

**IMPACT OF SCHOOL LOCATION ON ACADEMIC ACHIEVEMENT OF
SCIENCE SUBJECTS IN KCSE: A CASE OF RURAL AND URBAN SCHOOLS
IN HOMABAY SUB COUNTY IN HOMABAY COUNTY.**

**BY
VERONICAH A. LONGONDO**

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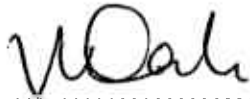
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DECLARATION


This project is my own and original task which has never been presented to any university for a fulfillment of any degree.

Signature..........Date.....04/07/2018.....

NAME: ONGONDO VERONICAH AKELLO

STUDENT REG NO: L40/85217/2016

This project has been presented with my approval as the supervisor for examination.

Signature..........Date.....04/07/18.....

Name: MR. DAN OLUOCH

Lecturer,

University of Nairobi.

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ABSTRACT

This study sought to investigate the impact that location of a school has on the performance of learners in science subjects in KCSE. Research conducted by the embassy of the republic of Kenya Washington showed that there are approximately 3,000 secondary schools in Kenya. These schools are distributed all over the country with some being located on the rural areas of Kenya while others are located on the urban areas of Kenya. Science subjects are taught in all these schools whether rural or urban. This study was based on the following objectives: to; Find out whether the availability of trained teachers in the rural and urban schools have effect on science performance in K.C.S.E., Determine whether availability of good infrastructure cause effect on science performance in rural and urban schools and Find out whether variations in the attitudes of learners in rural and urban students have effect on their performance in science. This research was carried out in a few schools in Homabay Sub County. Four schools were selected, two from urban and two from rural areas with the research design being a case study. The sample size was a total of 184 respondents consisting of teachers and students. Questionnaires were used as the research tools to collect information from the respondents. The questionnaires were later analyzed, Tabulated and formatting done for the purposes of coding and putting them in form of tables using the descriptive and inferential statistics. From the findings it was seen that majority of the students in the urban located schools found it easy to study their science subjects and the teachers in those selected urban schools were all trained and this was unlike the counterparts in the rural located schools. Regarding the attitudes of the students towards science subjects, it was realized that majority of the respondents from urban located schools had good attitude while those from rural located schools had negative attitude. A significant majority of the respondents in the urban located schools indicated that their performance in the science subjects were well because majority of them agreed that the facilities such as laboratories, libraries, electricity and even good roads leading to their schools were adequate. On the contrary, rural located schools lacked those facilities as was shown by the respondents. In conclusion, it was found out that science subjects were well performed in urban located schools better than the rural located schools.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Education has been defined by very many different scholars. What stands out in all of the definitions is that in education one acquires knowledge which is applied in every day's life. Education therefore is key for the development of all countries whether developing or developed and in particular, Science education whose learning cannot be avoided in schools since it has become core in the socio-economic success of these countries. The development of any country that counts on science and technology, attaches to the science education of that particular country. Being that Science is a primal part of our day to day life and vital to our knowing of the world, it educates us in the means of finding out about the world, and by doing so we acquire the ability to develop ideas and knowledge on how things work. Science education is therefore important, since science can influence the decisions of individual citizens which in turn influence the developmental efforts of a given country.

Homa bay county and in particular Homa bay sub county also relies on the science education offered in the schools for its success and development. Rural and urban schools in Homabay Sub County have been believed to have variations in their features which contributed to the differences in their performances. Lipton (1977) argues that rural people are the main source of their own difficulties by rapid population growth and Okafor (1986) looks at the source of rural problems as lack of understanding the true relationship between urban and rural which should be symbiotic.

1.2 Statement of the Problem

Learning in science requires a lot of practical work which is mostly carried out in the laboratories in schools. Rural and urban areas have a lot of differences in their demographic and physical properties. The rural areas are characterized by inadequate infrastructure, aging population and agrarian orientation Adediji (1998); whereas the urban areas are characterized by increasing industrialization and availability of modern infrastructure. The citing of secondary schools by the government of Kenya does not take into consideration characteristics of the rural and urban areas because of its plan to make secondary school more accessible to the people even in the remote areas. Huge difference has been realized in the rural and urban in relation to inadequate resources which include materials and man power and the management level. These characteristics have made it difficult for the science students in the rural schools to access science practices with ease.

1.3 Objectives of the study

The overall purpose of the study was to investigate the impact that location of a school has on learner's performance in science. More specifically, the primary objectives were to:

- 1) Find out whether there are availability of trained teachers in the rural and urban schools and the effect on science performance in K.C.S.E.
- 2) Determine whether there are availability of good infrastructure and the effect on science performance in rural and urban schools.
- 3) Find out whether location of school affects the attitudes of learners in rural and urban schools and subsequently affect their performance in science.

1.4 Hypothesis

HO1: There is significant difference in science performance of students in rural and urban schools in Homa bay Sub County.

1.5 Research Questions

- 1) How does the availability of quality teachers (trained) affect the performance of science in rural and urban schools in Homa bay Sub County?
- 2) How does the availability of good infrastructure in rural and urban schools in Homa bay Sub County differ and in turn influence the performance of learners in science?
- 3) What is the effect of location of school on the learner's attitude in the rural and urban schools and their performance in KCSE science?

1.6 Significance of the study

One of the distinctive contributions of this study to the field of education is to extend the present knowledge related to location of schools on KCSE performance specifically science subjects. This study investigates the effect that location of schools present to the science performance. It would therefore provide suggestions on factors to be considered when citing a school at a particular location in order to make it fit for science learning.

1.7 Scope and limitations of the study

This study was conducted on students of some rural and urban schools in Homabay Sub County investigating conditions in the rural and urban areas in Homabay Sub County and further how they affect the performance of the learners in science. This research was carried out in just a few schools in one sub county therefore one major limitation is that the findings, conclusions and recommendations which apply to the schools in this region may not apply to other regions since certain cultures and characteristics remain limited just to this region and so may not apply to other regions.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

Science is core for the development of any country since a lot of scientific knowledge is required in carrying out research, in growth of industries, among others. Performance of students in science subjects vary between the rural and urban schools. A comparison table was developed to just try and show how different the rural and urban areas are since it is believed that it is these differences found in these locations that bring about the variations in the science performance of the students in the locations.

Table 2.1 The Comparison of Urban and Rural

Basis of comparison	Urban	Rural
Meaning	A settlement where the population is very high and has the features of a built environment is known as urban.	An area located in the outskirts, is known as rural.
The inclusion	Cities and towns	Villages and hamlets
Lifestyle	Fast and complicated	Simple and relaxed
The size of population	Densely populated	Sparsely populated
Surrounding environment	Greater isolation from nature.	Direct contact with nature.
Social mobility	Highly intensive	Less intensive
Division of labour	Always present at the time of job allocation.	There is no such division.
Associated with	Non-agricultural work, i.e. trade, commerce or provision of services.	Agriculture and livestock.
Development	Planned settlement exists in urban areas that are developed according to the process of urbanization and industrialization.	Developed randomly, based on availability of natural vegetation and fauna in the area.

In this chapter therefore a review is done to the literature that is related to this study. It entails some of the factors that affect rural and urban located schools which in turn affects the academic achievement of science students in those schools. These factors include: availability of trained teachers, availability of good infrastructure and the effect of location on the attitudes of learners in the rural and urban schools.

2.2. Availability of trained teachers in the rural and urban schools in Homabay sub county and its effect on science performance in KCSE.

Providing schools with qualified teachers that are properly trained has proved to be a difficult task for a lot of countries both in the rural and urban areas. A research by the UNESCO Institute of Statistics (UIS), shows that sub-Saharan Africa will need about 6.1 million teachers by the year 2030, of which 2.2 million will be positions that are newly created. For effective performance in science subjects (biology, chemistry and physics), a teacher plays an important role and is key. Afe (2001) records that teachers are crucial in the academic achievement of learners since they have the sole responsibility of translating policy into action and principles as they interrelate with the learners. Their views are supported by study conducted by Wright, Horn and Sanders (1997) in which they found out the teacher is the utmost essential aspect in student learning. Teachers play a role in the transmission of knowledge, skills and values which constitute in totality the learning process that is, education. According to oleuten (1983), knowledge of the subject content and skills in teaching are key for successful teaching-learning process. Kanno (1997) adds that these knowledge and skills acquired gives the teacher the ability to manage the challenges that come with teaching and it enables the teacher to deliver in

a way that will enable the learner to learn the concept taught and also find the learning stimulating and interesting. Perkins (2013) suggests that the attitude of the teacher has a direct effect on the attention of the students during the lesson teaching and this is supported by Adesoji and Olatunbosun (2008) who indicates that the mental outlook and alertness of the students is in relation to teacher qualities/characteristics.

Rosehotz and Simpson (2002), says that contemporary education thought holds that one of the key causes of unpredictable development in many nations is the inability to adequately staff schools with teachers. According Tyke and O'Brien (2002), schools are faced by a huge challenge of shortage of teachers as a result of increase in students' enrolment, teacher attrition and retirement, which ultimately leads to poor academic performance. Inadequate teachers in schools are believed to be a problem all over the world and Kenya is no exemption of it. Tyke and O'Brien (2002), adds that this inadequacy of teachers has resulted to low standards of education in many education systems since they employ untrained teachers to try and fill the vacancies that would otherwise be filled by the qualified teachers. All the stakeholders of education in general together with the general public have always thought that there are at least differences in the kind of education offered in the urban and rural schools, for example, Young and Fisher (1996) found out that the effectiveness of the education in rural areas was less than that of urban and that the competency was also low in the rural as compared to the urban schools.

Researchers of the International Online Journal of Educational Sciences, 2011, 3(1), 91-112 93 realized that the standard of a school is approximately higher when the teachers of the school have high academic qualification, if they teach in their areas of specialization in addition to the years of experience in the field of teaching. And that the teachers taking part in programs that are aimed at improving their professional skills also lead to a high quality of the school education. In support of their findings, Scheerens (1997) said that the academic qualifications of a teacher together with the number of years a teacher has taught have a direct influence on the achievement of the students as well as the performance of the school as a whole. This has been seen to have impact since teachers in the rural schools play a key role in cultivating the children who in most cases lack enough support at home. In addition, the trainers in education acknowledges that the more years a teacher teaches and the programs they attend to increase their professional quality, the more success the student achieves, and that teachers who are fruitful in teaching students are those with strong scholarly accomplishment. (Ballou 1996; Ehrenberg & Brewer 1994, 1995; Ferguson 1991).

Dr. Fred Matiang'i when he took office as the Cabinet secretary (Cs) Education in Kenya in 2013, he vowed to deal with the problem of untrained teachers in Kenyan schools. The Star News (2016:12) quoted the Cs Education Dr. Fred matiang'i to have said that with effect from January 2017 no one would be teaching in a school in Kenya without TSC certificate which he said that is only achievable if someone had trained and had been proven by TSC to have qualified for teaching in a class. He further said that the administrators would conduct inspection in all schools to ensure that only qualified

teachers handle lessons at the institutions. In a number of countries for example in Africa, trained teachers come out strongly to prefer urban postings. Akyeampang and Lewin (2002:346) states that more than 80% of trained teachers in Ghana prefer to teach in the urban schools. A number of benefitting issues could result in these preferences. An internet search, siteresources.worldbank.org reports that in several countries urban areas have high number of qualified teachers who are unemployed and the case in rural areas is unfilled positions. Furthermore, that the disparities in the conditions of living in the rural and urban is a huge constraint in attracting teachers to the rural schools.

2.3. Availability of good infrastructure and their effects on science performance in urban and rural schools.

The infrastructure of any school is important at any given time for the successful performance in the sciences. Infrastructure in the schools include; classrooms for learning, laboratories which are key for science practices, electricity used both in the laboratories and classrooms, libraries for helping with the scientific researches and further readings, classrooms, among others. Eshiwani (1993), talks of the achievement of students in the examinations as being influenced by the availability of instructional materials and school facilities like the laboratories, libraries, textbooks, laboratory equipment among others.

(Beynon, 1997) agrees that the academic performance of students depends in the important educational contributions which include; textbooks, chairs, desks, instructional materials, classrooms, among others. Ayoo (2002) and Eshiwani (1993) also supports

these studies that school environment such as; classrooms, desks and books have a direct result on good achievement among the students in developing countries. A facility like classroom is where the students spend the most part of their day whenever they are in school. A researcher like Wabuoba (2011) realized that in an overcrowded classroom, the students are not able to write freely, a situation that limits their potential and that the teachers' movement around the classroom is also limited thus reducing the help that the individual students would have received from the teachers. Science education has a lot of demonstrations carried out in those classrooms and this insinuates that teaching and learning process is hindered. Through the Koech report (1968), The Kenyan government realized that congestion within classrooms has a great impact on the teaching learning process. Just like many other scholars, the government realized that students cannot receive individual attention as the teacher is not able to move around freely in the class due to the congestion.

Aikens and Barbarin (2008) in their research realized that schools located in low economic status communities (which is the typical definition of the rural areas and the rural located schools), are mostly not adequately resourced a situation that affects the teaching-learning process. The government does provide adequate resources and even the Parents from low economic status are also unable to afford resources such as books, computers or tutors to make this upward learning environment. According to research done by Mandina shadreck (2012) in Zimbabwe, rural areas are improperly developed and remote and as a result the rural schools in these areas lack the proper infrastructure for teaching and learning as required. Infrastructure such as laboratories is a requirement

for science learning specifically for the practical work. Owoeye and Yara, (2010) realized that Laboratory work stimulates learners' interests since they are involved one on one as they are made to personally engage in useful scientific activities and experimentations

Orodho, (2013), furthers that poor results in academic is related to teaching as well as the learning resources put into it. Collin and Rosmiller (1987) assert that even highly competent teachers find it difficult to teach effectively with inadequate facilities or if they are lacking the necessary instructional materials. Education currently both in rural and urban schools is trying to embrace a lot of ICTs. The sluggish pace of the rural electrification programme means many rural schools will not be able to catch up as ICTs are normally powered by electricity and good connectivity. This signifies that if the infrastructure as a resource is put in a school then the outcome of achievement particularly in science will be good.

2.4. Effect of location on the attitudes of learners in the rural and urban schools and their subsequent effect on their science performance.

Attitude is defined differently by different scholars. One of the scholars Vaidaya (1989) defines it as a condition of readiness for a certain type of activity. This means that attitude towards science would refer to how learners welcomes the idea of learning science that is, how ready they are to it. A lot of researchers have tried to carry out researches on the topic of attitudes but a huge challenge that they always receive is the fact that a lot of factors normally contributes to attitude of an individual towards science. A lot of scholars (Breakwell and Beardsell 1992; Brown 1976; Crawley and Black 1992;

Gardner 1975; Haladyna, Olsen, and Shaughnessy 1982; Keys 1987; Koballa Jr. 1995; Oliver and Simpson 1988; Ormerod and Duckworth 1975; Piburn 1993; Talton and Simpson 1985, 1986, 1987; Woolnough 1994) in their studies have included a set of factors leading to attitudes of students towards sciences, some of which include: the value that students have for sciences, the confidence they have at science, regard of the science teacher(s), the desire towards science subjects, the attitudes of the classmates and friends towards the science subjects, the perception of parents to science, the general school environment, the individual performance of the student in science, among others. In support of the findings of all these scholars, Adesoji (2008) in his research realized that there are a number of things that could influence the attitude of students to science some of which included the influence of parents, career interest of the students, how society look at science among others and pollard and Triggs, (2000), also supports this by saying that those people around the learners particularly the parents and teachers needs to provide opportunities and time to all that pertains to science so as to help the learners have more positive attitude to science subjects.

A very important factor that affect the kind of education that students receive is how best the parents gets involved in the learning process of their children at all their education levels (Flaxman & Inger, 1991), which they say eventually reflects the quality of the schools education. Therefore, Henderson, (1994), suggests that parents must be involved at all grades and classes so as to achieve quality education in schools. Some experts believe that parent expectations is the most influential factor affecting youth decisions to pursue education (Esterman & Hedlund, 1995; Smith, Beaulieu, & Seraphine, 1995). Herman, Zayco and tucker (2002) advocates that academic performance of learners is only directly affected

by motivation and that all the things affect performance due to their effect on motivation. According to Anwar, (2005), motivating students enable them to have positive attitude towards their studies and also to be more obligated in their school work and society. This positive attitude is really key for the better achievement in science results.

Of importance also is the suggestion of (Breakwell and Beardsell 1992; Talton and Simpson 1985), that attitude towards science for students is strongly determined by the attitude of the peers and friends. His point is explained by the model of Head's (1985) where he tried to explain adolescence as a period of stay where an individual is trying to make a self-identification and is deeply affected by the norms of the peers. Boys for example would do science because science is looked at customarily as male subjects while girls would avoid science since it is not believed to be for women and by doing so they are trying to establish their own gender identity.

According to Peterson, (1978), a lot of teenagers from the urban schools are highly motivated and have high self-esteem as compared to those from the rural schools and in support, Barcinas (1989) adds that the students from urban schools have high career and educational ambitions as compared to the students in rural schools. The thinking of 'I can do it' among the urban students improves their attitude towards the science subjects. (Moore, Baum, & Glasgow, 1984; Cosby & Picou, 1973) have shown in their work that rural and urban residences are related to the educational and occupational ambitions of the youths in those areas. Peterson (1978) found adolescents from large urban communities thought more highly about themselves than did adolescents from rural

communities. And to sum it up Barcinas (1989) concluded that urban students have greater educational and occupational ambitions than rural students.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

The type of research design that was used in this study was case study design since it enabled the researcher to compare in depth the degree of the influence of a school location on the performance of science. The design was therefore seen to be appropriate to the title of study.

3.2 Research Site and Population

The research was carried out in rural and urban schools in Homa bay Sub County and it involved four schools, two in urban and two in rural in Homa bay Sub County, and a few teachers and students from those schools selected to take part.

3.3 Sample Size and Sampling Technique.

The sample size was 184 respondents which included the teachers and the students. Fourty students from each of the four schools and six teachers form each of the schools. Of the six teachers, two were from the biology department, two from chemistry department and the last two from physics department, while 20 students from form 3 and another 20 from four were selected.

To get the right sample of students, the researcher used the systematic sampling technique. For the researcher to have chosen 20 form four students out of 100 students in each school, first the sampling constant (K) was calculated.

Sampling Constant, $K = \text{Population divided by sample size.}$

Therefore, $K = 100 \text{ divided by } 20 = 5$

So $K = 5$

The 100 students were each given numbers ranging 1-5 and all those with number 5 were selected and thus resulting in the twenty form four students that took part in answering the questionnaires. The same procedure was done for the form three class. Purposive sampling technique was used to select the six teachers in every school. The heads of each of the three departments were asked to pick one teacher from their department with the highest experience in teaching together with themselves.

3.4 Research Tools and their Validity

The research tool used was use of questionnaires which had high degree of honesty since the respondents didn't give their names or any personal details. This tool collects quantitative data which the researcher was able to objectively analyze.

3.5 Ethical Issues

The questions used were not intended on personal matters of the respondents to make them feel free to respond and not to be offended. The details of the respondents were not required on the questionnaires to preserve their discretion.

3.6 Data Collection

Before the actual collection there was pre-testing of the questionnaires which was done to about 1% of the entire sample size to identify the limitations on the tool for example lack of enough space for responding, vague questions shown by the different interpretations

by the respondents. The researcher visited the selected schools and distributed the questionnaires to the respondents. The questionnaires were developed to address the objectives of the study, research questions and the hypothesis. Data about the performance in science in the schools were gathered, data about effect of infrastructure on location of the school was also collected together with the availability of trained teachers. Since all the respondents were literate, each one answered their questions individually and eventually the researcher collected back all the 92 questionnaires for analysis.

3.7 Data Analysis

The questionnaires were analyzed for each individual and the data expressed in Percentage which was used to categorize the negative effects and the positive effects. Tabulation and formatting was done for the purposes of coding and putting them in form of tables using the descriptive and inferential statistics.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION

4.0 Introduction

In this chapter, the results are presented on the impact that location has on the science achievement of students in KCSE. This research was done in two rural schools and two urban schools within Homabay sub county. The researcher went ahead and presented the results as per the objectives of the research. The frequencies (F) of the respondents were provided in the tables and the percentage frequencies (%F) tabulated as seen in the tables and charts below.

4.1. The Grounding characteristic of the Respondents.

In each of the schools the researcher had a total of 46 respondents, out of which 20 were form four students, 20 were form three students and 6 were teachers. One teacher was a head of a science department and another was a member of that department that is, two from chemistry department, two from biology department and the last two from physics department. The systematic sampling technique was used to get the right sample size of the students and since the research was considering location of a school and how it affects achievement, the researcher did not take into consideration the different genders and even the different ages of respondents.

After the questionnaires were collected back, the researcher went through each of them to sort them out. All those from teachers were well answered and so were easily used. A few students from the rural schools did not complete all the questions and so their questionnaires were discarded. Out of the 80 student questionnaires from the rural

schools, 5 of them were discarded leaving the rest 75. All the 80 student questionnaires from the urban schools were considered.

4.2 Results

4.2.1 Responses of students on the quality of teachers

Table 4.1 Students' response on the effect of quality of teachers on science performance

Question	Response								
	Urban					Rural			
	SD		D	A	SA	SD	D	A	SA
	F	%F	F	F	F	F	F	F	F
		%F	%F	%F	%F	%F	%F	%F	%F
The science teachers make it easier for me to understand the science concepts by their way of teaching.	1	1.25	5 6.25	39 48.75	35 43.75	7 9.33	41 54.67	22 29.33	5 6.67
The science teachers vary their methods of teaching.	0	0	2 2.5	28 35	50 62.5	60 80.0	12 16.00	3 4.00	0 0
We have a practical lesson at least one time in a week.	0	0	15 18.75	40 50	25 31.25	70 93.3	5 6.67	0 0	0 0
My science teachers use models, charts, clips and other teaching aids every lesson time	0	0	9 11.25	50 62.5	21 26.25	50 66.67	13 17.33	12 16.00	0 0

As shown in Table 4.1, 48.75% of the students from the urban schools agreed that the science teachers make it easy for them to understand concepts by the way they teach, 43.75% of those students strongly agreed to it, 6.25% disagreed with 1.25% of those students strongly disagreeing with the statement. On the other hand, 6.67% of the students from the rural schools strongly agreed that the science teachers make it easier for them to understand concepts by the way they teach, 29.33% agreed, 54.67% disagreed and 9.33% of those students strongly disagreed.

62.5% of the students from the urban schools strongly agreed that their science teachers varied their methods of teaching, 35% agreed and 2.5% disagreed. 80% of the students from the rural schools strongly disagreed with the statement, 16% disagreed while 4% agreed to it. On whether they had a practical lesson at least once in a week, 31.25% of the students from the urban schools strongly agreed, 50% agreed to it, and 18.75% disagreed with the statement. 93.33% of the students from the rural schools strongly disagreed with this statement and 6.67% of the students disagreed.

On the statement that science teachers use teaching aids such as charts, models, clips and others during the lessons, the following response varied among the students: 26.25% of the student respondents from the urban schools strongly agreed to the statement, 62.50% agreed while 11.25% disagreed. 66.67% of the student respondents from the rural schools strongly disagreed with the statement, 17.33% disagreed and 16.0% agreed to it. None of these students strongly agreed.

4.2.2 Responses of teachers on the quality of teachers

When teachers were questioned on how many they were in their respective departments, 50% of the urban teachers said they had above 5 teachers and another 50% said they had a range of 3-5. 100% of their colleagues in the rural said they have a range of 1-2 teachers in every science department. On how many of those teachers were trained, 100% of the urban teachers agreed that all of their science teachers were trained and registered by the TSC. From the rural schools, 50% of the teachers said that few of their teachers were trained and another 50% of them said that none of their science teachers were trained.

The teachers were also asked to rate how often their science teachers used the different methods in teaching and this was their response, 100% of teachers in the urban schools said they use the practical method frequently while 100% of the teachers from the rural schools said they occasionally used this practical method. For the demonstration method, 70% of teachers from the urban schools said they occasionally use it, 20% said they frequently use and 10% of the teachers said the method has never been used. On the same method, 95% of teachers from the rural schools said they have never used that method in teaching science and 5% of the teachers said they use the method occasionally. 100% of teachers from the urban schools and 100% of teachers from the rural schools admitted that they frequently use the lecture method to teach their science subjects. For the other methods, 100% of teachers from the rural schools said that they never use any of them while for teachers from the urban schools, 50% said they never use them and another 50% said they use them occasionally.

4.2.3 Responses of students on Availability of infrastructure in the school.

The results on Table 4.2 below shows that 87.50% and 12.50% of the students from the urban schools strongly agreed and agreed respectively that there are access of good roads to their schools, as compared to their counterparts from the rural school where 8.0% agreed. 37.33% of the students from the rural schools strongly disagreed with the statement and 54.67% disagreed.

All the proportion of student respondents from the urban located schools 100% strongly agreed that there are laboratories for science practical lessons in their school as compared to a majority 60.0% students from the rural schools who strongly disagreed with an equal proportion of 20.00% disagreed and agreed respectively. In as much as the student respondents from the urban located schools overwhelmingly agreed that their schools have science laboratories, only a proportion of 48.75% strongly agreed that those laboratories were fully equipped with the required reagents and instruments required. 37.50% and 13.75% agreed and disagreed respectively. A very large proportion 77.33% of the students respondents from the schools located in the rural areas strongly disagreed with the statement while 9.33% and 13.33% of them disagreed and agreed respectively.

In respect to reliable electricity being available in the school, the whole proportion of the student respondents from the urban located schools 100% strongly agreed to the statement. On the other hand, a significant majority of those from the rural located schools 28.0% and 42.67% strongly disagreed and disagreed respectively with the statement. A small representation 25.33% of the students from the rural schools agreed to the statement.

In response to the school having at least one library for additional reading and research, a significant majority of 61.25% of the students from the urban located schools strongly agreed with the remaining 38.75% also agreeing. The student respondents from the rural located schools had 40.0% of them strongly disagreeing, 33.33% disagreed and 26.67% agreed, none of them strongly agreed.

Table 4.2. Students' response on the effect of availability of infrastructure to science performance

Question	Response							
	Urban				Rural			
	SD	D	A	SA	SD	D	A	SA
F	F	F	F	F	F	F	F	
%F	%F	%F	%F	%F	%F	%F	%F	%F
There is access of good roads to my school.	0 0	0 0	10 12.50	70 87.50	28 37.33	41 54.67	6 8.00	0 0
There are laboratories for science practical lessons in my school.	0 0	0 0	0 0	80 100	45 60.00	15 20.0	15 20.00	0 0
Laboratories are fully equipped with the required instruments and reagents necessary for science practical.	0 0	11 13.75	30 37.50	39 48.75	58 77.33	7 9.33	10 13.33	0 0
There is reliable electricity in the school used in the laboratories, classrooms and library.	0 0	0 0	0 0	80 100	21 28.0	32 42.67	19 25.33	3 4.00
There is at least one library for research and extra reading of science in the school.	0 0	0 0	31 38.75	49 61.25	30 40.0	25 33.33	20 26.67	0 0
My school performs well in the science subjects because of the adequacy of these facilities.	0 0	3 3.75	5 6.25	72 90.0	75 100			

4.2.4 Responses of teachers on availability of infrastructure in the school.

Table 4.3. Teachers' response on the effect of availability of infrastructure to science performance

Question	Response							
	Urban				Rural			
	SD	D	A	SA	SD	D	A	SA
F	F	F	F	F	F	F	F	F
%F	%F	%F	%F	%F	%F	%F	%F	%F
There are access of good roads to the school.	0 0	0 0	0 0	6 100	2 33.33	2 33.33	2 33.33	0 0
The school has reliable electricity within the compound to serve in the laboratories, libraries etc.	0 0	0 0	0 0	6 100	1 16.67	5 83.33	0 0	0 0
There is at least one science laboratory in the school that is properly equipped.	0 0	0 0	2 33.33	4 66.67	3 50.00	1 16.67	2 33.33	0 0
There is at least one library for science research work in the school.	0 0	0 0	3 50.0	3 50.0	2 33.33	2 33.33	2 33.33	0 0
The library is well equipped with varieties of reading and research materials for use by the teachers and the students.	0 0	0 0	5 83.33	1 16.67	6 100	0 0	0 0	0 0

The teachers were asked to rate the availability of infrastructure in their respective schools which entailed good roads, electricity, laboratory, libraries among others. All the teacher respondents that are 100% respondents of those teachers from the urban located schools rated strongly agree that there are access of good roads to their respective schools. All the teacher respondents from the rural located schools rated strongly disagree, disagree and agree at equal proportion of 33.33%.

From the Table 4.3 above, it is evident that the respondents from the urban located schools strongly agreed 100% that their schools had reliable electricity within the school compound. Those from the rural located schools had different opinions regarding this statement since 16.67% strongly disagreed and the rest 83.33% disagreed.

In regard to presence of laboratory in the school that is well equipped, the respondents from the urban located schools rated as follows: 66.67% strongly agreed and 33.33% agreed. There was no DS OR D registered. The respondents from the local schools varied their ratings as follows: 50% of them strongly disagreed, 16.67% disagreed while the other 33.33% agreed to the statement.

On the question of the presence of a library in the school for further reading and research, the respondents from the urban located schools agreed and disagreed at equal proportion of 50 % each. The respondents from the rural located schools also rated equal proportion of 33.33% for strongly disagree, disagree and agree.

The respondents from the rural located schools overwhelmingly at 100% strongly disagreed that the libraries in their schools are well equipped with reading and research materials. 83.33% of the respondents from the urban located schools agreed that their libraries were well equipped and 16.67% strongly agreed to it.

4.2.5 Responses of students on the attitude of the learners towards the science subject.

Table 4.4. Students' response on the effect of variations of students' attitude on Science performance.

Question	Response							
	Urban				Rural			
	SD	D	A	SA	SD	D	A	SA
	F %F	F %F	F %F	F %F	F %F	F %F	F %F	F %F
I love my science subject(s) and always ready and willing to learn it.	0 0	3 3.75	50 62.50	27 33.75	35 46.66	30 40.0	10 13.33	0 0
My role models are my parents and people within my locality.	0 0	15 18.75	12 15.00	53 66.25	2 2.67	5 6.67	33 44.0	35 46.67
The economic activities of my parents and the locality reduce my interest in my science subjects.	30 37.5	29 36.25	21 26.25	0 0	1 1.33	10 13.33	14 18.67	50 66.67
My parents get involved in my school academic activities and functions.	0 0	15 18.75	25 31.25	40 50.0	27 36.00	36 48.0	10 13.33	2 2.67
I get motivated to better my science achievement whenever my parents get involved in my school functions.	0 0	15 18.75	50 62.50	15 18.75	16 21.33	11 14.67	27 36.0	21 28.0

Results from the Table 4.4 above shows that the student respondents from the urban located schools had varied opinions regarding the statement that they loved their science subjects and were always ready and willing to learn it. 33.75% of them strongly agreed, 62.50% agreed and 3.75% disagreed. The respondents from the rural schools also had varied opinions regarding this statement as 46.66% strongly disagreed, 40.00% disagreed and 13.33% agreed to the statement.

66.25% of the respondents from the urban located schools strongly agreed that their role models were their parents and people within their locality, 15.00% agreed to the statement while 18.75% disagreed. On the same statement, a high percentage of 46.67% also strongly agreed, 44.0% agreed, while 13.33% and 1.33% disagreed and strongly disagreed respectively.

On whether the economic activities of the parents and the locality reduce their interest in science, 37.50% of students from the urban located schools strongly disagreed with it, 36.25% disagreed and the remaining 26.25% agreed to the statement. Their peers from the rural located schools had a large majority of the respondents 66.67% strongly agreeing to the statement, 18.67% agreeing and 13.33% agreeing to the statement.

50% of the respondents from the urban located schools strongly agreed that their parents get involve in their school education functions and activities, 31.25% agreed and 18.755% disagreed with the statement. On the other hand, 36% of the respondents from the rural located schools strongly disagreed that their parents got involved in their

academic school functions, 48% disagreed, 13.33% agreed and the remaining 2.67% strongly agreed. There was also mixed thoughts from the respondents both from the urban and rural located schools on whether they got motivated to better their science achievement whenever their parents got involved in their school education activities. From the respondents from urban schools, 18.75% of them strongly agreed, 62.50% agreed, 18.75% disagreed. From the rural located schools, 28.0% strongly agreed, 36% agreed, 14.67% disagreed and the rest percentage of 21.33% strongly disagreed.

4.2.6. Responses of teachers on the attitudes of learners towards the science subjects.

Table 4.5. Response of teachers from urban located schools (ULS) on the overall attitude of their learners to science subjects.

Responses on the attitudes of the learners	Frequency	Percentage frequency (%)
Poor	1	16.67
Good	3	50
Very good	2	33.33

The above Table 4.5 shows the percentage responses given by the respondents from the urban located school on how they would rate the overall attitude of their students towards the specific science subjects. 16.67% of the teachers rated the attitudes as poor, 50% rated as good and 33.33% rated the attitudes as very good.

Table 4.6. Responses of teachers from rural located schools (RLS) on the overall attitude of their learners to science subjects.

Responses on the attitudes of the learners	Frequency	Percentage frequency (%)
Poor	3	50
Good	2	33.33
Very good	1	16.67

The respondent teachers from the RLS also rated the overall attitude of their students towards the science subjects as shown in Table 4.6. A large number of them that is 50% said the attitudes were poor, 33.33% said it was good and 16.67% said it was very good.

4.2.7 Responses of teachers on the main economic activities carried out on the locations.

Table 4.7. Responses of teachers from ULS on the main economic activities of the people of the surrounding locality.

Economic activities	Frequency	Percentage frequency (%)
Small scale farmers	2	33.33
Employed	3	50
Non- employed	1	16.67

On the main economic activities of the people living in the locality including parents of the school, 50% of the teacher respondents from urban located schools stated that they were employed, 33.33% stated that they were small scale farmers and 16.67% stated that they were non employed.

Table 4.8. Responses of teachers from RLS on the main economic activities of the people of the surrounding locality.

Economic activities	Frequency	Percentage frequency (%)
Small scale farmers	3	50
Employed	1	16.67
Non- employed	2	33.33

In Table 4.8 the teacher respondents from the rural located schools had their different views on the main economic activities of the locality as depicted by the table. 50% of the respondents said that most people in their locality practiced small scale farming while 16.67% and 33.33% said they were employed and non-employed respectively.

4.2.8 Responses of the teachers on the parents' attendance to school education functions and activities.

Table 4.9. Responses of the teachers from ULS on the attendance of parents to education functions and activities.

Parents' attendance to school functions and activities.	Frequency	Percentage frequency (%)
Low	1	16.67
Average	1	16.67
Above average	4	66.67

Teacher respondents were also asked to rate the attendance of parents of their school locality to the school education activities and functions, and as shown in the above Table 4.9, the respondents in the urban locality rated the parents' attendance as follows: 66.67%

overwhelmingly rated it as above average, 16.67% rated average with another number of 16.67% rating low.

Table 4.10. Responses of the teachers from RLS on the attendance of parents to education functions and activities.

Parents' attendance to school functions and activities.	Frequency	Percentage frequency (%)
Low	3	50
Average	2	33.33
Above average	1	16.67

Table 4.10 shows how the respondents in the rural locality rated their parents' involvement in the school education activities and functions. A high number was registered for low attendance by 50% of the respondents. 33.33% rated average and 16.67% of the respondents rated above average.

On their opinion of how economic activity of the locality affects the attitude of the learners towards the science subjects, a lot of views were given. Some of the respondents from the RLS said it demoralizes the students making them not to see the need of working hard in sciences since the small scale farming practiced there did not require science knowledge. Some other people from the ULS said that a number of their students got motivated since they saw they kind of employment which their parents had most of which was as a result of science subjects, such students therefore work hard in science since they want to be like their parents.

Both respondents from the ULS and RLS registered the highest percentage of those who strongly agreed that parents' involvement in the school education functions and activities motivates learners thus improving their attitude towards the science subject. 98% of the respondents from ULS strongly agreed to the statement with 2% agreeing to it. 90% of the respondents from the RLS strongly agreed, 5% agreed while another 5% disagreed with the statement.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS.

5.0 Introduction

In this chapter, the researcher gives a summary of all the findings made as per the objectives of the study then makes a conclusion and finally highlights a few recommendations arising from the whole study and findings.

5.1 Summary

5.1.1 Availability of trained teachers in the rural and urban located schools.

From Table 4.1, it can be seen that majority of the students in the urban located schools find it easy to study their science subjects from the way their teachers teach. The teachers' response showed that all the science teachers in the urban located schools are trained, no wonder the majority of the students there admit that they vary their methods of teaching and try to use different teaching aids. This is unlike their counterparts in the rural located school where the teacher respondents admitted having a few if not none of the trained teachers. These untrained teachers are therefore not able to teach professionally making it difficult for the learners there to understand the concepts being taught. In an oral interview with the principals of the different schools, they said they were having those untrained teachers to offer alternative cheap labor since the school and the parents cannot pay better salaries to the trained teachers unlike the urban schools where parents easily pay better money to hire the trained teachers.

5.1.2 Availability of good infrastructure in the rural and urban schools

A significant majority of the learners in the urban located schools, according to the Table 4.2, puts it clearly that their performance in the science subjects is well and it is because majority of them agree that the facilities such as laboratories, libraries, electricity and even good roads leading to their schools are adequate. Their teachers also support their statements and they add that due to this adequacy they are able to carry out practical lessons at least once a week. On the contrary, rural located schools lack these facilities as shown in the response of the students and the teachers in those locations and so their science learning is eventually impaired.

5.1.3 Effect of location on the attitudes of the learners.

Generally, at least half percentage frequencies of all the respondents from the urban located schools said that the learners' general attitudes towards their science subjects are good. The teachers said so and most students confirmed by saying they loved their science subjects and were working hard in them. This was the unlike situation in the rural schools since most of them didn't have a positive attitude towards the science subjects. Both learners from the ULS and RLS agreed that their role models are their parents and people in their surrounding and therefore the economic activities of the surrounding either motivated or demoralized the learners towards the science subjects.

A lot of people in surrounding the urban located schools were employed which first required their good performance in the sciences and there the students from the ULS worked passionately in science so that they could become employed as people they saw

in their surrounding and besides, a lot of their parents attended the school functions and activities since most were literate and knew the importance of such and in turn they motivated their children as confirmed by the student respondents in the ULS. As opposed to the urban areas, the responses from the RLS showed that majority of people were small scale farmers with another high number as non-employed. Most learners in the RLS therefore looked forward to working in the farms which did not require scientific skills and so they saw less importance in striving to work hard in the sciences, besides they saw the non-employed people still able to raise their families. Majority of The respondents in the RLS also admitted that most parents did not get involved in the school functions and activities and this demoralized the students thus lowering their attitudes towards their science subjects.

In the opinions of the respondents from the rural located schools, the location of their school was a major hindrance to the science performance of the learners in KCSE because of the many inadequacies by the government and the surrounding itself. They claimed that the government after opening the schools forgot immediately about its existence to be able to meet its growing demands. They also argued that the parents in the locality also did not take seriously the importance of science education for their children and so did not work hand in hand with the teachers to better the science performance and they could not go out of their way to assist in availing any necessary thing to better the learners performance in science.

5.2. Conclusion

After carrying out a concrete research and analyzing the findings from the respondents, the researcher concluded that there was a significant difference in science performance of the students from urban located schools and those from rural located schools. This difference was attributed to by the many challenges faced by schools in the rural areas. This research did not explore all the differences and therefore the findings were specific to research on the availability of trained teachers in the rural and urban located schools, the availability of good infrastructure and the influence of location on the learners' attitude towards their science subjects. From the findings, it is important that the government does not only focus on expanding the secondary schools in order to make it available to the rural areas, but they should consider the quality of the education that is going to come out of it. This is important if the country has to have efficient and sufficient scientists in the future.

5.3. Recommendations

The recommendations provided here are those that were suggested by the respondents from both locations and as provided by the researcher on what can be done to ensure that the difference in location of a school should not be a hindrance to good performance of the learners in science subjects so that the learners will do well in their science subjects irrespective of where their school was located.

1. The government of Kenya together with other stakeholders in the secondary science education should put a lot of emphasis in providing the required facilities like electricity that is reliable to the rural located schools so that they are able to

use the laboratories and libraries without any inconvenience just like their counterparts in the urban located schools.

2. The government should do follow up in the rural schools like it does in the urban located schools to ensure that no untrained teacher goes to the classes to teach.
3. The ministry of education together with other stakeholders in the science education should work on sensitizing the parents and surrounding RLS on the importance of science education and their involvement in the school education functions and activities.
4. The TSC through the help of the government should deploy more trained teachers to the rural located schools so that they offer quality teaching in the science subjects.
5. The government should ensure that a laboratory is a requirement in any school before it is opened and started off.

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APPENDICES

APPENDIX I

**OFFICIAL LETTER FROM THE UNIVERSITY REQUESTING AUTHORITY
TO CARRY OUT RESEARCH**



**UNIVERSITY OF NAIROBI
OPEN, DISTANCE AND E-LEARNING CAMPUS
SCHOOL OF OPEN & DISTANCE LEARNING**

Telegram: "VARSITY" NAIROBI
Telephone: 245-020-318262
Telex: 28520Varsity KE

P.O Box 30197 NAIROBI
NAIROBI, KENYA
e-mail: acadreg@uonbi.ac.ke

8th November, 2017

RE: VERONICA A. ONGONDO L40/85217/2016

The above named is a student at University of Nairobi, ODeL Campus, Education Programmes Unit she is undertaking her Post-Graduate Diploma in Education (PGDE). We authorize her to carry out her research on, *"The influence of school location on the performance of Science in Kenya Certificate of Secondary Education" in Homabay County, Homabay Sub-County.*

Any assistance accorded to her is highly appreciated by this School to enable her compile her final document.

Thank you.


DR. DOROTHY KYALO
DEAN, SODL

APPENDIX II
QUESTIONNEIR FOR TEACHERS

INSTRUCTIONS. PUT A TICK IN THE BRACKET TO SHOW YOUR APPROPRIATE ANSWER

SECTION A: BACKGROUND INFORMATION

1. Gender: male () female ()
2. Teaching subject: () physics () chemistry () biology
3. Type of school: () public () private
4. Location of your school: () urban () rural

SECTION B: INFORMATION ON TEACHER QUALITY

5. How many science teachers are there in your department? () 1-2 () 3-5 () above 5
6. How many of the teachers in 5 above are trained in teaching the science subject?
() few () none () all
7. In a scale of 1-3, rate the teaching method used by the science teachers in your school:
(1)Never (2)Occasionally (3)Frequently
 - a. Practical.....()
 - b. Demonstration.....()
 - c. Lecture.....()
 - d. Others.....()

15. How do you think in your opinion, the economic activity of the locality affects the attitudes of the learners towards the science subject?

.....
.....
.....
.....
.....

16. How would you rate the attendance of the parents of your locality to school education functions?

Low **Average** **Above average**

17. Parents' involvement in school education functions motivates learners thus improving their attitude towards the science subject.

SD **D** **A** **SA**

SECTION E: ADDITIONAL INFORMATION

18. In your own opinion, how do you think the students' achievement in science is affected by the location of your school?

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19. What are some of the suggestions you would give that would ensure students achievement in science is not affected by the location of the school?

.....
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.....
.....

THE END

THANK YOU.

APPENDIX III
STUDENTS' QUESTIONNAIRE

INSTRUCTIONS. PUT A TICK IN THE BRACKET TO SHOW YOUR APPROPRIATE ANSWER

SECTION A: BACKGROUND INFORMATION

1. Gender: male () female ()
2. Form: Four () Three()
3. My science subject(s): () physics () chemistry () biology
3. Type of school: () public () private
4. Location of your school: () urban () rural

SECTION B: INFORMATION ON AVAILABILITY OF GOOD INFRASTRUCTURE

5. There are access of good roads to my school.
() SD () D () A () SA
6. There are laboratories for science practical lessons in my school.
() SD () D () A () SA
7. Laboratories are fully equipped with the required instruments and reagents necessary for science practical.
() SD () D () A () SA
8. There is reliable electricity in the school used in the laboratories, classrooms and library.
() SD () D () A () SA
9. There is at least one library for research and extra reading of science in the school.
() SD () D () A () SA

10. My school performs well in the science subjects because of the adequacy of these facilities. SD D A SA

SECTION C: INFORMATION ON THE ATTITUDES OF LEARNERS

10. I love my science subject(s) and always ready and willing to learn it.
 SD D A SA

11. My role models are my parents and some people in my locality.
 SD D A SA

12. The economic activities of my parents and the locality reduces my interest in my science subjects.
 SD D A SA

13. My parents gets involved in my school academic activities and functions.
 SD D A SA

14. I get motivated to better my science achievement whenever my parents get involved in my school functions.
 SD D A SA

SECTION D: INFORMATION ON QUALITY OF TEACHER

14. The science teachers make it easier for me to understand the science concepts by their way of teaching.
 SD D A SA

15. The science teachers vary their ways of teaching.
 SD D A SA

16. We have a practical lesson at least one time in a week.
 SD D A SA

17. My science teachers use models, charts, clips and other teaching aids every lesson time SD D A SA

SECTION E: ADDITIONAL INFORMATION

18. In your own opinion, how do you think the students' achievement in science is affected by the location of your school?

.....
.....
.....
.....

19 What are some of the suggestions you would give that would ensure students achievement in science is not affected by the location of the school?

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.....
.....

**THE END
THANK YOU.**