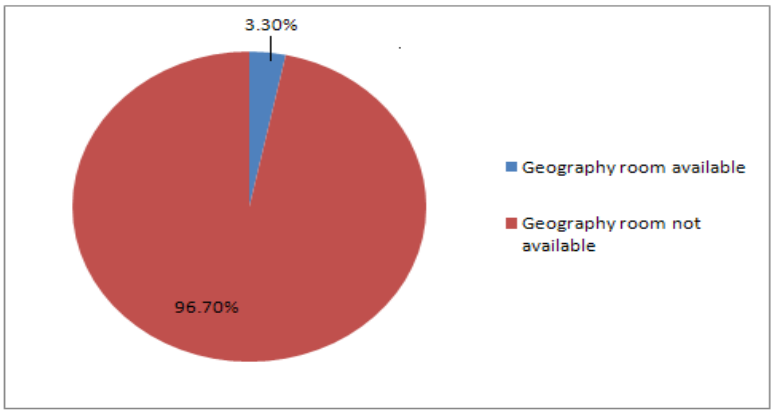

Fig. 4.6. Availability of geography rooms

The school with a geography room had a geography mean score of 9.43. This shows that there is a possibility of a relationship between having a geography room and good KCSE performance in geography in Makueni County.

Information on the availability of wall maps and charts was also collected in this study. 20 out of 30 schools were identified as having used charts (66.7%) while 24 out of 30 schools (80.0%) had used wall maps. Some of the participating schools used both types of resources with some schools using only one type. Information on the use of wall maps and charts was presented in Figure 4.7.

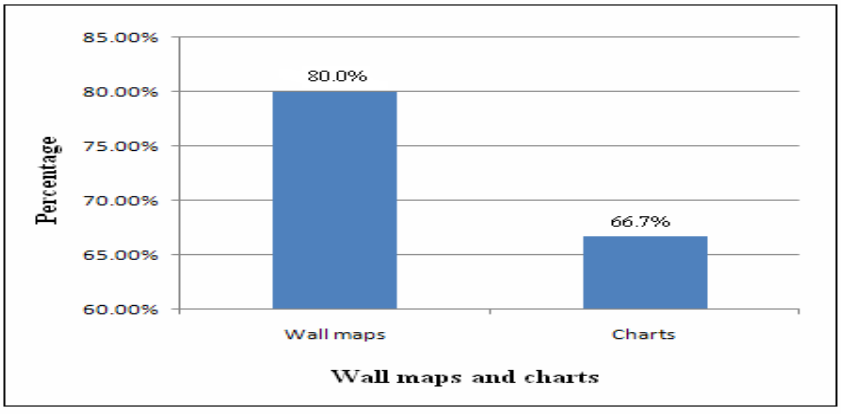

Fig. 4.7. The use of wall maps and charts in teaching and learning

ICT has become an important tool in today's life. In this connection therefore, the study sought to find out the extent of availability of ICT resources in secondary schools in Makueni County in connection to the geography subject area. In the participating schools, 11 schools (36.7%) had ICT resources. However, in 19 schools (63.3%) there were no ICT resources for integration in the teaching/learning process in geography. Information on the availability of ICT resources was presented in Figure 4.8.

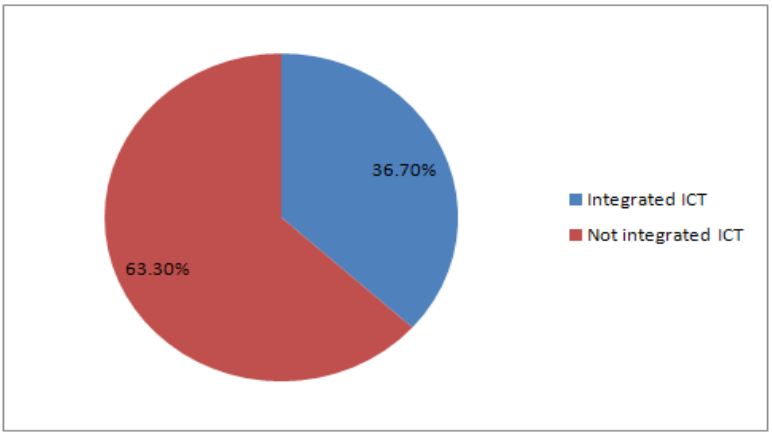

Fig. 4.8. Availability of ICT resources in the teaching and learning of geography

The possible relationship between integration of ICT and students' performance in geography was also related. The results of this comparison was presented in Table 4.12.

Table 4.12. Integration of ICT in teaching and KCSE results

KCSE Geography results 2014	<4.00	4.01 – 6.00	6.01 – 8.00	8.01>	**Total**
ICT integrated	1	5	3	2	11
ICT not integrated	3	7	6	3	19
Total	4	12	9	5	30

The results showed that of the 11 schools that integrated ICT in the teaching and learning of geography, five of them (45%) scored mean scores of 6.01 and above. However, nine out of 19 schools (47%) which had not integrated ICT in teaching and learning scored mean scores of 6.01 and above. These findings point to a possible relationship between ICT integration and KCSE performance in geography in public schools in Makueni County.

The study also sought to identify reasons as to why a majority of schools did not use ICT in teaching and learning of geography. When asked reasons for not using ICT in teaching and learning, teachers in the 19 schools which had not integrated ICT gave various reasons. Nine teachers (47.4%) said that the ICT resources were not available while four teachers (21.1%) said that failure to posses ICT skills had prevented them from integrating ICT in teaching and learning. Three teachers (15.8%) said that they did not see the need to use ICT in teaching and learning the subject. Finally, lack of electricity was cited by three teachers (15.8%) for failure to use ICT in teaching geography. Information on reasons for not integrating ICT in teaching and learning was presented in Figure 4.9.

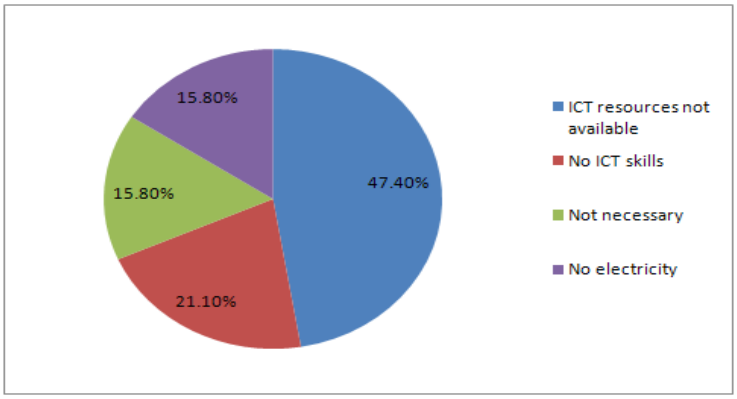

Fig. 4.9. Reasons for not integrating ICT in teaching and learning

Of interest is information gathered on cell phone ownership. All teachers in the study admitted to owning this devise. And despite owning them, in 19 out of 30 schools (63.3%) teachers had not integrated ICT in teaching geography. Yet, cell phones can be used to access the internet, which in turn can be an important tool in teaching and learning.

Readiness to integrate technology in teaching and learning is important. Because the use of technology like ICT requires the use of electricity, the presence of power sockets in classes is an important pointer to this readiness. But in the thirty schools participating in this study, only three schools (10.0%) had installed power sockets in their classrooms. The other 27 schools (90.0%) did not have power sockets in their classrooms. Presented in Figure 4.10 was information on schools with power sockets in classrooms.

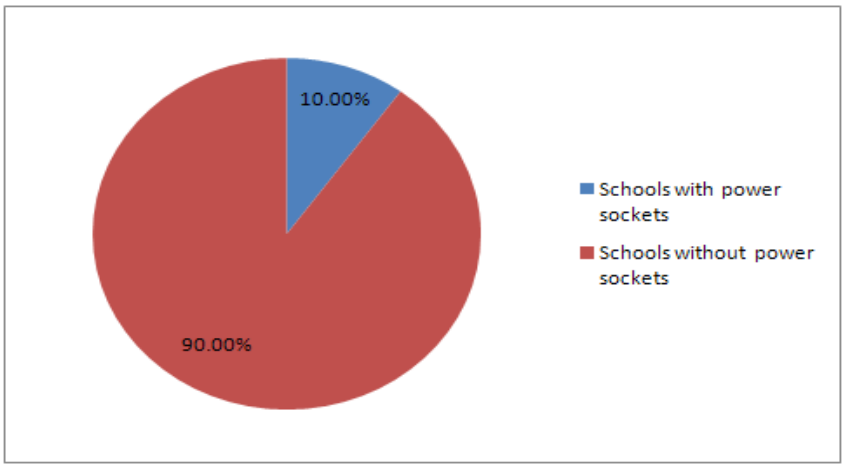

Fig. 4.10. Schools with power sockets in classrooms

To augment resources provided by schools, teachers can innovate. This can be done by preparing lessons on manila papers among other forms of innovation. Even the use of

the cell phone is an innovation in teaching and learning. In 24 out of the 30 (80.0%) schools participating in this study, teachers had innovated in teaching and learning while in six schools (20.0%) teachers had not innovated at all. Figure 4.11 presented information on teacher innovation in the teaching and learning among participating schools.

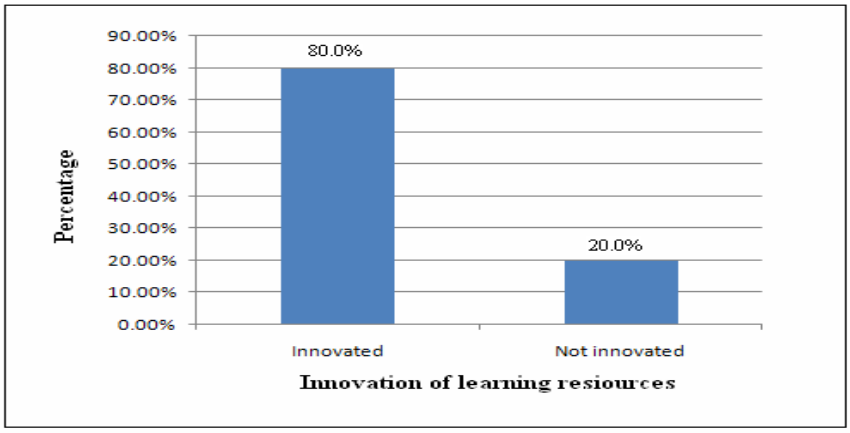

Fig. 4.11. Innovation in the teaching and learning of geography

Information on the school as a source of learning resources was of interest in this study. When principals were asked what factor determines their prioritization of learning resources, all the 29 principals cited subject as the reason. The researcher dug deeper to find out three subjects prioritized in provision of resources by principals. All principals said that they prioritized the sciences. Specifically, the principals provided information on the subjects they gave first priority to. Twelve principals (41.4%) listed biology; eight teachers (27.6%) listed chemistry. Principals who listed physics were seven (24.1%) while those who listed mathematics were two (6.9%). Information on prioritization by principals when acquiring learning resources was presented in Figure 4.12.

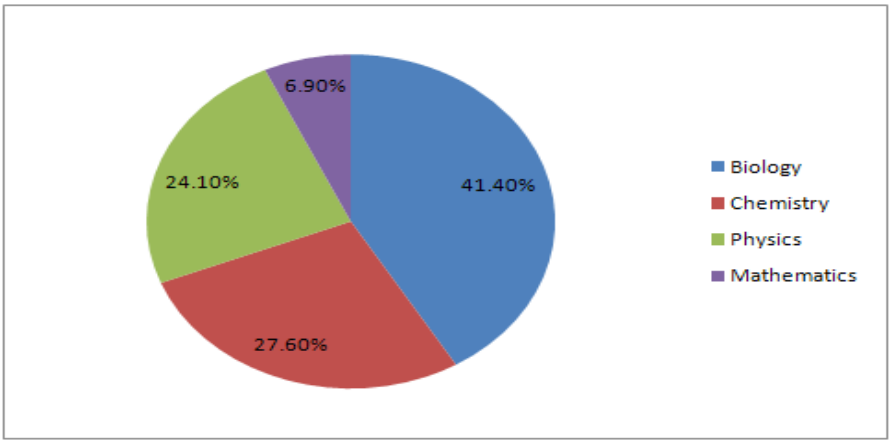

Fig. 4.12. Prioritization in acquisition of resources

Next, to establish which schools perform better in KCSE in terms of availability of resources, data on availability of resources was cross-tabulated against KCSE performance in geography in public schools in Makueni County in 2014. The result of the cross-tabulation was presented in Table 4.13.

Table 4.13. Availability of learning resources and KCSE geography results

availability of resources * KCSE geography results Crosstabulation

Count

		KCSE geography results				Total
		4.00 and below	4.01 - 6.00	6.01 - 8.00	8.01 and above	
availability of resources	highly ava.	4	12	8	1	25
	not highly ava.	0	0	1	4	5
Total		4	12	9	5	30

Of the 25 schools that had high availability of resources, nine (36%) performed well by having scores of 6.01 and above. The others in this category, that is 16 schools out of 25 (64%) performed poorly by attaining mean scores of 6.01 and below. In turn, in all five

schools (100%) where learning resources were not highly available, performance was good because their candidates had mean scores of 6.01 and above. Results of the cross-tabulation led to the conclusion that there was not a big difference between the high performing schools and the low performing schools in terms of availability of learning resources in public schools in Makueni County.

A correlation was calculated to test for the relationship between availability of learning resources and KCSE performance in geography in Makueni County. This was done by comparing data on availability of resources in the participating schools against the schools' KCSE geography performance in 2014. Teachers' views on the availability of resources in their schools were coded as: "highly available" was given Code 1 and "not highly available" was given Code 2. The KCSE codes designed for Ho1 were used in this analysis. Information on the availability of resources in participating schools against their KCSE performance in 2014 was presented in Table 4.14.

Table 4.14. Availability of resources in schools against the schools' KCSE performance in 2014

School Serial No.	Availability of resources	2014 KCSE Performance
1.	1 (Highly available)	2 (4.01 – 6.00)
2.	1 (Highly available)	2 (4.01 – 6.00)
3.	1 (Highly available)	4 (8.01 and above)
4.	2 (Not highly available)	3 (6.01 – 8.00)
5.	1 (Highly available)	2 (4.01 – 6.00)
6.	1 (Highly available)	2 (4.01 – 6.00)
7.	1 (Highly available)	3 (6.01 – 8.00)
8.	1 (Highly available)	1 (4.00 and below)
9.	2 (Not highly available)	4 (8.01 and above)
10.	1 (Highly available)	2 (4.01 – 6.00)
11.	1 (Highly available)	1 (4.00 and below)
12.	1 (Highly available)	3 (6.01 – 8.00)
13.	2 (Not highly available)	4 (8.01 and above)
14.	2 (Not highly available)	4 (8.01 and above)
15.	1 (Highly available)	3 (6.01 – 8.00)
16.	1 (Highly available)	3 (6.01 – 8.00)
17.	1 (Highly available)	2 (4.01 – 6.00)
18.	1 (Highly available)	2 (4.01 – 6.00)
19.	1 (Highly available)	3 (6.01 – 8.00)
20.	2 (Not highly available)	4 (8.01 and above)
21.	1 (Highly available)	2 (4.01 – 6.00)
22.	1 (Highly available)	1 (4.00 and below)
23.	1 (Highly available)	2 (4.01 – 6.00)
24.	1 (Highly available)	3 (6.01 – 8.00)
25.	1 (Highly available)	3 (6.01 – 8.00)
26.	1 (Highly available)	3 (6.01 – 8.00)
27.	1 (Highly available)	2 (4.01 – 6.00)
28.	1 (Highly available)	1 (4.00 and below)
29.	1 (Highly available)	2 (4.01 – 6.00)
30.	1 (Highly available)	2 (4.01 – 6.00)

Results of the correlation yielded a Pearson's Correlation coefficient of 0.631. This means that there is a strong correlation between availability of learning resources and

KCSE performance in geography in public schools in Makueni County in 2014. The result of this calculation is presented in Table 4.15.

Table 4.15. Correlation between availability of resources and KCSE performance in geography

Correlations

		KCSE geography results 2014
Availability of resources	Pearson Correlation	.631**
	Sig. (2-tailed)	.000
	N	30

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

Finally, to test for the ability of the independent variable (availability of resources) to predict the dependent variable (KCSE performance in geography), a regression analysis was performed. This was done by comparing the availability of resources in the participating schools against the schools' KCSE performance in geography in 2014. First, the result of the F-test provided a figure of 18.484. This figure showed that the independent variable is a good predictor of the dependent variable. Results of the F-test were presented in Table 4.16.

Table 4.16. F-test on availability of resources and KCSE results in geography

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.140	1	10.140	18.484	.000[b]
	Residual	15.360	28	.549		
	Total	25.500	29			

a. Dependent Variable: KCSE geography results

b. Predictors: (Constant), availability of resources

To adopt or reject the null hypothesis, a p-value for the relationship between availability of resources for the teaching of geography and KCSE performance in the subject was calculated. A p-value of 0.000 was realized on the relationship between availability of resources in the participating schools against the schools' KCSE performance in 2014. The result of the calculation was presented in Table 4.17.

Table 4.17. p-value between availability of resources and KCSE results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.680	.444		1.530	.137	-.230	1.590
	Availability of resources	1.560	.363	.631	4.299	.000	.817	2.303

a. Dependent Variable: KCSE geography results

The results of the statistical analysis showed that the significance level of 0.000 is below the cut-off value of 0.005. Therefore, the null hypothesis that: "There is no relationship between availability of learning resources for the teaching and learning of geography in public schools in Makueni County and KCSE performance in the subject in the county" was rejected. In its stead, the alternative hypothesis: "There is a relationship between availability of learning resources for the teaching and learning of geography in public schools in Makueni County and KCSE performance in the subject in the county" was adopted. Thus availability of learning for the teaching of geography is a good predictor of academic performance in the subject in Makueni County. This means that availability of resources promotes academic performance of students in geography in Makueni County.

4.3.3 Use of Learning Resources and Students' Academic Performance in Geography

The third task in this study dealt with establishing the use of learning resources in the teaching and learning of geography and its effect on KCSE performance in geography in public schools in Makueni County. Information was sought on what influenced decision to use learning resources in teaching and learning. Among the participating teachers, 14 of them (46.7%) said that they depended on the availability of the learning resources. Eight teachers (26.7%) taught in schools where there were no resources for the teaching/learning of geography. Six teachers (20.0%) said that the decision on what resources to use was influenced by objectives of the lesson. Finally, two teachers (6.7%) said that they depended on the topic to teach. Information on what factors influence choice of resources was presented in Figure 4.13.

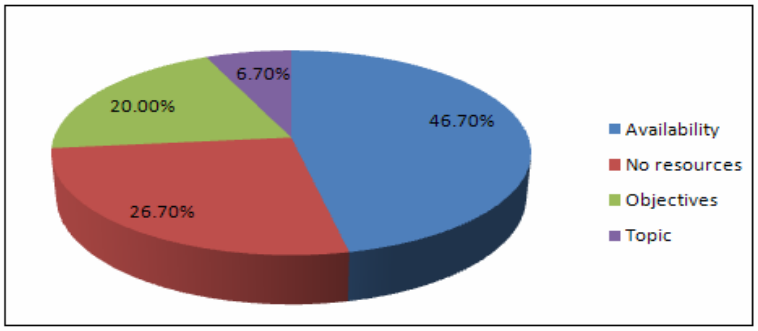

Fig. 4.13. Factors influencing choice of learning resources

All responding teachers including those from schools that did not have resources were unanimous that learning resources could be used to improve performance in geography. Information was sought on how learning resources can be used to achieve this. 14 teachers (46.7%) said that learning resources can be used to reinforce learning. Eight teachers (26.7%) said that learning resources can be used to explain difficult concepts.

Six teachers (20.0%) said that learning resources can be used for other beneficial purposes like demonstrations while two teachers (6.7%) said that learning resources can be used for revision purposes. This information was presented in Figure 4.14.

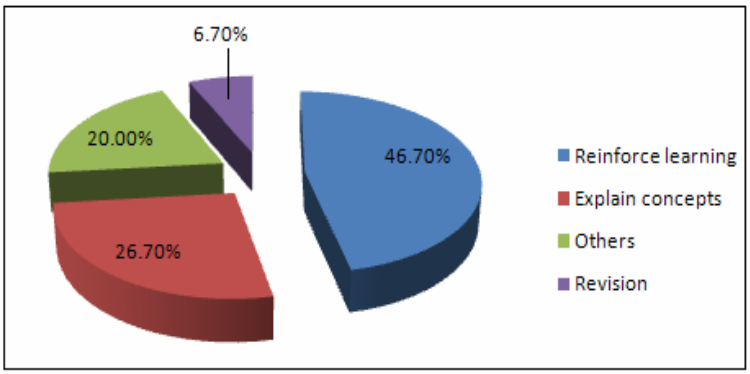

Fig. 4.14. Role of learning resources in enhancing performance in examination

Responding teachers agreed that the use of learning resources makes learners more active during the learning process. When asked how the learners were active in the learning process, 10 teachers (33.3%) said that students spent time mostly discussing on the learning resources. In eight schools (26.7%), the resources were missing. Six teachers (20.0%) said that students spent time handling and operating the resources. Six teachers (20.0%) said that students benefited by asking and answering questions. Information on learner activities when resources were used in the teaching/learning process was presented in Figure 4.15.

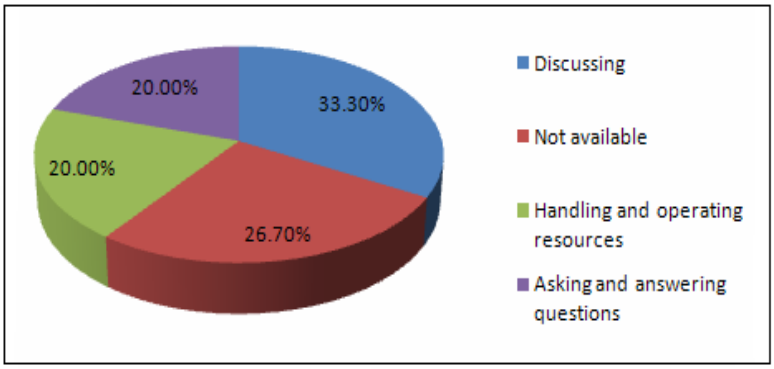

Fig. 4.15. Learners' activities when learning resources are used

Information was sought on how learning resources could be used to improve learner performance in geography. Teachers in 12 schools (40.0%) were of the opinion that more time should be provided for interaction between learners and the learning resources. In 10 schools (33.3%) teachers held the view that more resources should be provided. In eight schools (26.7%) the resources were missing. Finally, teachers in two schools (6.7%) had the view that students should be given time to handle the resources on their own. Information on how learning resources could be used to improve learner participation in a geography class was presented in Figure 4.16.

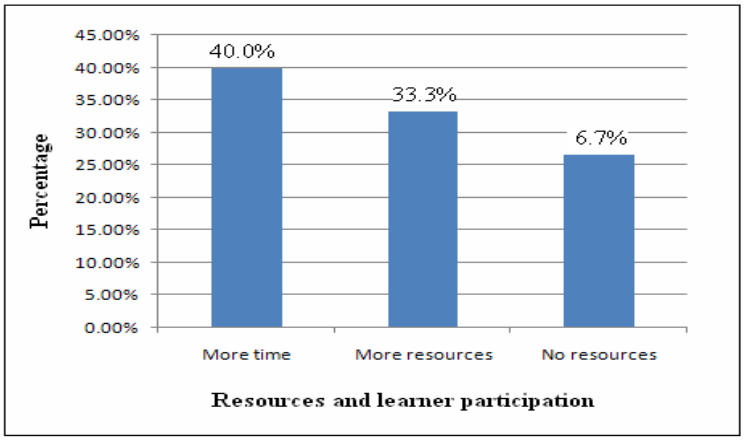

Fig. 4.16. Learning resources and how they can improve learner participation

This study was also interested in identifying some challenges interfering with the adoption of learning resources in the delivery of the curriculum in geography lessons. In eight schools (26.7%) the challenge was their unavailability. In other eight schools (26.7%), the feeling was that schools' administration prioritized the sciences. In four schools (13.3%) it was felt that the number of lessons allocated for the teaching of geography was inadequate for the satisfactory use of resources. In two schools (6.7%) teachers said that geography resources were inadequate for use in teaching and learning. In two other schools (6.7%) the complaint was that a wide geography syllabus was responsible for minimal use of resources. In yet two other schools (6.7%), teachers saw the use of learning resources as wastage of time. Finally, one teacher each in four schools (13.3%) gave a different answer which included lack of infrastructure like demonstration tables, lack of electricity, students not appreciating their use and lack of evidence of their effectiveness from internal examinations. Information on challenges to the use of resources in the teaching of geography is found in Figure 4.17.

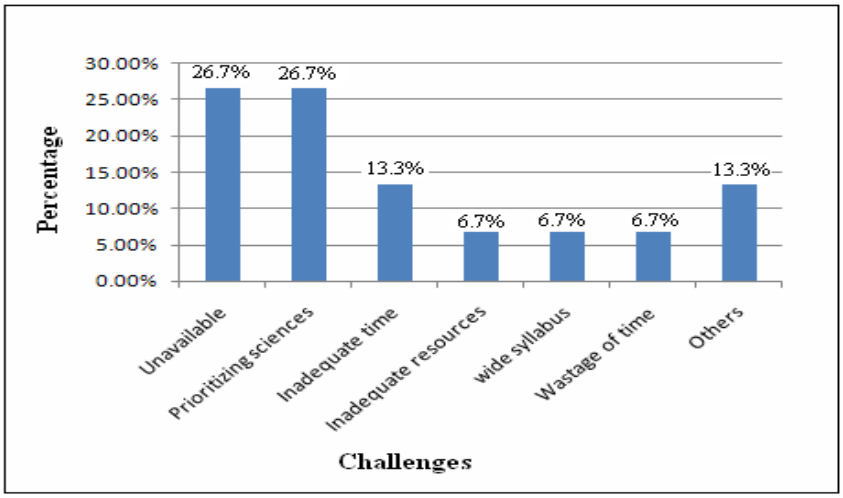

Fig. 4.17. Challenges to the use of resources in teaching geography

Views on the need to use resources in teaching and learning were collected. In 24 schools (80.0%) it was felt that the use of learning resources was highly necessary. In four schools (13.3%) learning resources were seen as necessary. It was only in two schools (6.7%) where learning resources were not seen as necessary. Information on necessity to use resources was presented in Figure 4.18.

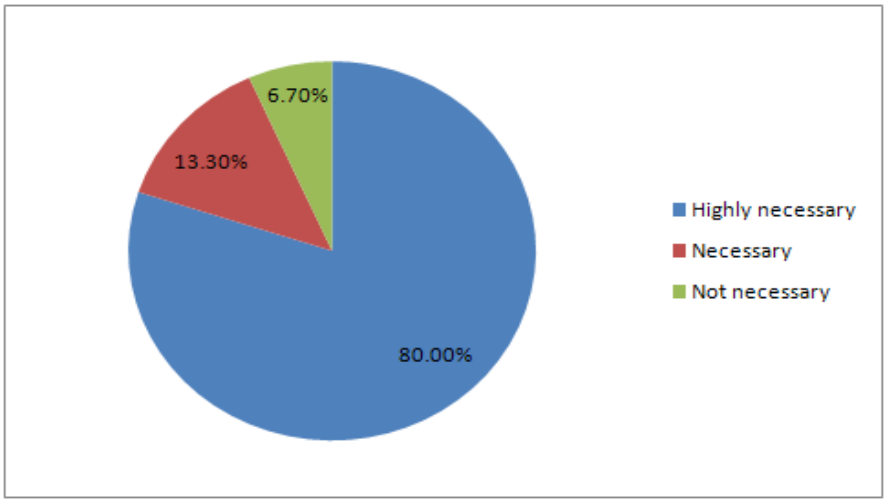

Fig. 4.18. Information on necessity to use learning resources

A comparison was made on the relationship between teachers' views on the need to use learning resources and students' performance in geography in 2014. The information on this relationship was presented in Table 4.18.

Table 4.18. The need to use learning resources and KCSE geography results

KCSE Geography results 2014	<4.00	4.01 – 6.00	6.01 – 8.00	8.01>	**Total**
Highly necessary	3	9	8	4	**24**
Necessary	1	2	0	1	**4**
Not necessary	0	1	1	0	**2**
Total	**4**	**12**	**9**	**5**	**30**

An examination of the information presented in Table 4.17 has shown a relationship between teachers' views on the need to use learning resources and students performance in geography. This is because in 12 out of 24 schools (50%) where teachers felt that it was highly necessary to use resources, KCSE performance in geography was 6.01 and above.

This study was also interested in determining ways of improving the use of learning resources. Responses gathered were as follows: give geography more time in the time-table was a response given in eight schools (26.7%). Schools should buy more resources was given as a solution in eight schools (26.7%). Training teachers on the use of resources was given by respondents in six schools (20.0%), while teachers should innovate was a response in four schools (13.3%). Sensitizing school management was given in two schools (6.7%). Finally, respondents in two schools (6.7%) each gave one reason. One of the reasons was that number of learning resources should be increased by involving learners in their collection. The other respondent said a special session for using learning resources should be created by teachers which is outside the teaching time-table. Information on how to improve learning resources is contained in Figure 4.19.

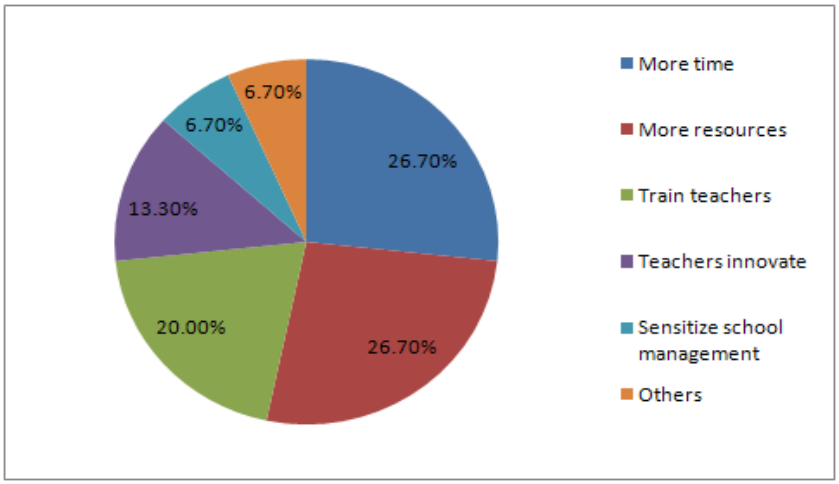

Fig. 4.19. Information on how to improve use of learning resources

In this study, students were asked to rate their teachers' use of learning resources in the teaching/learning process. Out of the 363 students who responded to the items of the questionnaire to students, 122 students (33.6%) were of the opinion that there had been no use of learning resources by their teachers. 89 students (24.5%) rated their teachers as having used learning resources very highly. Students who said that their teachers' use of learning resources was very low were 66 (18.2%) while 54 students (14.9%) rated their teachers as having used learning resources highly. 32 students (8.8%) had the opinion that their teachers' use of learning resources was low. Information on the frequency of use of resources by teachers was presented in Figure 4.20.

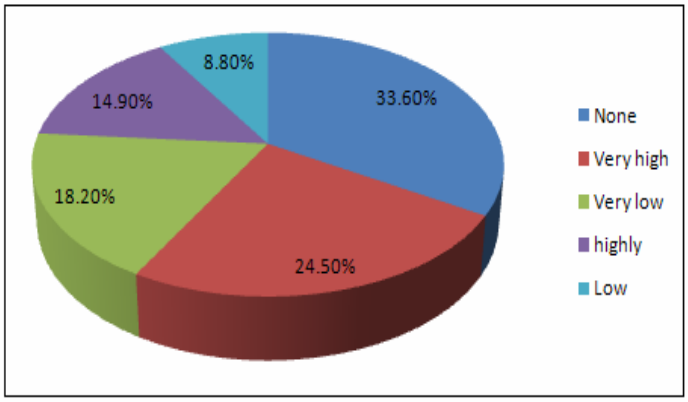

Fig. 4.20. Frequency of use of learning resources by teachers

The frequency of use of learning resources in geography and KCSE performance in Makueni County was compared. The result of the comparison was presented in Table 4.19.

Table 4.19. Frequency of use of resources and KCSE geography results

KCSE Geography results 2014	<4.00	4.01 – 6.00	6.01 – 8.00	8.01>	**Total**
Frequently	13	49	11	3	76
Rarely	26	59	50	35	170
Not at all	16	35	45	21	117
Total	**55**	**143**	**106**	**59**	**363**

Students who saw their teachers as frequently using resources were 76. Out of these, 14 of them (18%) came from schools which posted a performance of 6.01 and above. The researcher concluded that frequency of use of learning resources has a possible relationship with academic performance in geography in Makueni County.

To establish which schools performed better in KCSE depending on use of resources, data from students on the perceptions of their teachers' frequency of use of learning resources in the teaching process against KCSE performance in geography in Makueni County in 2014 was cross-tabulated. The result of the cross-tabulation was presented in Table 4.20.

Table 4.20. Use of learning resources and geography results

frequency of use of LR * KCSE geog results 2014 Crosstabulation

Count

		KCSE geog results 2014				Total
		4.00 and below	4.01 - 6.00	6.01 - 8.00	8.01 and above	
frequency of use of LR	frequently	13	49	11	3	76
	rarely	26	59	50	35	170
	not at all	16	35	45	21	117
Total		55	143	106	59	363

Of the 363 students who participated in this study, 76 attended schools where learning resources were frequently used. In turn, 170 students attended schools where learning resources were rarely used while 117 attended schools where resources other than the textbook were not used at all.

Of the 76 students attending schools where learning resources were frequently used, 14 of them (18%) did so in schools which performed well by scoring mean scores of 6.01 and above. The rest in this category, that is 62 students (82%) were from schools which performed poorly by scoring mean scores of 6.00 and below.

Eighty-five out of 170 students (50%) who attended schools where learning resources were rarely used did so in schools which posted good mean scores of 6.01 and above. A similar number of 85 out of 170 students in this category did so in schools which posted poor mean scores of 6.00 and below.

Sixty-six out of 117 students (56%) who attended schools where learning resources other than the textbook were never used did so in schools which performed well by posting mean scores of 6.01 and above. In turn, 51 out of 117 students who attended schools where learning resources other than the textbook were not used did so in school which posted poor mean scores of 6.00 and below.

The findings presented in this section show that a considerable number of students who attended schools where learning resources were frequently used did so in schools which posted poor results in geography. Similarly, a good number of students who attended schools where learning resources other than the textbook were not used did so in schools which posted good mean scores of 6.01. The results of the analysis have shown that there was not a big difference between the high performing schools and the low performing schools compared to the frequency of use of resources in public schools in Makueni County.

A correlation was calculated to test for association between the use of learning resources and students' academic performance in geography in KCSE in Makueni County in 2014. This was done by comparing data on students' perceptions of their teachers' use of resources during geography lessons. Students' views on use of resources by teachers were coded. "Frequent use of resources" was given Code 1. "Rare

use of resources" was given Code 2 while "No use" of resources was given Code 3. The KCSE codes used had been designed as presented earlier when analyzing Ho1 (for information on the use of resources in participating schools against the schools' KCSE performance in 2014 see appendix 10). The frequency of use of resources was presented in Table 4.21.

Table 4.21. Frequency of use of learning resources in teaching

Description	Frequency of use	Percentage
Frequently	76	20.9
Rarely	170	46.8
Not at all	117	32.2
Total	**363**	**100.0**

A statistical calculation was done to correlate the relationship between students' perception of their teachers of geography use of resources against KCSE performance in the subject. Result of the calculation was presented in Table 4.22.

Table 4.22. Correlation of frequency of use of resources against KCSE results

Correlations

		KCSE geog results 2014
frequency of use of LR	Pearson Correlation	.196**
	Sig. (2-tailed)	.000
	N	363

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

The calculation yielded a Pearson's Moment Correlation coefficient of 0.196. The calculated coefficient shows that in Makueni County, the frequency of use of learning

resources in teaching and learning has some weak positive influence on performance in geography.

Finally, to test for the ability of the independent variable (frequency of use of resources) to predict the dependent variable (KCSE performance in geography), a regression analysis was performed. This was done by comparing the frequency of use of resources in the participating schools against the schools' KCSE performance in geography in 2014. First, the result of the F-test provided a figure of 14.37. This figure showed that the independent variable is a good predictor of the dependent variable. Results of the F-test were presented in Table 4.23.

Table 4.23. F-test on relationship between frequency of use of resources and KCSE geography results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.186	1	12.186	14.371	.000[b]
	Residual	306.133	361	.848		
	Total	318.320	362			

a. Dependent Variable: KCSE geog results 2014

b. Predictors: (Constant), frequency of use of LR

A test of significance was then conducted to either adopt or reject the null hypothesis. A p-value of 0.000 was realized on the relationship between frequency of use of resources in the participating schools against the schools' KCSE performance in 2014. The result of the calculation was presented in Table 4.24.

Table 4.24. p-value between frequency of use of resources and KCSE results in geography

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.928	.150		12.873	.000	1.634	2.223
	frequency of use of LR	.254	.067	.196	3.791	.000	.122	.386

a. Dependent Variable: KCSE geog results 2014

The significance level of 0.000 is below the cut-off value of 0.005. Therefore, the null hypothesis that: "There is no relationship between the use of learning resources in the teaching and learning of geography in public schools in Makueni County and KCSE performance in the subject in the county" was rejected. In its stead, the alternative hypothesis: "There is a relationship between the use of learning resources 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 use of learning resources in the teaching and learning of geography is a good predictor of KCSE performance in the subject in the county. This means that the use of resources promotes academic performance of students in geography in Makueni County.

4.3.4 Teacher Training and Students' Academic Performance in Geography

Finally, the fourth task in this study sought to find out the relationship between teacher training on learning resources and its effect on KCSE performance in geography in Makueni County.

To have a background understanding on teacher training on learning resources, the research sought information on the years that a responding teacher of geography had in

the teaching profession. Ten teachers (33.33%) had between 1 and 10 years in the profession. Also, 10 teachers (33.33%) had between 11 and 20 years. Similarly, 10 teachers (33.33%) had 20 years and above in the teaching profession. This information was presented in Table 4.25.

Table 4. 25. Teachers' length of service in the teaching profession

No. of years	Frequency (N)	Percent
1 – 10	10	33.33
11 – 20	10	33.33
20 +	10	33.33
Total	**30**	**100.00**

Data was also collected on the other teaching subject of the teachers who were involved in the study. It was discovered that four teachers (13.3%) taught a science subject while 26 teachers (86.7%) taught a non-science subject. Information on type of the other teaching subject of participating teachers was presented in Figure 4.21.

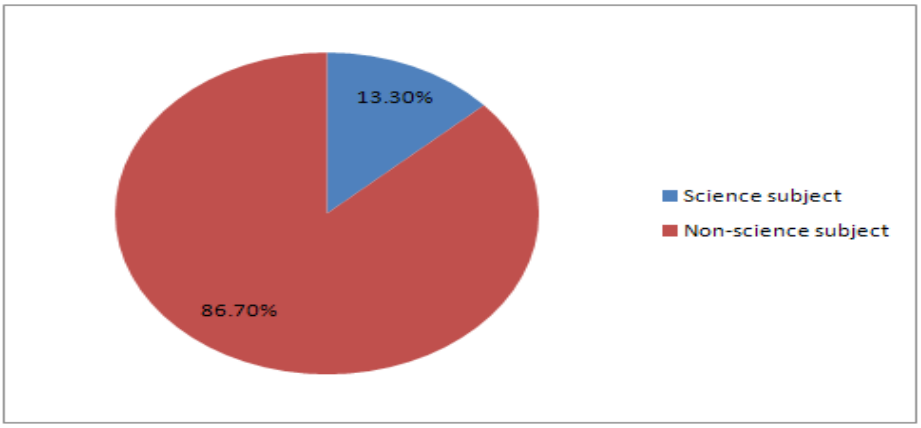

Fig. 4.21. Type of the other teaching subject of participating teachers

The study further sought to identify the first teaching subject of the sampled teachers. Of the 30 teachers involved in this study, 14 teachers (46.7%) had geography as their

first subject. In turn, 12 teachers (40%) had the other of their subject as their first teaching subject. Finally, four teachers (13.3%) did not have a first (core) and a second (minor) subject. Information on teaching subjects was presented in Figure 4.22.

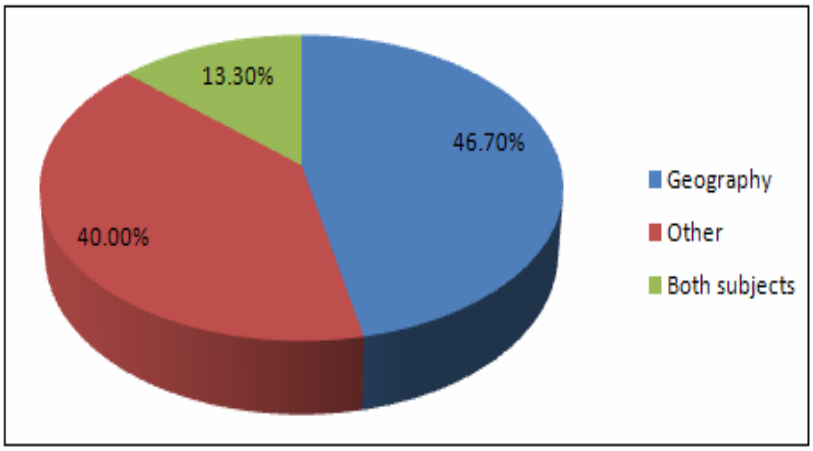

Fig. 4.22. Teaching subjects of participating teachers

Of interest in this study also was the level of professional training attained by teachers. Sixteen teachers (53.3%) were trained first degree holders in education (Bachelor of Education) while six teachers (20.0%) had been trained as professional teachers with a diploma qualification (Diploma in Education). Four teachers (13.3%) did not have professional training in teaching while similarly; four teachers (13.3%) had masters' degrees after their first professional degree in education. Information on professional training of teachers was presented in Figure 4.23.

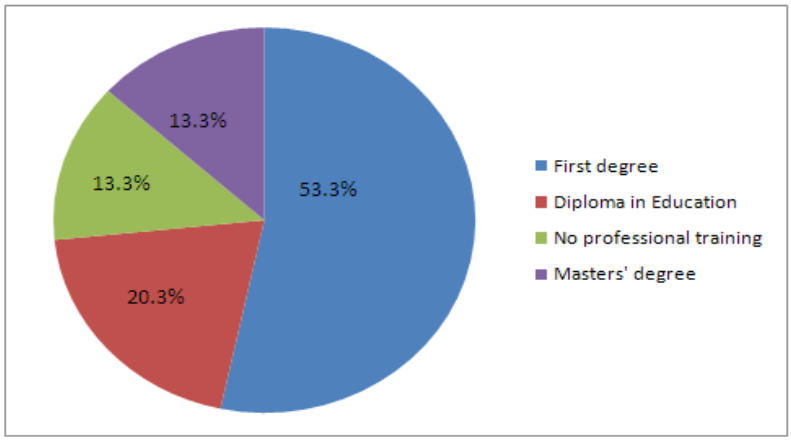

Fig. 4.23. Professional training of teachers

The study sought to determine the training of teachers on production of learning resources in their professional training at college. While 16 teachers (53.3%) said that they had received training on the production of resources, 14 teachers (46.7%) confessed not having received such training. Information on training of teachers on production of learning resources was presented in Figure 4.24.

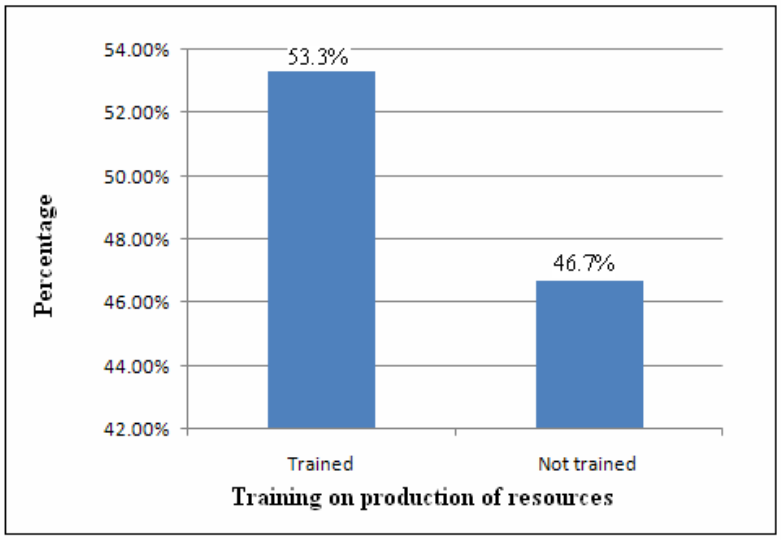

Fig. 4.24. Training of teachers on production of learning resources

Information was also sought on the training of teachers on the use of resources. While 28 teachers (93.3%) said that that they had received training on the use of learning resources at college, two teachers (6.7%) said that they had not received such training. Information on training of teachers on use of learning resources was presented in Figure 4.25.

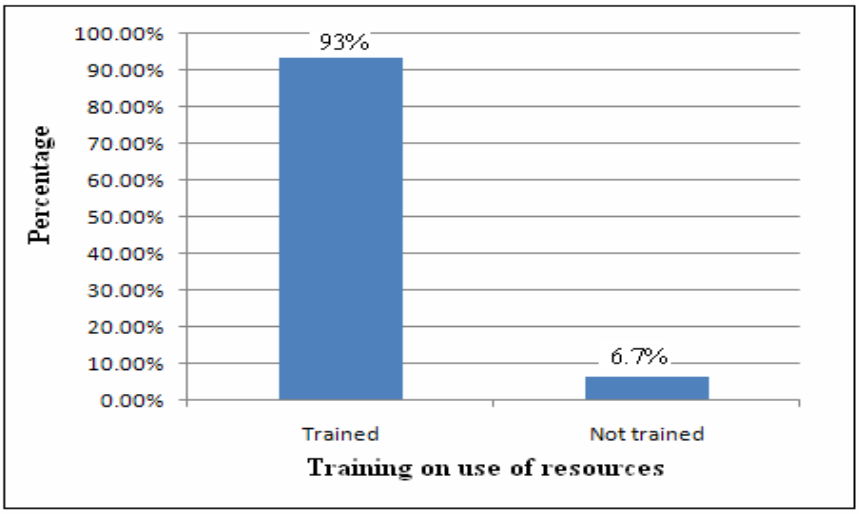

Fig. 4.25. Training of teachers on use of learning resources

A comparison was made between teacher training on use of learning resources and academic performance of students in geography. The results of the comparison were presented in Table 4.26.

Table 4.26. Teacher training on use of resources and KCSE results in geography

KCSE Geography results 2014	<4.00	4.01 – 6.00	6.01 – 8.00	8.01>	**Total**
Trained	2	12	4	3	**21**
Not trained	2	0	5	2	**9**
Total	**4**	**12**	**9**	**5**	**30**

Seven out of 21 schools (33%) whose teachers of geography had been trained in their pre-service training on the use of learning resources scored mean scores of 6.01 and above. However, seven out of nine schools (77%) whose teachers had not received pre-service training on use of learning resources scored mean scores of 6.01 and above. This was a likely indication that pre-service training on use of learning resources given to teachers may not have been of great influence to their students' performance in examinations.

On attendance of symposia and workshops, 26 teachers (86.7%) of geography admitted to having attended subject symposia and workshops after graduation. Four teachers (13.3%) admitted to receiving no training on use of learning resources after graduation through attendance of subject symposia and workshops. Information on attendance of subject symposia and workshops on use of learning resources was presented in Figure 4.26.

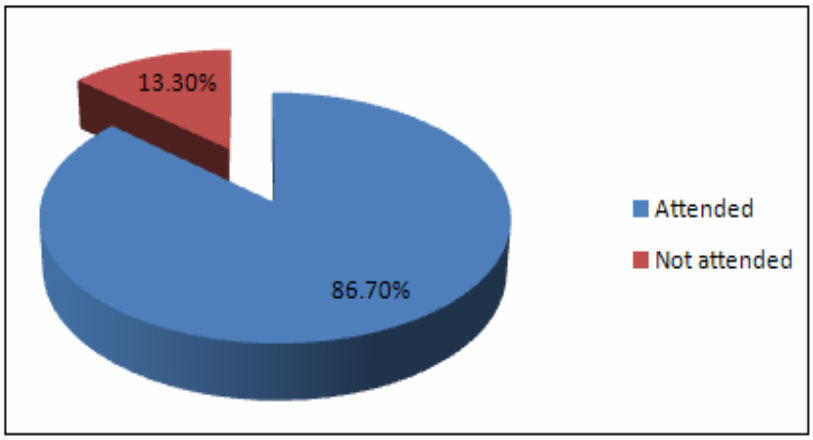

Fig. 4.26. Teacher attendance of subject symposia and workshops on learning resources

Serving teachers' attendance of symposia and workshops on learning resources was compared with students' performance in geography. Result of the comparison was presented in Table 4.27.

Table 4.27. Attendance of symposia and workshops and geography results

KCSE Geography results 2014	<4.00	4.01 – 6.00	6.01 – 8.00	8.01>	**Total**
Attended	3	10	8	5	**26**
Not attended	1	2	1	0	**4**
Total	**4**	**12**	**9**	**5**	**30**

Results of the analysis showed that 13 out of 26 schools (50%) whose teachers had attended symposia and workshops on use of learning resources scored mean scores of 50% and above. However, only one out of four schools (25%) whose teachers had not attended subject symposia and workshops had mean scores of 6.01 and above. On the

strength of this finding, the researcher reached a conclusion that teachers' attendance of subject symposia and workshops on use of learning resources in geography raises the performance of their students in the subject in public schools in Makueni County.

To find out which schools performed better in KCSE in terms of teacher training on use of learning resources, data on teacher training and KCSE performance in geography in Makueni County in 2014 was cross-tabulated. The result of the cross-tabulation was presented in Table 4.28.

Table 4.28. Training on use of resources and KCSE geography results

training on use of resources * KCSE geography results Crosstabulation

Count

		KCSE geography results				
		4.00 and below	4.01 - 6.00	6.01 - 8.00	8.01 and above	Total
training on use of resources	trained	2	12	4	3	21
	not trained	2	0	5	2	9
Total		4	12	9	5	30

Seven out of 21 teachers (33%) trained on use of learning resources taught in schools which posted good performance of 6.01 in geography in KCSE. However, 14 teachers (67%) trained on use of learning resources taught in schools which posted poor performance of 6.01 and below. On the other hand, seven out of nine teachers (78%) not trained on use of resources taught in schools which performed well by scoring mean scores of 6.01 and above. However, two out of nine teachers (22%) not trained on use of resources taught in schools which did not perform well by scoring mean scores of

6.00 and below. The foregoing results have shown that in terms of teacher training, there was not a big difference in KCSE performance in geography between schools taught the subject by trained teachers on learning resources and those taught the subject by teachers who were not trained.

A correlation was calculated to establish the relationship between training of teachers and performance in geography in Makueni County. This was done by comparing data on teacher training on learning resources against the schools' KCSE performance in geography in 2014. Teachers' views on the pre-service training they were given on the deployment of learning resources in the teaching and learning process was collected in this study. Teachers' perception that they were adequately trained was given Code 1 while perception that they were not adequately trained was given Code 2. Similarly, the KCSE codes used in analyzing this hypothesis were those presented earlier in analyzing Ho1. Information on teacher training on learning resources against KCSE performance was presented in Table 4.29.

Table 4.29. Teacher training on learning resources against KCSE performance in 2014

Sch. Serial No.	Teacher training on resources	2014 KCSE Performance	Sch. Serial No.	Teacher training on resources	2014 KCSE Performance
1.	1 (Adequate)	2 (4.01 – 6.00)	16.	2 (Inadequate)	3 (6.01 – 8.00)
2.	1 (Adequate)	2 (4.01 – 6.00)	17.	1 (Adequate)	2 (4.01 – 6.00)
3.	2 (Inadequate)	4 (8.01 and above)	18.	1 (Adequate)	2 (4.01 – 6.00)
4.	1 (Adequate)	3 (6.01 – 8.00)	19.	2 (Inadequate)	3 (6.01 – 8.00)
5.	1 (Adequate)	2 (4.01 – 6.00)	20.	1 (Adequate)	4 (8.01 and above)
6.	1 (Adequate)	2 (4.01 – 6.00)	21.	1 (Adequate)	2 (4.01 – 6.00)
7.	2 (Inadequate)	3 (6.01 – 8.00)	22.	1 (Adequate)	1 (4.00 and below)
8.	2 (Inadequate)	1 (4.00 and below)	23.	1 (Adequate)	2 (4.01 – 6.00)
9.	1 (Adequate)	4 (8.01 and above)	24.	2 (Inadequate)	3 (6.01 – 8.00)
10.	1 (Adequate)	2 (4.01 – 6.00)	25.	1 (Adequate)	3 (6.01 – 8.00)
11.	2 (Inadequate)	1 (4.00 and below)	26.	2 (Inadequate)	3 (6.01 – 8.00)
12.	1 (Adequate)	3 (6.01 – 8.00)	27.	1 (Adequate)	2 (4.01 – 6.00)
13.	2 (Inadequate)	4 (8.01 and above)	28.	1 (Adequate)	1 (4.00 and below)
14.	1 (Adequate)	4 (8.01 and above)	29.	1 (Adequate)	2 (4.01 – 6.00)
15.	1 (Adequate)	3 (6.01 – 8.00)	30.	1 (Adequate)	2 (4.01 – 6.00)

The data on the training of teachers on resources was then correlated against KCSE performance in geography in Makueni County. The result of the calculation was presented in Table 4.30.

Table 4.30. Correlation of teacher training on KCSE performance in geography

Correlations

		KCSE geography results
training on resources	Pearson Correlation	.197
	Sig. (2-tailed)	.296
	N	30

The calculated Pearson's Product Moment Correlation coefficient of 0.197 was realized. This shows that there is some weak positive relationship between teachers' training on learning resources and performance in geography in Makueni County.

To test for the ability of the independent variable (training of teachers on use of resources) to predict the dependent variable (KCSE performance in geography), a regression analysis was performed. This was done by comparing the training of teachers on use of resources in the participating schools against the schools' KCSE performance in geography in 2014. First, the result of the F-test provided a figure of 1.133. This figure showed that the independent variable is a very weak predictor of the dependent variable. Results of the F-test were presented in Table 4.31.

Table 4.31. F-test on relationship between teacher training and KCSE results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.992	1	.992	1.133	.296[b]
	Residual	24.508	28	.875		
	Total	25.500	29			

a. Dependent Variable: KCSE geography results

b. Predictors: (Constant), training on use of resources

A p-value was then calculated to test for the significance of the relationship between teacher training on resources and KCSE results in geography in public secondary schools in Makueni County in 2014. A p-value of 0.296 was realized. Results of the calculation were presented in Table 4.32.

Table 4.32. p-value between training of teachers on resources and KCSE results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.984	.514		3.862	.001	.932	3.037
	training on use of resources	.397	.373	.197	1.065	.296	-.367	1.160

a. Dependent Variable: KCSE geography results

The results of the statistical analysis showed that the significance level of 0.296 was above the cut-off value of 0.005. Therefore, the null hypothesis that: "There is no relationship between teacher training on learning resources and KCSE performance in geography in public schools in Makueni County" was adopted. Thus the pre-service training given to teachers on learning resources is not a good predictor of KSCE performance in geography in Makueni County. This means that training of teachers on learning resources did not promote academic performance of students in geography in Makueni County.

4.4 Discussion of the Research Findings

In this section is provided a discussion of the findings earlier reported in this chapter. The findings were presented on the basis of the four objectives of the study.

4.4.1 Variety of Learning Resources and Students' Academic Performance in Geography

A cross-tabulation that was carried out showed that there was not a big difference between the high performing schools and the low performing schools in terms of access

to variety of learning resources. However, when data on access to a variety of resources in teaching and learning was correlated against academic performance in KCSE geography, the results showed that access to a variety of resources in teaching and learning was responsible for a rise in academic performance in geography in KCSE in public secondary schools in Makueni County. This is because a Pearson's Moment Correlation coefficient of 0.401 was realized. A regression analysis that was done on the influence of a variety of resources on KCSE performance in geography realized a p-value of 0.028. This led to rejection of the null hypothesis related to the relationship between variety of learning resources and academic performance in the subject. As a result, the alternative hypothesis was instead adopted to show that when teachers in Makueni County have access to a variety of resources in curriculum delivery in geography, then students perform well in the subject.

This study finding is consistent with Ozturk (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.

4.4.2 Availability of Learning Resources and Students' Academic Performance in Geography

A cross-tabulation led to the conclusion that there was not much difference between the high performing schools and the low performing schools in terms of availability of

learning resources in public schools in Makueni County. However, data was further correlated on the relationship between availability of learning resources and students' academic performance in KCSE performance in geography. Results of the correlation showed that there is a strong relationship between availability of learning resources and students' academic performance in KCSE in geography in public schools in Makueni County. This is because a Pearson's Correlation coefficient of 0.631 was realized. When a regression analysis was done on the influence of availability of resources on KCSE performance in geography, a p-value of 0.000 was realized. Consequently, the null hypothesis was rejected. Instead, the alternative hypothesis that availability of learning resources influences KCSE performance in geography in Makueni County was adopted.

The finding is supported by earlier finding by Onwu's (1999). Onwu (1999) conducted an investigation on the availability and use of learning materials in the Northern Province of South Africa. One of the findings was that the availability and quality of the resources varied almost exactly according to the schools' performance categories, from good/adequate in high performing schools to fair/poor/inadequate in low performing schools. The implication of Onwu's (1999) study was that availability of learning resources determines academic performance of learners. Similar sentiments were expressed by Andambi and Kariuki (2013), who conducted a study on learning resources used for teaching SEE in secondary schools in Bungoma District, Kenya. In the study, more than half of the students agreed that the types of learning resources used made knowledge in SEE more lifelike and interesting. On the same note Reche et al. (2012) in their study in Mwimbi Division, Maara District, Kenya, on the adequacy of

learning resources like text books, library books, wall maps and exercise books in primary schools realized that among the factors contributing to poor performance in primary schools were inadequate learning resources.

From Rwanda, when the difference in academic performance was compared to the difference in availability and adequacy of school resources, it became clear that adequate supply of school resources greatly influenced students' academic performance in the PLE (Nzabihimana, 2010). Kojweke (2013) found out that the availability of learning resources to both students and teachers contributed to the performance of students in geography. However, this finding is contra to Guloba et al. (2010) whose view is that supplying more teaching resources should not be the number one priority intervention if the quality of education is to be improved. They said that the supply of teaching resources is found to have adverse effects on education quality because the supply of teaching resources in these schools seem to be done at the expense of effective teaching.

The finding that the availability of learning resources promotes academic performance in geography in public schools in Makueni County is supported by Cohen et al. (2003) in the Classroom Instruction Theory. Cohen et al. (2003) say that no deliberate attempt to learn or teach is conceivable in the absence of resources, and there is ample evidence that resources are causally related to learning. They point out that one key circumstance in the availability of learning resources for teaching and learning is the desired result.

4.4.3 Use of Learning Resources and Students' Academic Performance in Geography

A cross-tabulation analysis that was carried out showed that there was not a big difference between the high performing schools and the low performing schools depending on use of resources in public schools in Makueni County. Next, data on frequency of use of learning resources was correlated against KCSE performance in geography by students in geography in KCSE in public schools in Makueni County. The calculation yielded a Pearson's Correlation coefficient of 0.196. The calculated coefficient showed that in Makueni County, the frequency of use of learning resources in teaching and learning positively influences performance in geography. Next, a regression analysis was carried out on the influence of the use of learning resources in the teaching/learning process. A p-value of 0.000 was realized as a result of the analysis. This led to the rejection of the null hypothesis. In its stead, the alternative hypothesis that the use of learning resources in the teaching/learning process influences KCSE performance in geography in Makueni County was adopted.

The finding is supported by findings from Kurdziolek's **(**2011) study. Kurdziolek **(**2011) conducted a study in Texas, USA, and established that students and teachers can interact with the SimCalc resources in a variety of ways and still achieve student-learning gains. Yara and Otieno (2010) conducted a study on teaching and learning resources and academic performance in mathematics in secondary schools in Bondo District of Kenya. Just like is the case in the current study, Yara and Otieno (2010)

discovered that classrooms/laboratories, stationeries/teaching aids, and textbooks among other resources positively influenced students' academic performance.

The finding that the use of learning resources in the teaching/leaning process promotes academic performance in geography in Makueni County is in agreement with Cohen et al. (2003) in the Classroom Instruction Theory. Cohen et al. (2003) say that differences in the use of learning recourses by teachers lead to different results in learning. They add that results of research findings on the relationship between use of learning resources and learning have shown that more effective teachers deployed resources that helped students to learn.

4.4.4 Teacher Training and Students' Academic Performance in Geography

Data on teacher training was cross-tabulated against KCSE performance in geography. Results showed that there was not a big difference between schools taught geography by teachers trained on learning resources and those taught by teachers who were not trained. In turn, a very weak Pearson's Moment correlation coefficient of 0.197 was realized when data on pre-service teacher training was correlated against KCSE performance in geography in public schools in Makueni County. This showed that there was some weak positive relationship between teachers' training and performance in geography in Makueni County. However, when a regression analysis was carried out on the influence of pre-service teacher training on KCSE performance in geography in the county, a p-value of 0.296 was realized. This led to the adoption of the null hypothesis

that pre-service teacher training on KCSE performance in geography has no influence on KCSE performance by learners in geography in Makueni County.

The association between learning resources and academic performance seems to support Blankenship (1998) finding that the training provided by the school system appears to have some difference in both the self-perception of teachers and use of computers in classroom instruction by teachers. Further Ugbe and Agim (2009) in their study found out that there is significant relationship between teachers' competence and students' academic performance in Chemistry. This was because chemistry students taught by qualified teachers performed significantly better than those taught by unqualified teachers.

The finding of this study that teacher training on learning resources promotes academic performance in geography in Makueni County does not agree with Cohen et al. (2003) in the Classroom Instruction Theory. Cohen et al. (2003) offer a different view that teachers' formal training promotes academic performance. They say that formal teacher training has a causal effect on students' learning. Professional teacher training also includes training on learning resources. However, from the findings of this study, it seems that formal training given to trainee teachers on learning resources has not made them prepare students to perform well in geography in Makueni County.

4.5 Implications of Research Findings

The results of this study have highlighted pertinent issues with regard to the relationship between learning resources and students' learning. This is manifested in academic performance of students in geography in KCSE in public schools in Makueni County.

The results have shown that the use of learning resources in the teaching of geography positively promotes students' academic performance in the subject. Discussed in the following sub-sections are the implications of the study to principals, teachers of geography and parents in Makueni County.

4.5.1 Implication of the Findings to Principals

Principals are the main curriculum leaders in the schools that they head. They should therefore make an effort to ensure that teaching programmes in their schools are successfully conducted. This study has established the important role that learning resources can play in the learning process as evidenced in academic performance. It is true that public schools experience shortage of finance to effectively run all school programmes. But apart from the funds for FDSE provided by the government and which are supposed to buy tuition materials like learning resources, principals should also source for extra funds and donations from for example donors and the school community. The collections can be used to provide infrastructure like electricity and special facilities like geography rooms in their schools. The sourcing of learning resources like globes, textbooks, and charts should also be prioritised. Such efforts would go a long way in improving the teaching and learning of geography in secondary schools in public schools in Makueni County.

4.5.2 Implication of the Findings to Teachers of Geography

The findings of this study have left no doubt as to the efficaciousness of learning resources in influencing the learning process as evidenced in the KCSE results that learners post at the end of the four-year secondary school cycle. Teachers of geography

in public schools in Makueni County should bear in mind the fact that since geography is to a large extent a practical subject, its teaching should involve effective methods if students are to acquire desirable knowledge, skills, attitudes and values. One way of ensuring effectiveness is to deploy learning resources in teaching. However, since it is possible that not all schools will be in a position to provide all learning resources every time they are needed, teachers of geography should seek for ways of acquiring some of the resources. This can be done through collecting samples including rocks, soils and plants. Learners can be involved in collecting of samples. Rocks and soil samples can be stored in a geography room while plant samples can be planted in the school compound. Teachers should also make it their duty to write and use notes in the teaching process. Failure to make and use teachers' notes in the teaching process is inexcusable and amounts to serious neglect of duty.

4.5.3 Implication of the Findings to Parents

Parents in Kenyan public schools are significant financiers of the educational experiences that their children are exposed to while in school. This is a responsibility that is shared with the government though paying of teachers as well as such programmes as FPE in primary schools and FDSE in secondary schools. Because the government of Kenya is paying tuition fees for the core functions like buying textbooks, chalk and laboratory equipment and chemicals, parents should put an extra effort in providing other resources like geography rooms, money for geography trips, and allowances for resource persons to talk to the students. This effort by parents will assist

in promoting teaching and learning in geography thus promoting students' academic performance in the subject.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of findings, conclusion and recommendations of the study. The study was conducted to investigate the relationship between learning resources and students' academic performance in geography in KCSE in public schools in Makueni County, Kenya. In the preceding chapter, effort was made to analyze and report the results of the data collected. The current chapter is divided into the following sections: summary of the findings, conclusions, recommendations and areas for further research.

5.2 Summary of the Findings

The study had four specific objectives which aimed at: establishing 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 subject in the county; finding out the availability of learning resources for the teaching and learning of geography in public schools in Makueni County and its effect on KCSE performance in the subject in the county; establishing the use of learning resources in the teaching and learning of geography in public schools in Makueni County and its effect on KCSE performance in the subject in the county; and finally, finding out the relationship between teacher training on learning resources and its effect on KCSE performance in geography in public schools in Makueni County.

Data collection in the study was done using the questionnaire method and an observation checklist. Sampled for the study were 33 principals, 39 teachers of geography and 438 students of geography in Form Four. However, 29 principals, 31 teachers and 363 students were available for data collection. To validate the questionnaires for data collection a pilot study was conducted. Quantitative data was analysed using the SPSS computer programme while qualitative data was analysed using the log frame. Both descriptive and inferential statistics were used to analyse the data. The analysed data was presented using frequency tables and figures. The pertinent findings of this study were summarized under each objective stated for the study.

5.2.1 Variety of Learning Resources on Academic Performance in Geography

The first objective aimed at establishing the variety of learning resources used in the teaching and learning of geography in public schools in Makueni County and their relationship with KCSE performance in the County. The types of learning resources in schools in the county were identified. They included globes, wall maps, charts, atlases, ICT and teachers' notes. It was established that less than half of the public schools in Makueni County had these resources. However, although many schools (slightly less than half of them) had globes, wall maps and charts, atlases and ICT resources existed in very few schools. It was also established that most teachers in public schools in the county had teachers' notes for the teaching/learning process. However, a significant number of teachers in the county did not prepare teachers' notes. Many schools had collected samples for the purpose of teaching and learning in the county. These samples

included plants, soils, and rocks. The samples mainly collected were rocks while the least collected samples were plants. On the presence of a specialized geography room, it was established that majority of the schools did not have this room. On the source of learning resources it was found that many teachers relied on collecting resources to augment those purchased by their schools. And while some teachers relied only on resources purchased by their schools, a small number relied on other sources including borrowing.

A cross-tabulation carried out showed that there was not a big difference that existed in KCSE performance in geography between schools that had access to a variety of resources for the teaching and learning of geography and those without this access. Data on the variety of resources found in the schools was correlated against KCSE performance in geography in public schools in Makueni County. The calculation yielded a moderate correlation of 0.401 between variety of resources used in the teaching of geography and performance in the subject in the county. Further, a regression analysis was conducted to establish the relationship between variety of resources and performance in geography by students in public schools in the county. Results of the calculation yielded a level of significance of 0.028 that led to the rejection of the null hypothesis and consequent adoption of the alternative hypothesis. The result of the regression analysis showed that access to a variety of resources in the teaching and learning of geography is a good predictor of academic performance of students in geography in public schools in KCSE in Makueni County. Thus, access to a variety of resources promotes academic performance of students in the subject in the county.

5.2.2 Availability of Learning Resources on Academic Performance in Geography

The second objective aimed at finding out the availability of learning resources for the teaching and learning of geography in public schools in Makueni County and its effect on KCSE performance in geography in the county. The study has found out that apart from the textbook, a small number of schools in the county relied on other learning resources. Charts and wall maps formed part of these other resources. Of the schools that used other learning resources in addition to the textbook, about half used charts while many others used wall maps. On the other hand, ICT has been integrated in less than half of the schools in the county. Majority of schools had not integrated this important learning resource in teaching and learning the subject. Reasons for not integrating ICT in teaching and learning of geography included unavailability, teachers seeing no need to integrate ICT in teaching and learning, lack of electricity and lack of skill on the use of ICT.

Although all teachers in the county owned cell phones, majority of teachers in the county had not used the cell phones as a tool for integrating ICT in the teaching and learning of geography. This study has established that many public schools in Makueni County were not ready to integrate technology like ICT in teaching and learning. This was because only a minority of schools in the county had power sockets in their classrooms.

In majority of public schools in Makueni County teachers had innovated in the teaching of the subject. However, a small number of schools in the county had failed to innovate.

A cross-tabulation that was conducted between availability of learning resources and KCSE performance showed that in schools where resources were highly available and where resources were not highly available, there was not a big difference in KCSE performance in geography. A correlation was calculated to test for relationship between availability of learning resources and KCSE performance in geography in public schools in Makueni County. The results yielded a strong Pearson's Moment Correlation coefficient of 0.631. A regression analysis was also carried out to find out the relationship between availability of learning resources for the teaching and learning of geography and students' academic performance in public schools in Makueni County. The resulting significant level of 0.000 led to the rejection of the null hypothesis. Instead the alternative hypothesis was adopted. This means that the availability of learning resources is a good predictor of KCSE performance in geography in public schools in Makueni County. Thus, the availability of resources promotes academic performance of students in the subject in the county.

5.2.3 Use of Learning Resources on Academic Performance in Geography

The third objective aimed at determining the use of learning resources in the teaching and learning of geography and its effect on KCSE performance in geography in public schools in Makueni County. On decision to use learning resources, it was discovered that a very small number of teachers in Makueni County depended on the topic they were to teach. In turn, the number of teachers in the county who depended on objectives of the lesson to make a decision on what resources to use in teaching in the subject rose

slightly when compared to those who depended on the topic. Finally, about half of teachers in public schools in Makueni County depended on the availability of learning resources to make a decision to use learning resources in teaching in the subject.

The study also identified some of the challenges interfering with the adoption of learning resources in teaching and learning. The challenges cited by teachers included: the unavailability of the resources; prioritizing the sciences; few number of lessons slotted for the teaching of geography which did not allow for adequate use of learning resources in teaching; inadequate number of resources for use in teaching in the subject; a wide geography syllabus; teachers who saw the use of learning resources as a wastage of time; shortage of infrastructure like demonstration tables; lack of electricity, students not appreciating the use of learning resources in teaching as well as lack of evidence of their effectiveness from internal examinations.

On the necessity to use learning resources in teaching and learning, in most of the schools in Makueni County, it was felt that the use of learning resources was highly necessary. It was only in a few schools (6.7%) where it was felt that learning resources are not necessary. Some of the ways of improving the use of learning resources were identified. They included: training of teachers on the use of learning resources; giving geography more time in the time-table; schools to buy more resources; teachers to innovate; sensitizing school management on the importance of learning resources in teaching and learning; involving learners in the collection of resources; and finally, teachers creating special sessions for using learning resources outside the teaching time-table.

The study rated the use of resources by teachers in public schools in Makueni County. Information gathered showed that some of the teachers used learning resources very highly, others highly used the resources. A small number of teachers had a low use of learning resources in teaching. A considerable number of teachers had a very low use of learning resources in teaching in geography. Yet, about a third of the learners in public schools in Makueni County in Form Three had never been taught geography using learning resources.

A cross-tabulation was carried out between KCSE geography results and use of resources. Results of the analysis showed that there was not a big difference in performance between those schools where learning resources other than the textbook were used and those schools where learning resources other than the textbook were not used. A statistical calculation was done to correlate the relationship between the use of learning resources and geography performance in public schools in the county. The correlation yielded a very weak Pearson's Moment Correlation coefficient showing that frequent use of resources had some influence on academic performance in geography. A regression analysis was further carried out to establish the possible relationship between the frequent use of resources and academic performance of students in geography in public schools in Makueni County. The calculated significant level of 0.000 led to the rejection of the null hypothesis. This showed that the use of learning resources in teaching and learning geography in public schools in Makueni County is a good predictor of academic performance in the subject in the county. Thus, the use of learning resources in teaching and learning of geography in Makueni County promotes academic performance of students in the subject in the county.

5.2.4 Teacher Training on Academic Performance in Geography

The final objective aimed at establishing the effect of teacher training on learning resources and its effect on KCSE performance in geography in public schools in Makueni County. On work experience, the research established that about a third of secondary school teachers teaching geography in public schools in Makueni County had between 1 and 10 years in the profession. Similarly, about another third of teachers had between 11 and 20 years of teaching experience. Data was also collected on the other teaching subject of the teachers involved in this study. It was discovered that while only a few secondary school teachers of geography in the county taught a science subject, the majority of the teachers taught a non-science subject.

On first (core) and second (minor) teaching subject, it was established that slightly less than half of the teachers in public schools in Makueni County had geography as their first subject. In turn, two-fifths of teachers of geography in the county had the other subject as their first teaching subject. Finally, few teachers of geography had not been trained on either core or minor subject.

On level of training, about a tenth of the subject's teachers in public schools in Makueni County did not have any professional training in teaching while a fifth had received training as professional teachers with diploma qualification. First degree holders in education were slightly about half of the teachers in public schools in Makueni County while another fifth had masters' degrees in education.

The study has established that slightly more than half of teachers of geography in public schools in Makueni County received pre-service training on production of learning

resources in their professional training at college, slightly less than half had not received such training. Information on training on use of learning resources was also collected. While most of the teachers in the county (slightly over 90%) received training on the use of learning resources at college as part of pre-service training, a small minority did not receive such training. Training after graduation can be offered through symposia and workshops. In the county, majority of the teachers had attended subject symposia and workshops after graduation. However, some few teachers of geography (slightly less than 7%) in the county had not received this kind of training.

A cross-tabulation was done on the relationship between pre-service teacher training and students' performance in KCSE in geography. Results showed that pre-service teacher training did not influence performance between the low performing and high performing schools in geography in public schools in Makueni County. Pre-service training given to teachers on learning resources was correlated against KCSE geography performance in the county. The calculation realized a weak Pearson's Moment Correlation coefficient of 0.197. This showed that pre-service teacher training had a weak influence on students' academic performance in geography. A further calculation done by conducting a regression analysis led to the realization of a significant level of 0.296 that led to the adoption of the null hypothesis. The implication was that pre-service training given to teachers of geography who later taught in public schools in Makueni County is not a good predictor of academic performance in the subject in the county. Thus, the pre-service training given to teachers in the use of learning resources in the teaching and learning of geography does not promote academic performance of students in the subject in Makueni County.

5.3 Conclusions

The results of this study, in conjunction with findings of other previous similar studies, suggest that learning resources can help, to some extend predict the performance of learners in geography in public schools in Makueni County. From the findings of the study therefore, it has been concluded that:

1. Access to variety of learning resources, availability of learning resources and use of resources in the teaching and learning process has promoted academic performance in geography in KCSE in public secondary schools in Makueni County.
2. Pre-service teacher training on learning resources does not promote academic performance in geography in KCSE in public secondary schools in Makueni County.

5.4 Recommendations

After carefully analyzing and interpreting of the study findings of this study, several pertinent issues that have key implications to geography education in secondary schools have been identified. 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.
3. School heads should ensure that their schools are equipped with the necessary teaching and learning resources for the teaching/learning of geography. At the same time, principals should encourage their teachers who teach geography to attend in-service training particularly on teaching methodology. Principals should also support teachers financially to attend such training opportunities through providing transport, daily subsistence (*per diem*) and night-out allowances.

4. This study has found out that pre-service training on use of resources does not influence students' performance in geography examinations in public schools in Makueni County. The Ministry of Education and the TSC should therefore ensure that training opportunities are offered to serving teachers in challenging areas such as integrating ICT in teaching and learning so that through increased teacher competence and knowledge learners' grades in geography in KCSE in the county can improve.
5. The content of training opportunities like symposia and workshops should be scrutinized and areas of weakness identified and strengthened. Issues like whether in such training sessions teachers are taught on techniques of meaningful teaching and learning, or whether it is all about making students pass examinations should be scrutinized. Such issues should be resolved to ensure that students benefit from the teaching/learning experience.
6. The use of emerging technology, especially ICT should be given more consideration in teaching and learning. This is because ICT can give instant and updated information on diverse areas. But despite its applicability to teaching and learning, few teachers seem to have embraced this learning resource.

5.5 Areas for Further Research

The following are suggestions for further research emanating from this study:

1. The study has important findings on ways of improving the performance of students in geography in KCSE. The study for example has shown that performance of students in geography is enhanced through the utilization of

learning resources in teaching and learning. However, despite the importance of the study findings, they cannot be generalized to all the secondary schools in Kenya. This is because the study involves a small sample and from only one county. To ensure that all students in secondary schools in Kenya benefit in the teaching of geography, the current research should be duplicated to cover a large sample probably drawn from all the counties in the Republic of Kenya.

2. Symposia and workshops are important in-service training opportunities for imparting new skills, knowledge, attitudes and values among serving staff. The researcher recommends that further studies should be conducted to establish the content of the symposia and workshops, their usefulness to the teachers who attend them, and what can be done to improve their usefulness in the teaching profession.
3. This study is based on the influence of learning resources in teaching and learning in secondary schools. The researcher recommends that a multivariate study relating performance in geography with entry behaviour of learners into secondary school from their previous schooling in primary school and use of learning resources in teaching and learning be conducted. Such a study can provide insights into the effect of previous learning to learner performance in geography at the secondary school level . The results of the study can be used for effective teaching to overcome poor learning in primary school.

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APPENDIX 1

INTRODUCTION LETTER TO RESPONDENTS

Dear Respondent,

My name is Munguti Stephen. I am conducting a study on *learning resources and students' academic performance in geography in Makueni County, Kenya*. The data collected in this study is meant for academic purposes only. The research will try to establish the use of learning resources in teaching and learning geography and how this influences academic performance in the subject in Makueni County. Kindly provide honest answers to the items of the questionnaire. Responses to these questionnaires will be treated as confidential and will not be used against you as a person or influence the performance of your school in the future. Do not write your name or the name of your school anywhere in the questionnaire. Provide answers by choosing the suitable option or filling in the spaces provided.

Munguti Stephen

0724750199

Thank you.

APPENDIX 2

QUESTIONNAIRE FOR PRINCIPALS ON LEARNING RESOURCES AND STUDENTS' ACADEMIC PERFORMANCE IN GEOGRAPHY IN MAKUENI COUNTY, KENYA

PART A: BACKGROUND INFORMATION

1. Your sex [ ] Male [ ] Female

2. Your age [ ] years

3. Type of school you head

[ ] National [ ] Extra-county [ ] County [ ] District 4. (a) Operations of the school

[ ] Day school [ ] Boarding school [ ] Both day and boarding school

(b) Is it a boys', girls', or a mixed school?

[ ] Boys only [ ] Girls only [ ] Both boys and girls

5. Sub-County where the school is located _____

6. What is the school's current enrolment?

Class	Enrolment
Form 1	
Form 2	
Form 3	
Form 4	
Total	

7. Kindly provide information on KCSE results of the school for the following years:

Year	KSCE Performance (Mean grade)
2008	
2009	
2010	
2011	
2012	
2013	
2014	

8. What is your level of professional training?

[ ] None [ ] Certificate [ ] Diploma in education [ ] Diploma (not in Education) [ ] First degree in education [ ] Untrained graduate

[ ] Master's degree in education

Any other (please explain) _____

PART B: GENERAL INFORMATION

a). Variety of Learning Resources

9. kindly provide the number of the following learning resources in your school

Wall maps [ ] Charts [ ] Globes

Plant samples [ ] Soil samples [ ] Rock samples [ ]

Any other (kindly list them and their number) _____

_____

10. Apart from textbooks and the chalkboard, how do you rate the necessity to use learning resources in the teaching of geography?

[ ] Highly necessary [ ] Necessary [ ] Not Necessary

11. How do you arrive at a decision to buy learning resources in your school?

[ ] Through your own judgment [ ] Teachers' requests [ ] Students' requests

12. What is the source of learning materials used for teaching geography

Source	**Number of learning resources**
Bought by the school	
Donated by parents	
Donated by business community	
Donated by organizations	
Any other (please specify)	
Total	

b). Availability of Learning Resources

13. What factor determines your choice to purchase learning resources other than textbooks?

[ ] Price [ ] Subject

[ ] Any other (please specify) _____

14. Which subject do you give priority to when purchasing or seeking donations for learning resources? _____

15. Do you think that learning resources are important in aiding teaching and learning?

[ ] Yes [ ] No

16. How do you think learning resources can be used to increase learner participation in the learning process? _____

_____

17. Rate the need to use learning resources in teaching and learning in geography

[ ] Highly necessary [ ] Necessary [ ] Not necessary

c). Use of Learning Resources

18. In your own opinion, what do you think can be done to improve the use of learning resources in the teaching and learning of geography _____

_____

d). Training of Teachers

19. Which training opportunities have you provided to your teachers to improve on their teaching capacities in the last five years?

[ ] Symposia [ ] Workshops

Any other (please specify) _____

20. If training opportunities were provided to teachers, were any on production, care and use of learning resources in teaching?

[ ] Yes [ ] No

APPENDIX 3

QUESTIONNAIRE FOR TEACHERS OF GEOGRAPHY ON LEARNING RESOURCES AND STUDENTS' ACADEMIC PERFORMANCE IN GEOGRAPHY IN MAKUENI COUNTY, KENYA

PART A: BACKGROUND INFORMATION

1. Your sex [ ] Male [ ] Female

2. Your age [ ] years

3. Year you completed professional training as a teacher _____

4. Type of school [ ] National [ ] Extra-county [ ] County

[ ] Sub-County

5. Operations of the school

[ ] Day school [ ] Boarding school [ ] Both day and boarding school

6. Is it a boys', girls' school or mixed?

[ ] Boys only [ ] Girls only [ ] Both boys and girls

7. Sub-County where the school is located _____

8. How many students take geography in Forms Three and Four?

Class	**Enrolment**
Form 3	
Form 4	
Total	

9. Kindly provide KCSE results of geography and other subjects in the following years:

Year	Geography	KSCE Mean Score
2008		
2009		
2010		
2011		
2012		
2013		
2014		

PART B: GENERAL INFORMATION

a). Variety of Learning Resources

10. List the resources used to teach geography in the school _____

_____

(b) What is the source of your teaching resources? _____

11. Apart from textbooks and the chalkboard, how do you rate the necessity to use learning resources in the teaching of geography?

[ ] Highly necessary [ ] Necessary [ ] Not Necessary

12. (a) As a teacher of geography, have you collected any of the following samples? Plant samples [ ] Soil samples [ ] Rock samples [ ]

(b) If you have collected any of the above samples, how do you use them?

_____

(c) Kindly list any other samples you have collected _____

_____

13. Is there a geography room in the school? [ ] Yes [ ] No

14. Has the school purchased the following resources for use in teaching

geography:

Wall maps [ ] Yes [ ] No

Charts [ ] Yes [ ] No

Globe(s) [ ] Yes [ ] No

15. For the resources purchased, where are they kept? _____

_____

16. As a teacher of geography, have you integrated Information and Communication Technology (ICT) in teaching? [ ] Yes [ ] No

17. If your answer in (16) above is "no" what are the reason(s) for not using ICT in teaching and learning? _____

_____

18. Do you own a mobile phone?

[ ] Yes [ ] No

b). Availability of Learning Resources

19. For all the learning resources available for teaching geography in the school, kindly provide their number

[ ] Wall maps [ ] Charts [ ] Globes [ ] Plant samples

[ ] Soil samples [ ] Rock samples

Any other (kindly list them and their number) _____

_____

20. As a teacher of geography, what innovations have you made as a way of acquiring teaching /learning resources? _____

_____

21. Where are geography learning resources stored?

[ ] In the geography room [ ] In the staffroom [ ] In a strongroom

Any other (please specify) _____

22. How are learning resources transported to the lesson venue? _____

_____

c). Use of Learning Resources

22. What influences your choice of resources?

[ ] Objectives [ ] Topic [ ] Availability of resources

[ ] Students' request [ ] Principal's request

[ ] Any other (please specify) _____

23. How do you think learning resources can be used to improve learner performance in geography examinations _____

24. As a teacher of geography, do you use learning resources in teaching geography

[ ] Yes [ ] No

25. When you use learning resources what are some of the learner activities?

_____

26. How do you think learning resources can be used to increase learner participation in the learning process? _____

_____

27. Do you think the use of learning resources makes students to perform well in internal examinations and KCSE?

    [ ] Yes [ ] No

28. As a teacher of geography, what do you think is the greatest challenge to the use of learning resources in teaching? _____

    _____

29. Rate the need to use learning resources in teaching and learning in geography

    [ ] Highly necessary [ ] Necessary [ ] Not necessary

30. In your own opinion, what do you think can be done to improve the use of learning resources in the teaching and learning of geography? _____

    _____

d). Training of Teachers

31. How many years have you been in the teaching profession? [ ]

32. What is your level of professional training?

    [ ] Certificate [ ] Diploma in education [ ] Diploma (not in education) [ ] First degree in education [ ] Untrained graduate

    [ ] Master's degree in education

    Any other (please explain) _____

33. In your pre-service training, were you trained on the following:

    Production of learning resources [ ] Yes [ ] No

    Use of learning resources [ ] Yes [ ] No

    Care and maintenance of learning resources [ ] Yes [ ] No

34. Since graduation and employment have you received training on production, use and care of learning resources? [ ] Yes [ ] No

35. Have you attended training opportunities like symposia, workshops and seminars since your employment as a teacher? [ ] Yes [ ] No

36. If your answer in (35) above is "Yes", identify the number of times you have been involved in further training opportunities in your two subjects and the year

Year	**In geography**	**In the other subject**

APPENDIX 4

QUESTIONNAIRE FOR STUDENTS OF GEOGRAPHY ON LEARNING RESOURCES AND STUDENTS' ACADEMIC PERFORMANCE IN GEOGRAPHY IN MAKUENI COUNTY, KENYA

PART A: BACKGROUND INFORMATION

1. Your sex [ ] Male [ ] Female

2. Type of school: [ ] National [ ] Extra-county [ ] County

[ ] District

3. Is it a boys' or girls' school? [ ] Boys only [ ] Girls only

[ ] Both boys and girls

4. Operations of the school: [ ] Day school only [ ] Boarding school only [ ] Mixed day and boarding

5. Sub-county where the school is located _____

PART B: GENERAL INFORMATION

a). Variety of Learning Resources

6. Identify the learning resources teachers have been using to teach you in geography _____

7. Identify the learning resources teachers have been using to teach you in all the other subjects

Subject	Resources
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.	

b). Use of Learning Resources

8. Rank the use of learning resources by teachers in teaching the various subjects you study in this school.

Order	Subject	Order	Subject
1.		8.	
2.		9.	
3.		10.	
4.		11.	
5.		12.	
6.		13.	
7.		14.	

9. How often do your teacher(s) of geography provide learning opportunities like field trips, and use of learning resources other than chalk, chalkboard, and textbooks?

[ ] Frequently [ ] Rarely [ ] Not at all

10. Do you think that the use of teaching resources helps you to learn better?

[ ] Yes [ ] No

11. If your answer in (10) above is 'yes', how do you think that the use of learning resources helps you learn _____

_____

12. When are you usually active in the teaching / learning process?

[ ] When teachers use teaching resources

[ ] When teachers do not use teaching resources

13. If you become active when teachers use learning resources, please explain the reason for this _____

14. What do you think is the influence of teaching resources on your academic performance in examinations? _____

_____

15. What are your views on the importance of teachers using learning resources in assisting you pass your examinations? _____

_____

16. Do you think that you would perform better in geography if your teachers increased their use of learning resources in teaching you?

[ ] Yes [ ] No

APPENDIX 5

OBSERVATION CHECKLIST FOR GEOGRAPHY LESSONS ON LEARNING RESOURCES AND STUDENTS' ACADEMIC PERFORMANCE IN GEOGRAPHY IN MAKUENI COUNTY, KENYA

This observation checklist is for use in a 40 minute geography lesson. It is for use whether learning resources are in use or not and will be used by the researcher.

1. Class being taught _____

2. Topic being covered _____

3. (a) Are learning materials used during the lesson [ ] Yes [ ] No

(b) If learning materials are in use which ones are they?

[ ] Teacher's notes [ ] Charts [ ] Textbooks

[ ] Atlases [ ] The globe [ ] Newspaper cuttings

[ ] Wall maps [ ] Rock samples [ ] Soil samples

[ ] Plant samples [ ] ICT resources

[ ] Any other (specify) _____

4. (a) How have the resources been brought into class? _____

_____

(b) Is there an assistant to assist in setting up the learning resources?

[ ] Yes [ ] No

5. Have students placed atlases on their desks?

[ ] Yes [ ] No

6. Does the class have the following resources?

[ ] Wall maps [ ] Wall charts

7. Does the class have power sockets?

[ ] Yes [ ] No

APPENDIX 6

RESEARCH AUTHORIZATION FROM NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:
14th August, 2014

NACOSTI/P/14/6740/2419

Stephen Munguti
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Effects of utilization of learning resources on Geography performance in Kenya Certificate of Secondary Education in Makueni County, Keya,"*** I am pleased to inform you that you have been authorized to undertake research in **Makueni County** for a period ending **14th December, 2014.**

You are advised to report to **the County Commissioner and the County Director of Education, Makueni County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

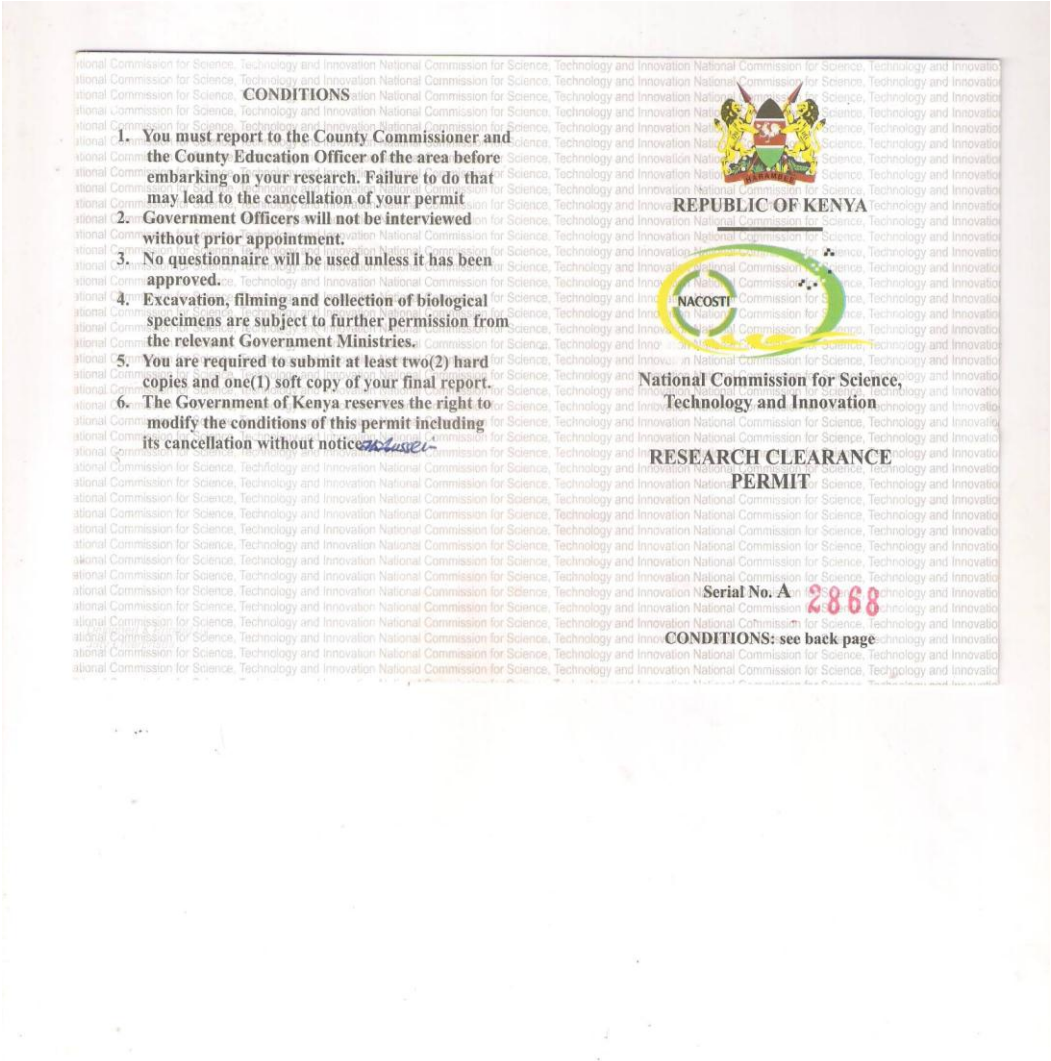
DR. S. K. LANGAT, OGW
FOR: SECRETARY/CEO

Copy to:

The County Commissioner
The County Director of Education
Makueni County.

APPENDIX 7

RESEARCH CLEARANCE PERMIT FROM NACOSTI



CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No. A 2868

CONDITIONS: see back page

APPENDIX 8

KCSE COUNTRY PERFORMANCE IN 2012

Subject	KCSE performance (%)
101 English	37.88
102 Kiswahili	35.81
121 Mathematics (Alt. A)	28.66
122 Mathematics (Alt. B)	9.49
231 Biology	26.21
232 Physics	37.87
233 Chemistry	27.93
236 Biology for the blind	17.38
237 General Science	11.66
311 History and Government	40.94
312 Geography	46.58
313 CRE	44.03
314 IRE	32.13
315 HRE	-
441 H/Science	56.88
442 Art and Design	63.79
443 Agriculture	34.97
444 Woodwork	46.01
445 Metal Work	53.43
446 Building and Construction	42.13
447 Power Mechanics	65.26
448 Electricity	60.60
449 Drawing and Design	43.04
450 Aviation technology	59.90
451 Computer Studies	57.64
501 French	54.74
502 German	66.61
503 Arabic	46.52
504 Kenyan Sign Language	60.96
511 Music	50.60
565 Business Studies	44.30

Source: Kenya National Examinations Council, 2013

APPENDIX 9

KCSE COUNTRY PERFORMANCE IN 2013

Subject	KCSE performance (%)
101 English	27.47
102 Kiswahili	41.60
121 Mathematics (Alt. A)	27.58
122 Mathematics (Alt. B)	8.65
231 Biology	31.63
232 Physics	40.10
233 Chemistry	24.83
236 Biology for the blind	18.97
237 General Science	9.73
311 History and Government	44.72
312 Geography	42.41
313 CRE	47.96
314 IRE	34.82
315 HRE	80.00
441 H/Science	57.98
442 Art and Design	56.00
443 Agriculture	33.60
444 Woodwork	53.32
445 Metal Work	54.66
446 Building and Construction	56.29
447 Power Mechanics	66.27
448 Electricity	60.08
449 Drawing and Design	56.45
450 Aviation technology	58.33
451 Computer Studies	55.18
501 French	56.73
502 German	56.86
503 Arabic	55.37
504 Kenyan Sign Language	60.58
511 Music	56.83
565 Business Studies	47.12

Source: Kenya National Examinations Council, 2014

APPENDIX 10

USE OF RESOURCES IN PARTICIPATING SCHOOLS AGAINST SCHOOLS' KCSE PERFORMANCE IN 2014

No.	F	Geog results	Qn. No.	F	Geog results	Qn. No.	F	Geog results	Qn. No.	F	Geog results
1.	2	2	48.	2	2	95.	2	4	142.	2	4
2.	2	2	49.	2	2	96.	2	4	143.	3	4
3.	2	4	50.	2	2	97.	2	4	144.	1	4
4.	2	3	51.	2	2	98.	2	4	145.	2	4
5.	2	2	52.	2	2	99.	2	4	146.	3	4
6.	2	2	53.	2	2	100.	2	4	147.	3	4
7.	2	3	54.	2	2	101.	2	2	148.	3	4
8.	2	1	55.	2	2	102.	2	2	149.	2	4
9.	2	4	56.	2	2	103.	2	2	150.	3	3
10.	2	2	57.	2	2	104.	2	2	151.	3	3
11.	1	1	58.	2	2	105.	2	2	152.	3	3
12.	2	3	59.	2	2	106.	2	2	153.	3	3
13.	2	4	60.	2	2	107.	2	2	154.	3	3
14.	1	4	61.	2	2	108.	2	2	155.	3	3
15.	3	3	62.	2	2	109.	2	2	156.	3	3
16.	3	3	63.	2	2	110.	2	2	157.	3	3
17.	3	2	64.	2	2	111.	1	1	158.	3	3
18.	3	2	65.	2	2	112.	1	1	159.	3	3
19.	3	3	66.	2	2	113.	1	1	160.	3	3
20.	3	4	67.	2	2	114.	1	1	161.	3	3
21.	3	2	68.	2	2	115.	1	1	162.	3	3
22.	3	1	69.	2	2	116.	1	1	163.	3	3
23.	1	2	70.	2	3	117.	1	1	164.	3	3
24.	2	3	71.	2	3	118.	1	1	165.	3	3
25.	2	3	72.	2	3	119.	1	1	166.	3	3
26.	1	3	73.	2	3	120.	1	1	167.	3	3
27.	1	2	74.	2	3	121.	1	1	168.	3	3
28.	2	1	75.	2	3	122.	1	1	169.	3	3
29.	1	2	76.	2	1	123.	2	3	170.	3	3
30.	2	2	77.	2	1	124.	2	3	171.	3	3
31.	2	2	78.	2	1	125.	2	3	172.	3	3
32.	2	1	79.	2	1	126.	2	3	173.	3	3
33.	2	3	80.	2	1	127.	2	3	174.	3	3
34.	2	2	81.	2	1	128.	2	3	175.	3	3
35.	1	4	82.	2	1	129.	2	3	176.	3	3
36.	2	1	83.	2	4	130.	2	3	177.	3	3
37.	2	3	84.	2	4	131.	2	4	178	3	3
38.	2	3	85.	2	4	132.	2	4	179.	3	3
39.	2	3	86.	2	4	133.	2	4	180.	3	3
40	2	3	87.	2	4	134.	2	4	181.	3	3
41.	2	2	88.	2	4	135.	2	4	182.	3	3

42.	2	2	89.	2	4	136.	2	4	183.	3	3
43.	2	2	90.	2	4	137.	2	4	184.	3	2
44.	2	2	91.	2	4	138.	2	4	185.	3	2
45.	2	2	92.	2	4	139.	2	4	186.	3	2
46.	2	2	93.	2	4	140.	2	4	187.	3	2
47.	2	2	94.	2	4	141.	2	4	188.	3	2
189.	3	2	233.	3	2	277.	2	3	321.	1	2
190.	3	2	234.	3	2	278.	2	3	322.	1	2
191.	3	2	235.	3	2	279.	2	3	323.	1	2
192.	3	2	236.	3	2	280.	2	3	324.	1	2
193.	3	2	237.	3	2	281.	2	3	325.	2	2
194.	3	2	238.	3	2	282.	2	3	326.	2	1
195.	3	2	239.	3	2	283.	2	3	327.	2	1
196.	3	2	240.	3	1	284.	2	3	328.	2	1
197.	3	2	241.	3	1	285.	2	3	329.	2	1
198.	3	2	242.	3	1	286.	2	3	330.	2	1
199.	3	2	243.	3	1	287.	2	3	331.	2	1
200.	3	2	244.	3	1	288.	2	3	332.	2	1
201.	3	2	245.	3	1	289.	2	3	333.	2	1
202.	3	2	246.	3	1	290.	2	3	334.	2	1
203.	3	2	247.	3	1	291.	2	3	335.	2	1
204.	3	2	248.	3	1	292.	2	3	336.	2	1
205.	3	2	249.	3	1	293.	2	3	337.	2	1
206.	3	2	250.	3	1	294.	2	3	338.	2	1
207.	3	2	251.	3	1	295.	2	3	339.	2	1
208	3	3	252.	3	1	296.	2	3	340.	1	1
209.	3	3	253.	3	1	297.	2	3	341.	1	2
210.	3	3	254.	3	1	298.	2	3	342.	1	2
211	3	3	255.	1	2	299.	2	3	343.	1	2
212.	3	3	256.	1	2	300.	2	3	344.	1	2
213.	3	3	257.	1	2	301.	2	3	345.	1	2
214.	3	3	258.	1	2	302.	1	3	346.	1	2
215.	3	3	259.	1	2	303.	1	3	347.	1	2
216.	3	4	260.	1	2	304.	1	3	348.	1	2
217.	3	4	261.	1	2	305.	1	3	349.	1	2
218.	3	4	262.	1	2	306.	1	3	350.	1	2
219.	3	4	263.	1	2	307.	1	3	351.	2	2
220.	3	4	264.	1	2	308.	1	3	352.	2	2
221.	3	4	265.	1	2	309.	1	3	353.	2	2
222.	3	4	266.	1	2	310.	1	3	354.	2	2
223.	3	4	267.	1	2	311.	1	3	355.	2	2
224.	3	4	268.	1	2	312.	1	2	356.	2	2
225.	3	4	269.	1	2	313.	1	2	357.	2	2
226.	3	4	270.	1	2	314.	1	2	358.	2	2
227.	3	4	271.	1	2	315.	1	2	359.	2	2
228.	3	4	272.	1	2	316.	1	2	360.	2	2
229.	3	4	273.	1	2	317.	1	2	361.	2	2
230.	3	4	274.	1	2	318.	1	2	362.	2	2

231.	3	4	275.	1	2	319.	1	2	363.	1	2
232.	3	2	276.	2	3	320.	1	2			

Note: Qn = Questionnaire; F = Frequency