

# Availability of School Facilities and their Influence on Students' Academic Achievement in Public Day Secondary Schools in Kisii County, Kenya

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**Abstract:** - The study intended to investigate availability of essential school facilities and their influence on students' academic achievement in public day secondary schools in Kisii County. The study was guided by the Education production function model. The study adopted a correlational research design which involved students and teachers from the 246 public day secondary schools in Kisii County. The target population was 75,977 subjects comprising of 73,554 students and 2,423 teachers in public day secondary schools in Kisii County. The sample size was 350 students and 50 teachers totalling to 400 subjects. Data collection was done by use of student questionnaire Document analysis guide and Teachers Interview Guide. Data collected were both quantitative and qualitative. Quantitative data were analysed using descriptive statistics, correlational statistics and multiple regression. Qualitative data were analysed thematically and were reported as direct quotations. Findings from the analysed data were presented as tables, pie charts and graphs. The study found out that most facilities needed for teaching and learning were available in most public day secondary school in Kisii County. These facilities ranged from recommended course books and set books, basic laboratory equipment, classrooms and libraries. Among the facilities that were not available in almost all schools were libraries. The study indicated that availability of school facilities alone did not influence students' academic achievement.

**Key Words:** Availability, School Facilities, Academic Achievement, Public Day Secondary Schools

## I. INTRODUCTION

School facilities are the material resources that are used by learners and teachers so as to aid the teaching and learning process. In this study the school facilities that were studied were the size and capacity of classrooms, laboratories and laboratory equipment, library facilities, which included recommended textbooks and set books. According to Neji and Nuoh (2015), utilization of school facilities is the frequency with which the available school facilities such as laboratory facilities, library facilities, textbooks, set books and other reference materials are used during respective class lessons. Oriade (2008) did a separate study in Nigeria where he investigated the utilization of laboratory facilities in Biology. The findings showed that laboratory facilities were inadequately utilized in the teaching and learning of Biology in secondary schools.

According to Alimi (2004). The main purpose of school establishment is for teaching and learning. Schools therefore

need to have adequate facilities to enable teachers and learners to achieve the set objectives at the end of the course. This is the essence of the school plant and facilities. Carbonaro (2005) notes that several studies in the field of education have focused on school characteristics such as type of school (public or private), size, student body demographic, teacher qualification and their relationship to students' academic outcomes. Carbonaro (2005) continues to argue that, schools are able to influence their students' attachment, commitment in all school activities and academic achievement through their facilities. Students and teachers of schools with inadequate facilities are likely to fail in perceiving a clear focus on academic purposes and the learning environment and such a school is likely to be uncondusive for learning process to take place properly. Mwiria (2004) is in agreement with what Carboraro say about school facilities but says that materials on their own cannot bring about improved performance in schools.

In Nigeria, Udo (2006) notes that academic achievement of students in science subjects generally had witnessed a deplorable trend and linked his to inadequacy of laboratory facilities. On the other hand, Akpan (2006) on an investigation of the relationship between adequacy and academic performance in Chemistry in Nigeria examined adequacy of laboratory facilities using frequency counts and percentages. The result revealed that 61.1% of the total respondents agreed that the laboratory facilities for the teaching of chemistry were adequate in secondary schools. This poses a question as to why the deplorable trend of academic achievement of student in science subjects when the majority 61.1% agree that laboratory facilities for the teaching science are adequate.

According to the South African Press Release Login (PRLog, 2012) boarding schools have the facilities which are needed by students for their studies which creates a learning environment for pupils to access libraries, computers, while doing their work. This is particularly in boarding schools which is not the case in the non-boarding schools. While in agreement with adequacy of facilities in boarding schools the research fails to give reason why some students from boarding schools do not perform satisfactorily and some from non-boarding schools without facilities perform very well in examinations.

According to Reche et al (2012), Kenya's education system is dominated by examination oriented teaching where emphasis is laid on passing examination. Performance in examination is seen as an indicator of academic achievement which depends on the type of teaching and learning process that takes place in the school. It is for this reason that schools need to avail adequate and relevant facilities for teachers and learners to utilize them properly for their academic achievement. According to UNICEF (2000), teaching and learning can take place anywhere but the positive learning outcomes that educational systems seek will take place in quality learning environment. Quality learning environment that is aimed at better academic achievement includes quality school facilities, adequate instructional materials and textbooks, working conditions for teachers and students and the teachers ability to utilize these facilities through proper instructional approaches, availability of clean water supply and lavatories, classroom maintenance, space and furniture availability and lastly class size (UNICEF, 2000). According to Tremu and Sokan (2003) better academic performance is achieved through effective teaching and learning materials, proper teaching methodologies designed to encourage independent thinking, a well-maintained learning environment, well-trained and motivated teachers a well-designed curriculum, a valid and reliable examination system, adequate financing and effective organizational structure support.

This study attempted to establish whether there was a relationship between school facility utilization and students' academic achievement in public day secondary schools in Kisii County. Literature and researches on the extent of utilization of school facilities and students' academic achievement in public secondary schools seemed to be relatively scanty.

## II. OBJECTIVE OF THE STUDY

The main objective of the study was to establish the level of availability of essential school facilities and their influence on students' academic achievement in public day secondary schools in Kisii County.

## III. THEORETICAL FRAMEWORK

The study was guided by the production function model of education. In this case, the education production function model holds the view that a school is a firm which receives inputs (students, resources, teachers) and transforms them into educational outputs as graduates, through a process. Production function model has been used by a number of authorities including its proponent James Coleman (1966) and later by Fuller (1985). Coleman et al (1966) used this model in the United States of America in an attempt to measure on the contribution of various factors on educational achievement. The study was done to get the findings on why the poor and minority children performed poorly. The findings of this study which was released on July 4, 1966, revealed that children in schools were segregated by race and status. Those from poor background attended schools with inadequate

facilities. The production function of education model measures students' achievement by standardized achievement test scores. For this study school inputs are students and school facilities while school output are the students' academic achievement measured by test scores.

## IV. REVIEW OF LITERATURE

World Bank (2008) in a study on textbooks and school library provision in secondary education in Sub-Sahara Africa revealed that textbooks and libraries were not only inadequate but unevenly distributed among rural and urban schools in the area of study. Similarly Asiabaka (2008) on effective management of schools in Nigeria noted that the government's failure to establish policy directive on minimum standards in relation to schools facilities has led to disparities in acquisition. This is because while some have well equipped laboratories, libraries and other facilities for effective teaching and learning others have none and where they exist, such facilities are poorly equipped. On the same vein Olaniyan and Ojo (2008) also noted that lack of textbooks and training manuals was one of the challenges facing successful implementation of introductory technology in Nigerian secondary schools. This is supported by Chiriswa (2002) who noted that effective teaching and learning depends on the availability of suitable adequate resources such as books, laboratories, library materials and host of other visual and audio teaching aids which enhance good performance in national examination.

Philius and Wanjobi (2012) reveals that lack of facilities for teaching and learning are negatively affecting the academic achievement of schools. The result is in agreement with Hallak as cited in Owoeye and Yara (2011) as he posited that facilities form an important pillar in the academic achievement of students. He further argues that availability, relevance, adequacy and proper utilization of school facilities such as the entire school layout, playground and recreational equipment, buildings and accommodation, classrooms and furniture, libraries, laboratories and their apparatus and other instructional materials contribute to academic achievement. According to World Bank (2004), low quality schools can suppress schools' enrolment and impede student progression and achievement in developing countries. The education literature has not reached a consensus on the relationship between various elements of school quality and student outcomes despite the large number of public studies (Hanushek, 2007). Most of these studies focus on relationship between primary school quality and student's academic performance with more limited evidence at the secondary school level. This particular study on the other hand will focus on public day secondary schools. The main aim is to find out how these public day secondary schools utilize the available school facilities for their students' academic achievement.

According to Mbiti (2011) students in Kenya are assigned to public secondary schools on the basis their performance in the Kenya certificate of primary school examination, district level

allocation, and stated preferences for schools. The most selective (or elite) government schools are the National Schools, followed by the provincial (now County) schools and then the district schools (now Sub-County). National schools which are assumed to be having the best facilities attract the best students from the country while provincials (now County) schools attract the best remaining students from the region, and the district (Sub-County) schools admit the best remaining from the sub county. To encourage “National Unity”: there is a maximum number of students from each sub county that can attend each National and County/Extra County school.

## V. RESEARCH METHODOLOGY

The study used correlational research design so as to meet its objectives. The study was carried out in Kisii County of Kenya. The target population comprised of students and teachers in the 246 public day secondary schools in Kisii County. According to the Kisii County Education Office (2016), the total enrolment in public day secondary schools at the time of this study stood at approximately 73,554 students. The number of teachers employed by the Teachers Service Commission, teaching in public day secondary schools in Kisii County was approximately 2,423 (Kisii County Education Office 2016). All these added together brought the total to be 75,977 subjects and this formed the target population.

Sampling techniques that were used in this study included purposive sampling, systematic random sampling and non-proportionate sampling techniques. Teachers were sampled purposively where only two heads of departments were sampled one from language department and another from science departments in each school sampled. Students were sampled using systematic random sampling from a list provided. Schools were sampled using non proportionate sampling technique from the sub-counties. The data collection instruments that were used in this study included student questionnaires, Teachers interview guide and document analysis guide.

## VI. DATA ANALYSIS AND PRESENTATION

This study generated both quantitative and qualitative data. Babbie and Mouton (2002) refers to quantitative data analysis “as the stage where the researcher through the application of various statistical and mathematical techniques, focuses separately on specific variables in the data set”. The raw data that were collected from the field were organized and coded for analysis. The researcher used correlation to analyze quantitative data. Thematic analysis was used to analyze qualitative data. In this type of analysis data were organized, summarized and categorized into related themes. Patterns in the data were identified to look for relationships among the data. Direct quotations of the views expressed by respondents were used. Statistics that were gathered from quantitative data included means, frequencies, standard deviation and regressions.

## VII. RESULTS AND DISCUSSIONS

The study sought to establish the level of availability of essential school facilities and their influence on students’ academic achievement in public day secondary schools in Kisii County. It was meant to avail information on adequacy of essential school facilities in public day secondary schools in Kisii County and how these facilities influence students’ academic achievement. The essential school facilities under inquiry in this study were categorized into two, those required for the teaching and learning Languages and those required for the teaching and learning sciences. Facilities for teaching languages focused on English and Literature, Kiswahili and Fasihi, while facilities for teaching science the researcher focused on Physics, Chemistry and Biology. Classroom space, library and library facilities such as the recommended text books, Laboratory and laboratory facilities were also under inquiry. Students’ academic achievement is a contribution of all the subjects taught in a school and not only the subjects mentioned above that is; English, Kiswahili, Physics, Chemistry and Biology. To get the level of availability of school facilities, a twenty four item likert scale with all the essential school facilities recommended for secondary schools was constructed with a five scale ranging from; 1- Very Low, 2- Low, 3- Medium, 4- High and 5- Very High. Students were asked to respond to the likert scale which was used to get the computed summated score.

### a) *Level of availability of school facilities in languages.*

The compulsory language subjects taught in Kenyan secondary schools are English and Kiswahili. Out of the twenty four item likert scale constructed to investigate the level of availability of school facilities, six of them contained the essential facilities recommended for the teaching of languages.

Table 1: Categories of availability of facilities in languages

	Frequency	Percent	Cumulative Percent
Low availability	76	22.1	22.1
Medium availability	171	49.7	71.8
high availability	97	28.2	100.0
Total	344	100.0	

Table 1 above shows the responses on the level of availability of school facilities needed for the teaching and learning language subjects in Kenyan secondary schools. The table displays the results of the level of availability of schools facilities for the two language subjects under inquiry. The frequency column shows the number of responses and the percentage column shows the percentage representing the response. Results from this table revealed that the majority of the respondents 171 (49.7%) rated the availability of facilities needed for teaching and learning language subjects in public day secondary schools in Kisii County as medium, 97 (28.2%) rated the availability of these facilities as high, while 76

(22.1%) rated them as low. Cumulatively those who rated availability of school facilities as medium and high were 268 (77.9%). This shows that most public day secondary schools in Kisii County have availed recommended facilities for the teaching of language subject.

Table 2: Rate of availability of science facilities

	Frequency	Percent	Cumulative Percent
Low availability	20	5.9	5.9
Medium availability	119	35.2	41.1
high availability	199	58.9	100.0
Total	338	100.0	

Findings from table 2 above shows that the majority 199 (58.9%) of the respondents rated availability of school facilities needed in the teaching and learning sciences in their school as high. 119(35.2%) rated availability of these facilities as high while 20 (5.9%) rated them as low. Cumulatively those who rated availability of school facilities needed for the teaching and learning of science subjects from medium to

high were 318 (94.1%). This is a very high percentage compared to 20 (5.9%) those who rated availability as low. This strongly shows that recommended school facilities for teaching and learning science based subjects were available to most of the respondents. Free day secondary school provides for free tuition and books for secondary school students in public day secondary schools. This is the reason why most of the recommended course books for sciences are available to most of the respondents.

*b) The relationship between availability of school facilities and students' academic achievement*

The study sought to find out the relationship between availability of school facilities for teaching and learning in public day secondary schools in Kisii County. To find out the relationship between availability of school facilities and students' academic achievement in public day secondary schools, students' academic achievement was to be established first. This was done by computing the average mean score per student for each subject. Multiple regression was then used to establish the relationship between availability of school facilities and students' academic achievement

Table 3: Model summary for School Facilities Students' Academic Achievement

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.136 <sup>a</sup>	.019	.013	11.045	.019	3.114	2	329	.046

Table 3 above represents a model summary on availability of teaching and learning facilities and students' academic achievement. The independent variable studied explain 1.3% as represented by the adjusted R square which shows a weak positive relationship between availability of school facilities and students' academic achievement. The adjusted R square of .013 suggests that only 1.3% of the variance can be explained by the availability of school facilities. This infers that other factors not studied in this research contribute 98.7% of students' academic achievement. This therefore means that there are other factors other than availability of these school facilities that contribute to students' academic achievement in public day secondary schools.

Table 4: ANOVA<sup>a</sup> For School Facilities and students' academic achievement

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	759.718	2	379.859	3.114	.046 <sub>b</sub>
Residual	40134.268	329	121.989		
Total	40893.986	331			

According to Table 4 above, the F calculated was found to be 3.114. This shows that the overall model was statistically significant. Further the *p*-value in this study was 0.46 which

was less than 0.05 thus the model was statistically significant in predicting students' academic achievement in public day secondary schools in Kisii County. This infers that availability of school facilities has influence in students' academic achievement in public day secondary schools. Thus despite the fact that the availability of facilities only explain 1.3%,

Table 5 Coefficients for School Facilities and students' academic achievement

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	43.479	3.417		12.725	.000
Availability of facilities in languages	.008	.137	.004	.057	.955
Availability of facilities in sciences	.111	.054	.138	2.064	.040

The regression equation multiple regression is;

$$Y' = a + b_1X_1 + b_2X_2$$



Where;  $Y'$  = a predicted value of  $Y$  (which is the dependent variable)

$a$  = the value of  $Y$  when  $X$  is equal to zero. This is also called the “ $Y$  intercept”

$b$  = the change in  $Y$  for each 1 increase change in  $X$

$X_1$  = an  $X$  score on the first independent variable for which one is trying to predict A value of  $Y$ .

$X_2$  = an  $X$  score on the second independent variable for which one is trying to predict the value of  $Y$ .

When substituted the for, the equation will be;

$$Y = 43.479 + .008 X_1 + .111 X_2$$

The regression equation establishes that taking all factors into account constant at zero. Students' academic achievement in public day secondary schools in Kisii County has an index of 43.479. The findings presented also shows that taking all other independent variables at zero, a unit increase in the facilities for teaching languages leads to a .008 increase in students' academic achievement. The  $p$ -value of .955 which is more than .05 and thus the relationship is not significant. The study also found out that a unit increase in the facilities used for teaching sciences leads to a .111 increase in students' academic performance. The  $p$ -value is .040 which is less than .05 and thus the relationship is significant. This infers that availability of facilities for teaching science subjects contributed more (.111) to the students' academic achievement than the facilities for teaching language subjects. Generally it can be seen from the findings above that availability of school facilities alone does not have much contribution to students' academic achievement in public day secondary schools.

### VIII. CONCLUSION

The study revealed that most of the school facilities were adequately available. On the influence of available school facilities on students' academic achievement, the study found out that there was no statically significance between availability of school facilities and students' academic achievement in languages but there was a statistically significant relationship between availability of school facilities and students' academic achievement in science subjects. This study can therefore conclude that availability of essential school facilities on their own cannot influence students' academic achievement. This means that there are other factors other than availability of school facilities that influence students' academic achievement in day public secondary schools in Kisii County.

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