

Influence of physical facilities on academic performance in constituency development fund (CDF) built secondary schools in Rachuonyo South sub-County, Kenya

Ojuok, J. O.¹, Gogo, J. O.^{2*} and Olel, M. A.²

¹Kojwach High School, Kenya.

²Maseno University, Kenya.

Accepted 20 May, 2020

ABSTRACT

In 2013 and 2014, over 50% (728 out of 1336 and 778 out of 1491) of candidates enrolled in constituency development fund (CDF) built secondary schools in Rachuonyo South sub-County got E to D grades which are below the acceptable minimum quality grade of C+ that enables candidates pursue competitive courses at tertiary and university levels. It is against this background that this study purposed to establish the influence of physical facilities on student academic performance in CDF built secondary schools in Rachuonyo South sub-County. The study objectives were: to establish the influence of science laboratory, classroom quality and computer laboratory on student's performance at KCSE. The study was guided by Education Production Function Theory based on the input and output variables. Descriptive Survey and Correlation research designs were used. The study population was 42 principals of CDF built secondary schools and 1 sub-County Quality Assurance and Standards Officer (SCQASO). The sample comprised 37 principals of the 37 secondary schools, and 1 SCQASO. Data was collected using questionnaires, interview schedule and document analysis guide. The instruments were validated for content and face validity. A test-retest correlation of $r=.7$ showed that the instruments were reliable. Descriptive statistics as well as linear multiple regressions were used in data analysis. The results of the study revealed that the three variables, science laboratory, quality classroom and computer laboratory (which are components of physical facilities) had weak but significant relationship with student performance in KCSE. The study recommended that the Government should provide requisite facilities to guarantee quality education in CDF secondary schools. These findings will guide the government on resource allocation to these schools.

Keywords: Physical facilities, academic performance, Constituency Development Fund built schools, science laboratory, classroom quality, computer laboratory.

*Corresponding author. E-mail: jotieno2009@gmail.com.

INTRODUCTION

Governments world-wide are turning to school leaders to improve educational quality and are responding to greater demand for accountability from the public for the education system where children are learning (World Bank, 2009). In 2001, the then United Nations Secretary General came up with a critically important initiative, "Education First" which sought to refocus the world's

attention on the unfinished agenda of quality education for all. The emphasis placed on education quality is based on the premise that education promotes social equality and has strong links to reduction of poverty. It produces a more informed citizenry, it empowers individuals and enables them to become more proactive, gain control over their lives and broaden the range of

available options (UNESCO, 1997). Indeed, the government of Kenya has embraced education as a human right as quoted in the constitution under the economic and social rights. Education is therefore, one of the children's rights in Kenya (GOK, 2010) and that this education must be of quality.

Background of the study

By linking educational access to quality from the very onset, the World Declaration on Education for All in 1990 duly acknowledged that meaningful development would only be realized when learning resulted from education provided. The focus of education now rests on actual learning acquisition and outcomes, rather than the previous exclusive concern on enrolment, participation and certification. This commitment was reaffirmed in 2000 when the Dakar Framework for Action put quality squarely at the heart of education. As a concept, education quality needs to be understood in the inter-related nature of the five key dimensions: the learner, the environment, content, process and outcome (UNICEF, 2001).

To offer education of good quality therefore, educational institutions and programmes should be adequately and equitably resourced, with the core requirement of safe, environmentally friendly and easily accessible facilities, well-motivated and professionally competent teachers and books, other technologies that are context specific, cost-effective and available to all learners. It is because of the emphasis on quality education that the 2007 UNESCO and UNICEF reports addressed right to access quality education as one of the three interrelated rights that must be addressed in order to provide Education for All (EFA). The reports noted that the barriers to be removed in the provision of EFA include: inadequate and unqualified teachers, inadequate physical facilities, resources and lack of effective supervision. According to the United Nations (2001) the following constitute comprehensive policies and programmes that enhance educational quality: quality learners; quality content; quality teaching and learning processes; quality learning environments that are healthy, hygienic and safe and quality outcomes.

Regionally, member states of the countries of Sub-Saharan Africa, through the Framework for Action in sub-Saharan Africa: Education for African Renaissance in the Twenty-First Century also emphasized the commitment to education quality by prioritizing "access and equity, quality and relevance." While acknowledging learning outcome as primary indicators of education quality, the African Union Plan of Action for the second decade of Education for Africa (2006-2015) also included the following in their conception of quality: physical infrastructural resourcing for learning environment, learner characteristics, teacher qualification, competence

and motivation, relevance of subject matter, professional support for teachers and good governance.

The Association for the Development of Education in Africa (ADEA) in its latest Policy Brief in progress towards Second Decade for Education in Africa goals notes that managing education quality remains a challenge for all East Africa Community (EAC) partner states with issues of efficiency and effectiveness impacting on the provision of education and training (MOEST, 2015). In fact, Ayodo (2010) notes that the quest for provision of quality education continues to be a matter of leading concern to both consumers and providers of the education service in Kenya and other developing countries.

In Kenya, Strategies, Achievements and Progress in Quality Education was reviewed under the following dimensions of quality among others: infrastructural development, teacher quality and effectiveness and learning assessment (i.e. Learning outcome). The government recognizes infrastructure as a key component of education quality and this has been a major focus of investment; constructing and providing for quality classrooms, water and sanitation facilities, laboratories and libraries. Provision of infrastructure in educational institutions is done by the national government, devolved funds such as CDF and the community and development partners (MOEST, 2014).

Constituency Development Fund (CDF) is a form of Community Driven Development (CDD) initiative that involves some funding from the central government and other donors to empower local communities (Kimenyi, 2005). It is not unique to Kenya but is also used in other countries like India where it is called Member of Parliament Constituency Development Fund and in Solomon Island, where it is referred to as Rural Constituency Development Fund (Onduru, 2011).

In Kenya CDF was established through the CDF Act in the Kenya Gazette Supplement No 107 (Act No. 11) of 9th January 2004 which had been enacted by parliament in 2003. Among other objectives CDF is meant to eradicate poverty at constituency level. Education is one of the ways by which poverty can be fought and eradicated hence CDFs allocate 32% of their total funds to education. The rest is shared between health 26%, water 19%, physical infrastructure 8% and agriculture, security, social services and wildlife 15%.

In the education sector the CDF money is spent mainly on construction of tuition blocks, laboratories, dormitories, administration blocks and bursary since it is one of the interventions the Kenya government has put in place to expand school infrastructure (Ingubu and Wambua, 2011). Ng'alu and Bomett (2014) studied the role of CDF in provision of facilities in secondary schools in Kilome constituency and the study established that many schools have facilities courtesy of Kilome Constituency Development Fund.

A lot of studies have been conducted on how CDFs have contributed to access, equity and retention. For

example, Onduru (2011) studied the impact of CDF on access and equity in financing secondary education in Nyando Constituency and concluded that CDF had actually improved access. Wakaba (2013) studied the impact of CDF on secondary school's curriculum implementation in Nyahururu sub-County in Laikipia County. She established that CDF has contributed significantly to curriculum implementation in secondary schools in Nyahururu Sub-County through construction of laboratories, classrooms, dormitories, offices, and libraries. Olendo et al. (2016) studied the influence of CDF on access to secondary education in public secondary schools in Kisumu County and found that CDF is a strong predictor of access in public secondary schools in Kisumu County. A lot of research which has been conducted on CDF and its influence has been on access but little is known about how it has impacted quality of education by enabling many students to access quantity and not quality education.

In Kenya provision of education quality remains a major issue across the entire spectrum of education and will be the focus of Government attention in the medium term. There is a weak balance between the quantity (access and participation) and quality of education across all levels of education. A number of factors continue to frustrate the provision of quality education for a majority of Kenyan students; poverty being one of them. More affluent institutions of learning often have well equipped laboratories, classrooms and instructional materials. On the other hand, low income private, public and district schools are often characterized by lack of infrastructural and learning equipment and facilities (Ojiambo, 2009). Gogo (2002) found out that performance in the then Rachuonyo District in the national examinations was poor due to inadequacy of infrastructure, learning equipment and facilities and that schools which had low enrolments (hence low incomes) performed relatively poorly compared to the schools with high enrolments.

Declining pass rates at secondary school level is a source of concern since secondary education is significant because it prepares students for tertiary education. All secondary school students should therefore get quality education leading to quality passes. This research sought to investigate how examination outcomes in CDF built secondary schools in Rachuonyo South sub-County are influenced by quality of facilities.

Ingubu and Wambua (2011) studied the impact of school infrastructure on access and provision of quality secondary education and concluded that the number, state and size of school infrastructure highly influenced access, provision of quality secondary education and talent development. Ingubu and Wambua studied all categories of schools in Kisumu Municipality and looked at how school infrastructure impacts access and quality of education in all categories of secondary schools while this research studied the influence of school facilities on a specific category of secondary schools; CDF built

secondary schools. A study involving all types of secondary schools may not give a true picture because different schools may have different facilities.

The performance of Homa Bay County at KCSE has been average when compared to other counties in Nyanza Region since the introduction of counties. Table 1 shows 2012 and 2013 rankings of six counties making up Nyanza Region both at regional level and nationally.

In Nyanza Region, Homa Bay County has been trailing Siaya, Kisumu and Migori in that order. In 2014 and 2015 Homa Bay County had a total of 307 secondary schools which presented candidates for KCSE examination and 219 were sub-county secondary schools (KNEC, 2015). Table 2 presents 2014 and 2015 schools per sub-county, enrolment per sub-county and number of grades E to C per sub-county.

Data presented in Table 2 show that Rachuonyo South Sub-county had more schools than the rest of the sub-counties in Homa Bay county. It also had the highest number of candidates getting grades lower than the national minimum university grade (C+). In 2014, out of a candidature of 4329, over half, 2,257 (52.1%) attained E to C grades. In 2015, the sub-county enrolled 4440 candidates and 3293 (74.3%) got E to C. The high number of students getting grades below national university cutoff grade (C+) in Rachuonyo South Sub-county warranted an investigation into the selected factors influencing academic performance in Rachuonyo South Sub-county.

In 2013 CDF built secondary schools in Rachuonyo South Sub-county registered 1336 candidates and only 159 (11.901%) attained quality grades (C+ to A) while 728 (54.491%) scored grades below minimum university entry grade (E to D+) (Rachuonyo South Examination Department, 2013). In 2014 the schools enrolled 1491 candidates and only 172 (11.536%) scored quality grades (B to A) while 778 (52.179%) got grades below minimum university entry grade (E to D+). The same scenario is replicated in Rachuonyo North which neighbors Rachuonyo South. The CDF built secondary schools in Rachuonyo North are performing poorly as well. Less than 20% of their candidates got quality grades while the rest got grades below C+ which is the minimum university entry grade during the period under consideration (Sub-County Quality Assurance and Standards Officer, Rachuonyo North, 2014). In comparison non-CDF sub-county secondary schools in Rachuonyo South perform better than the CDF built secondary schools. In 2013 they enrolled 977 candidates and 205 (21%) got quality grades, 48.6% got medium grades and 30% got grades D. There was no student who got grade E. In 2014, out of 869 candidates registered in non-CDF sub-county secondary schools 253 (29%) got quality grades, 422 (48.56%) got medium grades, 193 (22.209%) got grades D and only one student got grade E.

It is important to note that the students in the CDF built secondary schools sit for the same KCSE examination

Table 1. KCSE performance in Counties in Nyanza Region for 2012 and 2013.

Regional position	County	Rank in 2012	Rank in 2013
1	Siaya	4	2
2	Kisumu	10	7
3	Migori	13	11
4	Homa Bay	14	13
5	Nyamira	22	22
6	Kisii	31	25

Source: Standard Digital (March 3, 2014).

Table 2. Enrolment and grades per sub-county in Homabay County.

Sub-county	2014			2015		
	Number of schools	Enrolment	E to C grades	Number of schools	Enrolment	E to C grades
Rachuonyo South	78	4329	2257	78	4440	3293
Homa Bay	64	3302	1511	64	3680	2545
Rachuonyo North	52	2475	1458	52	2745	2385
Ndhiwa	45	1971	1421	45	2022	1855
Suba	33	1230	736	35	1479	1323
Mbita	35	1260	647	33	1668	1265
Total	307			307		

Source: Data from the field (Homa Bay County Examination Office).

with those in county, extra-county and national schools. They also compete for the few chances available in tertiary institutions and universities as well as employment opportunities. Good performance at secondary school level is important because in most education systems all over the world, secondary education is optimum higher learning that prepares one for university and vocational training. Onduru (2011) identified the impact of CDF on education quality as a gap in knowledge that needed to be filled. This research, therefore, looked at the influence of physical facilities on student academic performance in CDF built secondary schools in Rachuonyo South Sub-county.

Statement of the problem

The choice of CDF built secondary schools as a focus of this study was necessitated by the fact that over 50% of the candidates enrolled in CDF built secondary schools in Rachuonyo South Sub-County get grades which are lower than the national minimum (C+) for university entry at KCSE. It should be noted that CDF built schools made up 59.155% (42 out of 78 public secondary schools) of the public secondary schools in the sub-County as of the year 2014. It means many of the students who get below C+ which is the minimum grade for university qualification are from these schools. Students enrolled in non-CDF Sub-County secondary schools seemingly perform better

than their counterparts in CDF built secondary schools. It was important to conduct a research on how physical facilities in CDF built secondary schools have influenced performance of students at KCSE in Rachuonyo South Sub-county.

Purpose of the study

The purpose of the study was to examine the influence of physical facilities on performance of students at KCSE examination in CDF built secondary schools in Rachuonyo South Sub-County. Specific objectives of the study were to: establish the influence of availability of science laboratories in CDF built secondary schools on student performance at KCSE examination; determine the influence of classroom quality on performance of students at KCSE examination in CDF built secondary schools; and examine the influence of availability of computer laboratories on performance of students at KCSE examination in CDF built secondary schools.

Research hypotheses

Research hypotheses of the study were:

H₀₁: There is no significant relationship between availability of science laboratories and student

performance at KCSE examination in CDF built secondary schools.

H₁₁: There is a significant relationship between availability of science laboratories and student performance at KCSE examination in CDF built secondary schools.

H₀₂: There is no significant relationship between classroom quality and performance of students at KCSE examination in CDF built secondary schools.

H₁₂: There is a significant relationship between classroom quality and performance of students at KCSE examination in CDF built secondary schools

H₀₃: There is no significant relationship between availability of computer laboratories and performance of students at KCSE examination in CDF built secondary schools.

H₁₃: There is a significant relationship between availability of computer laboratories and performance of students at KCSE examination in CDF built secondary schools.

Theoretical framework

This study was guided by Education Production Function Theory. Economists think in terms of a production model where schools and other influences go in and student's achievement comes out. Efficiency analysis is centrally concerned with measuring the competence with which inputs are converted into valued outputs (Fried et al., 1993). In schooling examination results are an important intermediate measure of outcomes. Education is seen as a production and schools as production units. Secondary schools (i.e. CDF built secondary schools) take inputs in terms of resources and use them to produce outputs in terms of students' performance in KCSE examinations. This study focused on school facilities as inputs which influence academic performance of students in CDF built secondary schools in Rachuonyo South Sub-county.

The Theory of Education Production is the process by which inputs are converted into outputs (Psacharopoulos and Woodhall, 1985). When schools take in students in form one the expectation is that when they exit at form four, they should exit with grades that enable them join institution of higher learning in order to join the country's pool of human resource. On the same note it is expected that the schools have adequate physical facilities that can guarantee quality education and not quantity education measured by the quality of outcomes (good grades in KCSE). It can be expressed thus:

$$A = f(X_r)$$

Where:

A = Achievement

X_r = Physical facilities

n = other variables like family background, pupil's entry behavior and attitude. This study was guided by the above theory using the following variables:

$$P = f(X_1, X_2, X_3, \dots, n)$$

Where:

P = Academic Performance (KCSE grades)

X₁ = laboratory

X₂ = classrooms

X₃ = computer laboratory

n = other variables that are not part of this study.

It can be expressed in a regression equation as follows:

$$P = a + bX_1 + cX_2 + dX_3 + \dots + \epsilon$$

Where: b₁, b₂ and b₃ are constants of regression

RESEARCH METHODOLOGY

The study was conducted through Descriptive Survey and Correlation research designs. Descriptive Survey is based on the premise that problems can be solved and practices improved through observation, analysis and description. It involves obtaining information or data through questions and interview schedules in order to test hypotheses or answer research questions of a given study (Thomas and Nelson, 1996). Correlation research was used to evaluate the associations of the independent variables and the dependent variable, student performance in KCSE.

The study population comprised of 42 principals of CDF built secondary schools in Rachuonyo South sub-County and 1 Sub-County Quality Assurance and Standards Officer (SCQASO). Hence, 42 principals of the schools and the SCQASO were the respondents. The SCQASO was used because he is the one responsible for education quality and standards in the sub-County. Out of the 42 principals, 5 principals who were used in the pilot study were sampled using Simple Random Sampling technique and then the remaining 37 were picked and used in the main study. Simple Random Sampling was used because the population was homogeneous, that is, all the schools studied were mixed day CDF secondary schools.

In this study three instruments were used for data collection: the principal's questionnaire, interview schedule SCQASO and document analysis guide on KCSE results. Triangulation ensured better results compared to using a single instrument (Shipman, 1988). This was to ensure that the shortcomings of one method would be taken care of by the other methods so that reliable results are finally obtained.

For face and content validity to be achieved, experts from the Department of Educational Management and Foundations, Maseno University examined the instruments, gave advice and recommendations. For reliability of instrument of research to be achieved, a pilot study was conducted in 5 CDF built secondary schools

through test-retest method with a high correlation of 0.7. Inadequacies, inconsistencies and weaknesses in the instruments were corrected before the instruments were finally used.

The researcher distributed a total of 37 questionnaires to the principals and interviewed the SCQASO. Data was analyzed using descriptive and correlation statistics as well as linear multiple regression analysis to determine the influence of science laboratory, classroom quality and computer laboratory on performance of students at (KCSE). Qualitative data gathered from the interview with the SCQASO was documented then organized into concepts or themes. The organized data was discussed under relevant objectives and hypotheses of the study.

RESULTS AND DISCUSSION

Level of adequacy of physical facilities

An observation check list was used to assess the level of adequacy of physical facilities in the CDF built secondary schools in Rachuonyo South Sub-county. The result is presented in Table 3. The results obtained in Table 3 shows that classrooms ($\bar{X} = 2.435$) were the most adequate physical facility in CDF built secondary schools in Rachuonyo South Sub-county. This was followed by Textbooks ($\bar{X} = 1.87$), Offices ($\bar{X} = 1.652$) and Laboratory ($\bar{X} = 1.435$). However, facilities like Library ($\bar{X} = 1.217$), Computer rooms ($\bar{X} = 1.174$) and Teachers houses ($\bar{X} = 1.087$) were generally unavailable.

The Sub-County Quality Assurance and Standards Officer observed that the schools lacked basic facilities like libraries, laboratories and playgrounds. According to him, CDF builds classrooms but does not put up other physical facilities like libraries so the few available physical facilities in these schools cannot adequately support quality teaching and learning.

Almost all the principals, 29 (91.3%), said that lack of physical facilities influences performance of students negatively. The reasons for their assertion are as presented in Table 4. Table 4 presents principals' responses on why lack of physical facilities has negative influence on students' performance. The most common reason was that; lack of library text books makes it impossible for students to make references 26 (81.3%); scarcity of resource breeds unhealthy learning environment for instance, lack of toilets 26 (81.6%) followed by response that lack of laboratory denies students chance to learn by practical experience and experiment thus ill preparedness by learners in the science subjects 25 (78.1%); Inadequate chairs and lockers leads to discomfort of students in class 24 (75.0%) and that when classrooms are inadequate, some lessons may go unattended in adverse weather 24 (75.0%). The other reasons why lack of physical facilities

has negative influence on students' performance were that students learn in unfriendly learning environment 23 (71.9%) and learners lack confidence and motivation in their school because of scanty and dilapidated learning facilities 23 (71.9%).

Similarly, a large percentage 25 (78.1%) of the principals felt that schools can do better with improved physical facilities and the reasons were as presented in Table 5. Table 5 presents principals' opinions on how schools can do better with improved physical facilities. Consequently, the leading response which was given by most principals, 26 (81.3%), on how schools can do better with improved physical facilities was that spacious classrooms with good ventilation make conducive environment for learning, 25 (78.1%) principals noted that, both teachers and students will feel motivated by the good adequate facilities and another, 25 (78.1%) of them indicated that frequent laboratory demonstrations and experiments, interaction with chemicals and apparatus will develop more confidence in them followed by 24 (75.0%) who said it will provide enough, secure and comfortable learning zones and a similar 24 (75.0%) commented that library would give students more access to the reference books.

In addition, another considerable number 22 (68.75%) said that laboratory enables performance of a variety of practical experiments, students go through first hand of practical experience enhancing learning, with a another similar percentage (68.75%) responding that adequate facilities boost teachers morale giving them ample time for preparation, another 23 (71.9%) noted that adequate facilities give a conducive learning environment, students get motivated and they attract more students with higher entry behavior and enhances students confidence, as well as that students when exposed to a library can do their private studies and home work efficiently.

Factors influencing performance of students

The opinions of the principals were sought on the factors that influenced the performance of their students. They were given three options and asked to tick the most influential factor. Their responses were analyzed and presented in Table 6.

From Table 6, 18 (48.65%) of the principals opined that KCPE entry marks influenced the performance of their students, 12 (32.43%) of the principals' felt it was quality of teachers while 7 (18.92%) indicated that school facilities influenced the performance of their students. This means that according to the principals, entry behavior of learners is quite critical in determining students' performance. This is in agreement with Amburo (2011) and Jagero (2013). Amburo found out that students' performance at KCPE had a correlation of 0.452 to their performance in KCSE and Jagero discovered that there is a correlation of 0.0559 between performance in KCPE and KCSE. Jagero concluded that

Table 3. Observation check list on the level of adequacy of physical facilities.

Facilities	Adequate (3)	Inadequate (2)	Unavailable (1)	Mean
	Frequency (%)	Frequency (%)	Frequency (%)	
Classrooms	12 (52.2)	10 (43.5)	0 (0.0)	2.435
Textbooks	0 (0.0)	20 (87.0)	3 (13.0)	1.87
Offices	1 (4.4)	13 (56.5)	9 (39.1)	1.652
Laboratory	4 (17.4)	10 (43.5)	1 (4.4)	1.435
Library	0 (0.0)	5 (21.7)	18 (78.3)	1.217
Computer rooms	0 (0.0)	4 (17.4)	19 (82.6)	1.174
Teachers houses	0 (0.0)	2 (8.7)	21 (91.3)	1.087

Source: Data from the field. Interpretation: 1.0– 1.65 Unavailable; 1.65 – 2.35 Inadequate; 2.35 – 3.00 Adequate.

Table 4. Principals' response on why lack of physical facilities has negative influence on students' performance.

Why lack of physical facilities has negative influence on students' performance	Frequency (%)
Lack of library text books makes it impossible for learners to make references	26 (81.3)
Scarcity of resource breeds unhealthy learning environment e.g. lack of toilets.	26 (81.3)
Lack of laboratory denies students chance to learn by practical experience and experiment thus ill preparedness in the science subjects.	25 (78.1)
Inadequate chairs and lockers lead to discomfort of students in class	24 (75.0)
Inadequate classrooms, some classes may go unattended in adverse weather	24 (75.0)
Students learn in unfriendly learning environment.	23 (71.9)
Learners lack confidence and motivation in their school.	23 (71.9)
Lowers self-esteem of the learners	22 (68.8)
Limited physical facilities reduce learner's exposure	21 (65.6)

Source: Data from the field. Total Responses n = 37.

Table 5. Principals' explanation on how schools can do better with improved physical facilities.

How school can do better with improved physical facilities	Frequency (%)
Spacious classrooms with good ventilation make conducive learning environment	26 (81.3)
Both teachers and students will feel motivated by the good adequate facilities	25 (78.1)
Frequent laboratory demonstration and experiments, interaction with chemicals and apparatus will develop more confidence in them.	25 (78.1)
It will provide enough, secure and comfortable learning zones	24 (75.0)
Library would give students more access to the reference books	24 (75.0)
Laboratory enables performance of a variety of practical lessons, students go through first hand of practical experience enhancing learning	23 (71.9)
Adequate facilities boost teacher morale and giving them ample time for preparation	23 (71.9)
Adequate facilities give a conducive learning environment, students get motivated	23 (71.9)
Attract more students with higher entry behavior. Enhances student confidence	23 (71.9)
Students when given library can do their private studies and home work efficiently.	23 (71.9)
Enables extensive reading in the library hence enhancing knowledge acquisition	22 (68.8)
With offices the teachers' comfort will be guaranteed, learning materials will be kept safely.	22 (78.8)

Source: Data from the field. Total Responses n = 37.

performance of students at KCPE can predict their performance at KCSE. As such, the performance of CDF built secondary schools is determined by the quality of students they admit. For their performance to improve

CDF built secondary schools need to have quality control measures to ensure that only students who perform well in primary schools get admitted into the secondary schools. This however becomes an uphill task since the

Table 6. Principals' opinion on factors that influenced the performance of the students.

Principals opinions	No. of respondents	Percentage
KCPE entry marks	18	48.65
Quality of teachers	12	32.43
School facilities	7	18.92
Total	37	100.0

CDF schools have scanty teaching/learning facilities and thus unable to attract good performers as deduced by Gogo (2002). Gogo deduced that enrolment in day schools remained low due to lack of adequate physical facilities and poor performance in KCSE.

According to the Quality Assurance and Standards Officer the CDF built secondary schools admit students with as low as 120 marks. These students lack the command of language and numeracy. He further noted that the schools end up with so many poor performers who do not compete in class, they are simply satisfied with the fact that they are in a secondary school. They also do not pay school fee well so they lose nothing even if they fail. When they fail to pay school fee well the schools are starved of the much-needed financial resource which can help guarantee quality performance.

Descriptive statistics

Over 50% of the schools did not have well equipped laboratories. Slightly less than 50% of the schools had adequate classrooms. Finally, the table shows that on average only 38% of the schools had computer laboratories. That means there is limited integration of ICT in learning in the CDF built secondary schools. The mean and standard deviations of the variables used in the study were established to give the internal variation and consistency between them. Table 7 presents descriptive statistics of the variables used in the study.

A correlation analysis of the variable was done and the coefficients recorded in Table 8.

Coefficient of determination was calculated to establish the contribution of each factor to student performance and the results presented in Table 9.

The independent variables are interdependent. This may influence the relationship between each independent variable with the dependent variable.

From Table 9 availability and use of science laboratory were found to be positively related to student performance though weak. The coefficient of correlation was 0.114 at 0.05% level of significance and coefficient of determination was 0.0129. This means that availability and use of a science laboratory accounts for 1.3% of KCSE mean score. The weak correlation could be as a result of the fact that laboratories are only used for

science subjects while the students' performance was measured in terms of overall KCSE results which encompassed even humanities and languages. Nevertheless, laboratory equipment enhances hands-on learning and thus improved performance. Schools without laboratories would therefore post poor performance especially in sciences.

This finding is in agreement with Gogo (2002) who found out that performance in Rachuonyo District in the national examinations was poor due to inadequacy of infrastructure, learning equipment and facilities. It further agrees with the findings by Ojiambo (2009) which established that more affluent schools often have well equipped laboratories, classrooms and instructional materials as opposed to low income public district schools which are characterized by lack of infrastructural and learning equipment and facilities.

Availability of well-built classrooms was found to be having a moderate positive relationship of 0.364 with students' performance. Well-built and furnished classrooms protect the learners from the vagaries of harsh weather conditions apart from enhancing the learners' self-esteem which boosts their confidence thus leading to good performance.

The existence and use of information technology also had a positive relationship with students' performance. The relationship was very weak at 0.108 and the coefficient of determination was 0.0116 meaning that information technology accounts for 1.2% change in KCSE mean score. Computer laboratories and computers were generally unavailable and this could have led to the insignificant contribution of information technology to KCSE mean score of the schools. Digitization of the schools however, can help improve performance their performance.

The null hypothesis that there is no significant relationship between physical facilities and performance of students at KCSE examination in CDF built secondary schools was rejected since school facilities were found to contribute significantly to KCSE mean score.

Regression analysis

The dependent variable was regressed against the independent variables and the findings recorded on Table 10.

Table 7. Descriptive statistics of variables used in the study.

Descriptive statistics	N	Minimum	Maximum	Mean	Std. Deviation
Y	37	3.19	7.09	5.0441	1.11132
X ₁	37	1.00	3.00	1.9730	.76327
X ₂	37	1.00	3.00	2.4050	.39924
X ₃	37	1.00	3.00	1.1620	.44930
Valid N (list wise)	37				

Y- School performance score (KCSE results); X₁ - Laboratory; X₂ - Classroom Quality; X₃ - Computer Laboratory.

Table 8. Correlation coefficients of variables used in the study.

Variables	X ₁	X ₂	X ₃
Y	0.114	0.334	0.108
X ₁	1.000	0.329	0.388
X ₂	0.329	1.000	0.467
X ₃	0.388	0.467	1.000

Source: Data from the field. Coefficients are significant at 0.05 level. X₁ - Laboratory; X₂ - Classroom quality; X₃ - Computer Laboratory.

Table 9. Coefficients of determination.

Variables	R	R ²
X ₁	0.114	0.0129
X ₂	0.364	0.1107
X ₃	0.108	0.0116

Source: Data from the field.

Table 10. Regression coefficients^a.

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.	
	B	Std. Error	Beta			
1	(Constant)	-2.769	.963		-2.867	.008
	X ₁	0.276	.142	0.191	1.966	.064
	X ₂	0.259	.297	0.236	-2.277	.035
	X ₃	0.143	.256	.0094	.945	.356

Dependent Variable: Student Performance

Source: Data from the field. X₁ - Laboratory; X₂ - Classroom Quality; X₃ - Computer Laboratory.

Going by the regression coefficients a linear regression equation was developed. Taking Y as the dependent variable and X₁, X₂, X₃ as independent variables the regression equation becomes:

$$Y = -2.769 + 0.276X_1 + 0.259X_2 + 0.143X_3$$

The equation illustrates the effect of each independent variable on the dependent variable. From Table 10, the existence and equipping of laboratories had a regression coefficient of 0.276 with students' performance. It means that a change of one unit in availability and use of a science laboratory would result in an increase of students' KCSE mean by 0.276 units. Classroom quality had regression coefficient with student performance of 0.259. This means an additional one unit in the number of standard classrooms would result in an increase of students' KSCE mean by 0.259 units. Finally, the use of computers in learning had a regression coefficient of 0.143 meaning that a change of one unit in availability and use of computers would result in an increase of

students' KCSE mean by 0.143 units. The null hypothesis that there is no significant relationship between school facilities and students' performance at KCSE in CDF built secondary schools was rejected. Going by the regression results, one would conclude that the students' entry mark is critical in determining their performance at KCSE especially in CDF built secondary schools. It is followed by availability and use of science laboratory, classrooms and lastly computer laboratory in that order.

CONCLUSIONS

The purpose of this study was to examine the influence of school facilities on performance of students at KCSE examination in CDF built secondary schools in Rachuonyo South Sub-county. Based on the research findings it was concluded that physical facilities are significant when looking at performance of students at KCSE. Good and adequate physical facilities will ensure learning environment is learner friendly and will make

teaching and learning enjoyable to both the teacher and the learner. Dilapidated buildings, and in extreme cases, lack of essential buildings like laboratory, library, computer rooms, classrooms and even offices inhibit learning and this leads to poor performance by the students. Students in CDF built schools where conditions of learning physical facilities are poor lack the motivation to learn. This influences their performance negatively. The regression results, therefore, leads to a conclusion that science laboratories, classrooms and computer laboratories are significant factors that influence performance of students in CDF built secondary schools.

RECOMMENDATIONS

This study recommends that before a CDF secondary school opens its doors to admit students, basic physical facilities like classrooms, libraries, laboratories and administration offices must be put in place. These will make the schools learner friendly and will make them attract high achievers.

REFERENCES

- Amburo, A. P. (2011).** Teaching in a Changing Africa: Differential Academic Performance of Students at KCSE Examination in Kenya International Journal of Innovative Interdisciplinary Research p. 131-140
- Ayodo T. M. O. (2010).** The Position of Secondary Education in Kenya. Proceedings of Educational Management Society of Kenya. Migori Workshop. April 2010.
- Fried, H. O., Schmidt, S. S., and Lovell, C. A. K (1993).** The Measurement of Productive Efficiency: Techniques and Applications. Oxford University Press
- Gogo, J. O. (2002).** The Impact of Cost-Sharing Strategy on Access, Equity and Quality of Secondary Education in Rachuonyo District, Kenya. Unpublished MED Thesis, Maseno University.
- GOK (2010).** Kenya 2009 Population and Housing Census Report. Ministry of Planning and National Development. Nairobi. Government Printers.
- Ingubu, M. and Wambua, B.K. (2011).** Widening Education Access: Its Implications and Challenges on School Facility Exploitation. <http://www.muk.ac.ke/ijci/>, Moi University.
- Jagero, N. (2013).** How Performance of students in Kenya Certificate of Primary Education can predict their performance in KCSE? Educational Research International, 1(3): 11-19.
- Kimenyi, M. S. (2005).** Efficiency and Efficacy of Kenya's Constituency Development Fund: Theory and Evidence. Working Papers 2005-42. The University of Connecticut, Department of Economics.
- KNEC (2015).** Kenya Certificate of Secondary Education (KCSE) Essential Statistics
- MOEST (2014).** Education for All. 2015 National Review: Kenya.
- MOEST (2015).** Education for All. The 2015 National Review 2014.
- Ng'alu, M. M., and Bomett, J. E. (2014).** The role of constituency development fund in provision of secondary school education in Kenya. International Journal of Scientific and Technology Research 3(8): 429-436.
- Ojiambo, P. C. O. (2009).** Quality of Education and its Role in National Development: A Case Study of Kenya's Educational Reforms. KSR Vol.1 Number1.
- Olendo, C. A., Olel, M. A., and Agak, J. O. (2016).** Influence of constituency development fund on access to secondary education in public secondary schools in Kisumu County, Kenya. Greener Journal of Educational Research, 6(5): 177-193.
- Onduru, K. O. (2011).** Impact of Constituency Development Fund on Access and Equity in Financing Secondary Education in Nyando District, Kenya. Unpublished MED Thesis. Maseno University
- Psacharopoulos, G., and Woodhall, M. (1985).** Education for Development: An Analysis of Investment Choices. New York: Oxford University Press.
- Shipman, M. (1988).** Limitations of Social Research. Third Edition. London: Longman.
- Sub-County QASO Rachuonyo North (2014).** Analysis of Rachuonyo North Kenya Certificate of Secondary Education Results.
- Thomas, J. R., and Nelson, J. K. (1996).** Research Methods in Physical Activity 3rd Edition, Champaign IL: Human Kinetics.
- UNESCO (1997).** Higher Education in the 21st Century: Achievements and Prospects in The Eastern and Southern Africa Region. Nairobi, Kenya.
- UNICEF (2001).** We the Children: Meeting the promises of the World Summit for Children. New York.
- United Nations (2001).** We the Children Meeting the Promises of the World Summit for Children, New York.
- Wakaba, D. W. (2013).** The Impact of CDF on Secondary Schools Curriculum Implementation in Nyahururu District, Laikipia County. Unpublished Med Research Project, Kenyatta University.
- World Bank (2009).** Expanding Opportunities and Building Competencies for Young People. A new Agenda for Secondary Education, Washington DC. World Bank

Citation: Ojuok, J. O., Gogo, J. O., and Olel, M. A. (2020). Influence of physical facilities on academic performance in constituency development fund (CDF) built secondary schools in Rachuonyo South sub-County, Kenya. African Educational Research Journal, 8(3): 462-471.
