

Full Length Research Paper

An investigation on the relationship between the school level of funding and performance at K.C.S.E. in Mumias District, Western Province, Kenya

Z. Sisungo*, L. Kaberia and P. Buhere

Egerton University, P. O. Box 536, Egerton, Kenya.

Accepted 1 February, 2012

The Kenyan government has been spending between 20% to 40% of its revenue on education with the aim to improving access and quality. Much of these resources have been devoted towards establishment and procurement of school inputs such as classrooms, teachers and textbooks. This study investigated the effects of funding on performance in Mumias District. Statistical proportionate and purposive sampling was used in identification of the sample. Piloting was conducted in two schools within the district. The study is based on the production function model which looks at the input – output relationship. Survey Questionnaires and interviews were used for data collection. Data were analyzed using descriptive and inferential statistics. The study established that there was a significant correlation between students' performance in Kenya Certificate of Secondary Education (K.C.S.E.) and school level of funding. Schools funded below 30% performed poorly in K.C.S.E. The study recommended that for performance to improve, day secondary schools which were the majority in the study need to be supported with learning resources. The findings of this study may be used by the stakeholders to improve on the quality of secondary education.

Key words: Performance, mean score, optimal resource utilization.

INTRODUCTION

School financing has remained a controversial issue of debate for many years. Taxpayers often believe that schools receive adequate funding and therefore do not want more of their taxes going towards education spending. Teachers and schools, on the other hand, often claim that current funds are insufficient to finance necessary school programme. Public education is a public good financed primarily by state and local governments. Economic theory views education as an important input to the production function. In fact many empirical studies have shown that education provides positive returns to society as more education leads to higher productivity and wages (Angrist and Krueger, 1991; Ashenfelter and Krueger, 1994; Card, 1995); thus because of these gains the Government invests billions of dollars each year in

education.

Prior to 1963, education in Kenya was largely funded by Christian missionaries and the colonial government. To the missionaries, the basic aim of education was evangelization, while to the colonial government, it was the production of cheap but literate manpower and the uplifting of the quality of life within the African reserves (Mutua and Namaswa, 1992). However, with the attainment of independence in 1963, the government recognized education as an important vehicle for human resource development and as an important instrument for national development.

Consequently, the Ominde Commission (1963) was appointed to address the educational needs of the country. The commission gave priority to secondary, technical and

*Corresponding author. E-mail: zwsisungo@yahoo.com.

higher education arguing that the key posts which had been left by the colonists in the civil service required such preparation (Olel, 2000). As a result of this, secondary school enrolment has grown from 30,000 in 1963 to 848,000 in 2002 (Ministry of Education Science and Technology, 2003). During the same period, the government has been investing large financial resources in the sub – sector. For example, from 1966 to 1970, out of \$8,841,000 earmarked for education, \$5,127,000 or nearly 58 percent was spent on secondary education (Sifuna and Kiragu, 1988). Over the last five years, secondary school recurrent expenditure has grown from Kshs 667.31 million in 2001/2002 to Ksh 668.88 million in 2002/2003; Ksh 945.42 million in 2003/2004 to Ksh 948.79 million in 2004/2005. In the same period, development expenditure has grown from Ksh 52.24 million in 2003 to Ksh 154.9 million in 2004 to 205.5 million in 2005 (Republic of Kenya, 2006). Notwithstanding the large amount of resources devoted to secondary education, performance has been unsatisfactory with only 12% of students transiting from secondary to university (MOEST, 2003). Ayot and Briggs (1992) assert that the ever-growing demand for education, the resultant expansion of educational system have all led to massive increase in finance on education all over the world. Almost every nation in the world devoted an increasing share of its resources to education during 1960s and 1970s. By 1974, this had grown to 4.8 percent of GNP. For instance in Kenya, 35% of its Gross National Product went to education. Notwithstanding the commitments by many nations to increase funding towards education, the budgets could not continue rising for long. This scenario was captured by Psachoropolous and Whitehall (1985); when he states that “Today there is increasing evidence of financial constraints and in many developing countries the proportion of the government budget devoted to the educational sector has began to decline”.

In Mumias District, good performance has been witnessed in primary schools yet the same has not been replicated in secondary schools. Studies by Maruti (1998) showed that most primary schools in the district received financial support from Mumias Sugar Company in form of education facilities which could explain the good performance.

In Kenya, the government is the major source of funding for public education. The government’s effort is supplemented by local communities who pay in form of direct fees and “Harambee” contribution. Olembo (1986) investigated the methods by which schools are financed and found out that most of the finances come from the Ministry of Education. He also found out that the amount of money raised from parents and government was inadequate in running school programmes; and teachers indicated that increased funding was necessary. In fact educators have always argued that improvement in school and students’ performance will cost more. Although the statistical link between levels of spending and student outcome continues to be debated, few argue

that how money is spent has an effect on student learning (Hanusheck, 1997). Sherlock (2011) in his study on the effect of financial resources on test pass rate found out that changes in spending may have had a positive impact on fourth grade math pass rates. This is suggestive but inconclusive evidence that additional resources were more effective at increasing test scores and consequently pass rates in initially low spending schools that were earlier low achieving.

Olembo (1986) investigated the methods by which schools are financed and found out that the amount of money from parents and the government was inadequate in running school programs and teachers were asking for more funding. Sessional paper No. 1 of 1986 reiterates the government’s commitment to reduce the share of the ministry of education to 30%. The reduction is to be achieved through cost sharing between the government and the local communities. The 1988 Report of the Presidential Working Party on Education and Manpower Training (Republic of Kenya, 1988) indicated that gradual reduction in recurrent costs in education would be realized through cost sharing in the financing of education facilities and materials.

As noted earlier, education is the vehicle for national development and for this reason many developing countries have invested massive amount of resources in the sector. For instance, Kenya spends 40% of its national budget on financing education. Good returns are thus expected from such an investment. Good performance in Kenya Certificate of Primary Education (K.C.P.E) has been witnessed in Mumias with top pupils in the province emerging from such schools as Booker Academy, Complex Primary School, Central Primary, St. Peter’s Boys and St. Annes among others, and the same has not been replicated in secondary schools. Studies by Maruti (1998) revealed that most Primary Schools in the District received support from Mumias Sugar Company in form of educational facilities such as well designed and equipped libraries, spacious and well lit classrooms, dormitories and dining halls in a bid to improve on performance. Many secondary schools in the area have such adequate facilities sourced from different agencies and initiatives. However, many of these schools have continued to perform poorly over the years. This study sought to investigate whether the level of funding had any effect on performance.

The purpose of the study was to investigate the effects of funding in schools on students’ performance in the Kenya Certificate of Secondary Education (K.C.S.E.). The objective of the study was to determine the relationship between the school level of funding and performance at K.C.S.E.

MATERIALS AND METHODS

This study was conducted in public secondary schools and the data are therefore limited to that category of schools. Correlation design was used in this study. Correlation studies may be broadly

Table 1. Respondents by gender according to school category.

School status	Gender	Number	Percentage	Total
Boys boarding	Males	60	100	60 (100)
Mixed day and boarding	Males	45	63.4	71 (100)
	Females	26	36.6	
Girls day and boarding	Females	15	100	15 (100)
Girls day	Females	60	100	60 (100)
Girls boarding	Females	57	100	57(100)
Mixed day	Males	224	54.9	408 (100)
	Females	184	45.1	
Boys day and boarding	Males	41	100	41 (100)
Totals	Males	370	52.0	712
	Females	342	48.0	

Source: Field Data (2009).

classified as either relational studies or as prediction studies (Gall et al., 2003; Kothari, 2004). This technique was the most suitable design for predicting the presence or absence of the relationship between the dependent variable (K.C.S.E. performance) and the four independent variables. The coefficient of correlation was measured using Pearson's product moment. This was because the independent and dependent variables were continuous in nature (Kerlinger, 2009).

The study population comprised the principals and teachers in charge of examinations, as well as from four students in the 44 secondary schools in Mumias District.

Mumias District has 44 secondary schools. A sample of 31 secondary schools was thus picked using stratified random sampling giving an estimate of 75%. The schools were picked on a proportional basis as follows: Boys 3, Girls 4, co-educational were 23 while one was a private school. The population was representative of the universe since all categories of schools were included in the study (Kothari, 2004). Location of schools with regard to urban and rural setting, day and boarding, private and public, provincial and District schools were also catered for. The respondents were spread as shown in Table 1. A questionnaire for the students and the teacher interview schedule for the Principal and a check list for K.C.P.E and K.C.S.E were used in data collection.

A pilot study was conducted to ensure the validity and reliability of the instrument. Test- retest technique was used to test the reliability of the instruments and Pearson product moment correlation was computed and yielded a co-efficient of 0.7, that allowed the continuity of the exercise.

RESULTS

The effects of the levels of funding on the performance in K.C.S.E. in Mumias District

This section presents the findings of the effects of funding on K.C.S.E. performance in Mumias District. The findings were presented in five sections. Section one deals with background information on the respondents and the school characteristics. The other sections dealt with

school level of funding and its effect on performance at K.C.S.E

Background information on sample units

A total of 712 form four students participated in the study. Three hundred and seventy were males while 342 were females. The males accounted for 52% while the females had 48% implying that more boys were represented in secondary education than girls in Mumias District.

The school characteristics were analyzed in terms of the number of streams and category of school. There were eleven one streamed schools and 31 two streamed schools. On the category of the school, 42.8% operated as mixed day and boarding, 28.6% operated as day while 28.6 operated as boarding. Majority of the schools (96.8%) operate as public institutions while only one school is private, an implication that the government is promoting access to secondary education in response to the ever increasing demand.

The research aimed at establishing the class size in the sampled schools. This information was obtained from the student's questionnaire and the teachers in charge of examinations. According to the respondents, the average class size was made up of 39 students.

It also became necessary to establish from the students whether they were learning in congested classrooms. The study also found out that 87.7% of the students were learning in congested classrooms while 22.3% learnt in well spacious classrooms. This information is shown in table 2.

As to whether congestion affected learning in classrooms the teachers in charge of examinations had the following responses; that congestion in classrooms negatively affected learning activities by as much as (73%)

Table 2. Congestion and effects on learning activities.

Mode	Frequency	Percentage
Congested	27	87.7
Uncongested	4	22.3

Source: Field data.

Table 3. Effect of congestion on learning activities.

Response	Number	Percentage
Yes	22	73.0
No	9	27.0
Total	31	100

Source: Field data.

while only 27% of the teachers felt that congestion in classes had no effect on learning activities. This is shown in Table 3.

Trends in K.C.S.E Performance (2003 – 2007)

Regarding the trend in performance in K.C.S.E by the sampled schools in the District, the results were as indicated in Table 4. The table shows frequency, percentage, and mean score for K.C.S.E performance for schools in Mumias district between 2003 and 2007. The mean score for each year ranged between 0.00 and 12.00. Findings in Table 4 reveal that most schools had a mean score between 0.00 and 6.00. It is only in one year 2007 where a school posted a mean score of 8.10 yet the score nationally was 10.5 (Daily Nation February 29th 2008). Drawing from this table therefore, it can be concluded that most schools in the study area performed poorly in K.C.S.E in the five years between 2003 and 2007. Further it is depicted from Table 4 that only about 7 schools in 2004 and 10 (32%) in 2005 performed above average in K.C.S.E. In 2006, 11 schools representing 36% performed above the mean score of 6 while in 2007, only 8 schools performed above the mean of 6, indicating a declining trend.

When these data presented graphically, the trend in Figure 1 emerges. Based on Figure 1 the graph is skewed to the left with most of the scores lying between 0 and 6.00. Given that 12 points is the highest score and 6.00 is the mean score. During the years between 2003 and 2007 the number of schools that had K.C.S.E means score of less than six were more than those that had K.C.S.E mean score of more than six. The figure also portrays fluctuations in the number of schools within certain mean score categories over the years where it is observed that during 2003 more schools had a mean score ranging between 0.0 – 4.0 as compared to the

years that followed. During 2003 few schools had a mean score of 4.1 – 5.0 as compared to the years that followed. The results show that performance was inconsistent and generally on the decline. Majority of the schools performed poorly with a score below the mean of 6.

Relationship between school level of funding and Performance in K.C.S.E.

The research sought to determine whether there was any relationship between the school level of funding and performance. This was done by asking students how often they were sent away for fees. The percentage of fees payment in each school was established from the Principals' questionnaire. The percentage of fees payment was arranged against school performance which was converted to percentage to make it suitable for correlation analysis. The information was tabulated and analyzed and the results are as shown in Table 5.

Findings in Table 6 shows that majority (46%) students in Mumias District are often sent home for fees. 41% are rarely sent home for fees while only 13% of students are never sent home for fees. This means that majority of the students do not pay fees in good time as a result they are out of school most of the time, an implication that substantial amount of learning time is spent out of school which has a direct implication on K.C.S.E. performance.

Rate of fees payment

Regarding fees payment information was coded and tabulated as shown in Table 7.

Information in Table 7 shows that majority of the schools have fees payment rate ranging between 50 and 75%. 29% of schools collect less than 50% of fees, implying that such schools have a serious funding problem. Only 6% of the schools collect over 75% of fees. This definitely affects performance since most of the school inputs can only be made available when there is adequate funding. A school with adequate finances will purchase Laboratory equipment, textbooks, hold academic excursions and make available other instructional resources which affect K.C.S.E. performance, as observed by Sherlock (2011) who confirms that funding has a positive impact on academic performance.

School level of funding –district and provincial secondary schools

It became necessary to analyze data on the level of funding and the K.C.S.E. mean score based on the school category. Data on District and provincial schools were analyzed and tabulated as shown in Table 5.

This data in Table 5 were analyzed and a sample size $N = 31$ and then subjected to Pearson correlation and the

Table 4. Trend in K.C.S.E performance from 2003 – 2007.

Mean Score	2003		2004		2005		2006		2007	
	f	%	f	%	f	%	f	%	f	%
00 – 4.00	10	32	5	16	2	6	4	13	5	16
4.1 – 5.00	4	13	11	35	11	36	11	35	11	35
5.1 – 6.00	10	32	6	19.5	8	26	5	16	7	23
6.1 – 7.00	4	13	6	19.5	4	13	7	23	4	13
7.1 – 8.00	3	10	3	10	6	19	4	13	3	10
8.1 – 9.00	0	0	0	0	0	0	0	0	1	3
Total	31	100	31	100	31	100	31	100	31	100

Source: Field data.

Table 5. Relationship between Levels of Funding and K.C.S.E. Performance –District and Provincial Secondary: District Schools.

School category	School	Percentage level of funding	Mean score
District	A	74	7.9
	B	72	7.62
	C	75	7.30
	D	65.	6.80
	E	65.	6.50
	F	60	6.28
	G	60	5.42
	H	65	4.52
Provincial	I	60	8.16
	J	70	6.90
	K	60	5.50
	L	60	5.46
	M	65	5.37
	N	55.	5.36
	O	45	5.30
	P	50	5.14
	Q	45	4.84
	R	38	4.74
	S	60	4.70
	T	52	4.59
	U	40	4.54
	V	55.	4.43
	W	40.	4.35
	X	45	4.19
	Y	41	4.20
Z	40	3.95	
A1	35	4.00	
A2	60	3.80	
A3	55	3.65	
A4	76	3.43	
A5	40	3.41	

results were as shown in Table 8 on the relationship between Level of Funding and K.C.S.E. Performance.

Results in Table 8 indicate that there was a positive correlation at 95% confidence level (0.05), between the

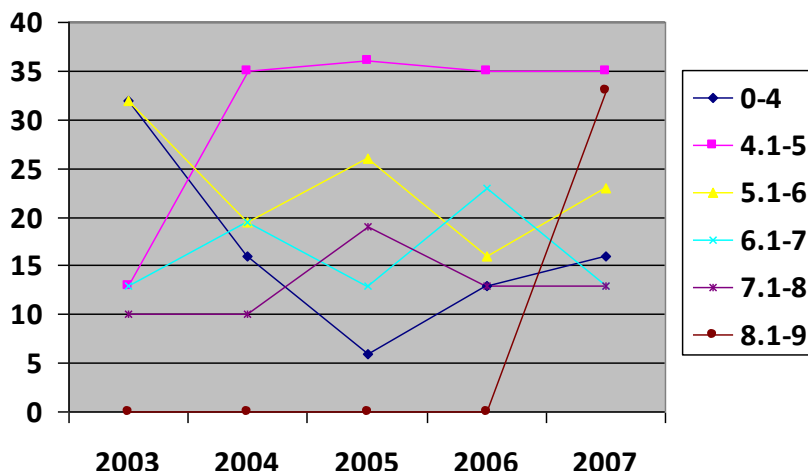


Figure 1. Line graph on K.C.S.E. performance between 2003 and 2007.

Table 6. Responses of students on how often they were sent home for fees.

Mode	Frequency	Percentage
Often	325	46
Rarely	293	41
Never	94	13

Source: Field data.

Table 7. Frequency, number and percentage indicating rate of fees payment in the schools.

Mode	Frequency	percentage	Degree
Below 50%	9	29	104
Above 50%	20	65	234
Over 75%	2	6	22
Total	31	100	360

Source: Field data.

school level of funding and performance in K.C.S.E. This implies that as the level of funding for the school increased performance in National examination also tended to be better.

DISCUSSIONS AND CONCLUSION

Sherlock (2011) confirms that funding has a positive impact on academic performance, thus the results of the data analyzed failed to accept the null hypothesis that: there is no significant relationship between school level of funding and performance was rejected. These results implied that for schools to do well in examinations, more funds should be made available in order to buy the necessary inputs such as text books and other instructional resources. Charles (2004) found out that for \$100

increase in revenue limit per student leads to a 0.04 point increase in the percentage of student scoring above the 50th Percentile in mathematics, a 0.22 to 0.026 increase from the cross sectional estimates. This also leads to a 0.01 point increase in the percent of student scoring above 50th percentile in reading, a 0.30 to 0.32 increase in the cross sectional estimates.

Abagi (1997) argued that while teachers were crucial for quality education, their contribution will be incomplete if there are no important inputs like textbooks. The textbooks can be purchased if there are funds in schools. The study also found out that parents were willing to pay more in schools which were performing better. For example, fees payment rate for school B, which is a private school, was over 75% yet this school charged more than the public schools. The same school also had a performance of over mean grade of 6 in K.C.S.E, which implies that parents were getting concerned about quality and were willing to pay higher fees. Responses from the head teachers reveal that low level of funding adversely affected learning since students were often sent away for fees. This is because funds were needed for the procurement of school facilities such as textbooks, laboratory equipment and workers salary, among others. Low funding thus interfered with the running of school programs. It was also noted that schools in urban setting had a higher rate of funding compared to rural day schools.

Performance in majority of the public secondary schools in Mumias District was inconsistent and generally on the decline. Majority of the schools performed poorly with a mean score of below 6. Table 5 reveals that most schools had a mean score between 1.00 and 6.00. It is only in one year 2007 where a school posted a mean score of 8.10 yet the best score nationally was 10.5 (Daily Nation February 29th 2008). Drawing from the findings, it can be concluded that most schools in the study area performed poorly in K.C.S.E. in the five years between 2003 and 2007. Further it is shown in Table 5

Table 8. Correlations between level of funding and K.C.S.E. performance.

		Performance
Level of Funding	Pearson correlation	0.604** (2-tailed sig. = 0.000)
	Sum of Squares and Cross-products	2479.645
	Covariance	82.655

**Correlation is significant at the 0.05 level (2-tailed).

that only about 7 schools performed slightly above average while, the rest performed below the mean score of 5. In 2005, only 10 schools (32%) of the schools in the study performed above average in K.C.S.E. In 2006, 11 schools representing (36%) performed above the mean while in 2007, only 8 schools performed above the mean indicating a declining trend.

There was a significant positive correlative between school level of funding and performance in K.C.S.E. Results in Table 7 indicate that there was a positive correlation between the school level of funding and performance in K.C.S.E. ($P < 0.05$). This means that as the level of funding for the schools increased performance in National examination also tended to be better. Thus the null hypothesis stating that no significant relationship existed between school level of funding and performance was rejected. These results imply that for schools to do well more funds should be made available in order to buy the necessary instructional resources. These results concur with Sherlock (2011) and Charles (2004), who found out that there existed a positive relationship between funding and performance. Vestegen and King (1998), after reviewing 36 years of production function research, concluded that "resource input can and do make a difference in student educational outcomes" while Charles (2004) found out that an estimated \$100 increase in the revenue limit per student leads to a 0.04 point increase in the percent of student scoring above the 50th percentile in math scores. Changes in the funding level were responsible for 35.6% of the changes in school mean scores.

It was also established that parents were willing to pay more in schools which were performing better. Changes in funding level were responsible for 35.6% of the changes in school mean score. There were significant variations between school categories; levels of funding and school mean score in K.C.S.E. with schools having less than 40% funding level having significant lower mean scores as compared to school with a funding level of over 60%. The study results imply that there is a significant correlation between school level of funding and performance at K.C.S.E.

The school level of funding strongly affected performance of students in K.C.S.E. in Mumias District. This is a revelation that funding level played an important role in effective teaching and learning. Schools funded below 30% performed poorly in K.C.S.E. Therefore it can be concluded that the school funding level was a cardinal

determinant of students' performance.

The study concludes that schools should be adequately funded. The Government should promptly release funds for free secondary education. The study found out that schools funded by less than 40% lead to significantly lower performance in K.C.S.E. According Jagero et al. (2011), lack of resources hinders access to and completion of secondary education. A study could also be conducted to determine the extent to which congestion affected learning in public schools.

REFERENCES

- Abagi O (1997). Public and Private Investment in primary education and agenda for action. Discussion papers No.005/97.1 PAR Nairobi.
- Angrist J, Krueger A (1991). Does compulsory school attendance affects schooling & earnings? *Q. J. Econ.* 106(4):979-1014.
- Ashenfelter O, Krueger A (1994). Estimation of Economics returns to schooling from a new sample of twins. *Am. Econ. Rev.* 84(5):1157-1173.
- Ayot HA, Briggs H (1992). Economics of education. Education research and publications; Nairobi (ERAP).
- Gall MD, Gall JP, Borg WR (2003). Educational research: Introduction (7th edition). White Plains, NY: Longman.
- Cards D (1995). Earnings; Schooling and ability revisited. *Res. Labour Econ.* 14:23-48.
- Charles T (2004). The effects of SCHOOL Funding on Student Academic Achievements. Study of California school Districts. London, Longman.
- Daily Nation Feb 29th 2008; Nation Media Group.
- Education for All (1999). A frame work for Action in Sub-Saharan Africa: Sahara conference on Education for All, Johannesburg, S. Africa 6th-10th December.
- Eshiwani G (1983). Policy studies on factors influencing performance among Primary and Secondary pupil in Western Kenya. Nairobi Kenya University.
- Hanusheck E (1997). Assessing the effects of School resources on student performance: An update, *Educ. Eval. Policy Anal.* 19(2):141-164.
- Jagero NO (1999). An evaluation of the factors affecting the quality of education in Day, secondary School in Kenya. Med, Thesis, Unpublished) Maseno University.
- Jagero N, Ayodo TM, Agak JA (2011). Cost effectiveness analysis between boarding and day secondary students in Kenya. *Afr. Educ. Rev.* 8(3):529-550.
- Jamison D (1982). Reduced class size and other alterations for improving schools: An economic view In: Glasser (Eds) *Class size: research and policy*, Beverly Hills Conference.
- Kerlinger F (2009). Introduction to research methods in education. Sage Publication.
- Kothari CR (2004). *Research Methodology*; New Delhi, Vishwa Prakashan.
- Maruti M (1998). An investigation into the role of the private sector in Education. Financing. A case of Mumias Sugar Company. M. Phil Thesis Kisumu Maseno University.
- Moulton J (2003). Improving Quality of Primary education in Africa:

- What has the World Bank learnt? Association for the Development of education in Africa: Biennial Meeting December 2003, Mauritius.
- Mutua RW, NamaswaG (1992). Education Planning. Education Research Publication.
- Olel M (2000). Optional utilization of Education Resources in Secondary schools. A case study of Kisumu District. Master Thesis. Maseno University.
- Olembo J (1986). Financing Secondary Education, Bureau of Education Research Kenyatta University, Nairobi.
- MOEST (2003). National Action Plan for Education for All. Nairobi: Ministry of Education Science & technology, Oxfam (GB).Oxfam (GB) 2003.
- Psachoropolous G, Whitehall M (1985). Education for development. World Bank, Washington D.C.
- Republic of Kenya (2004). Draft Report of the National conference on education and training, Government Printers. Nairobi.
- Republic of Kenya (1988). Kamunge report – report of the Presidential working party on education and anpower training for the next decade and beyond. Nairobi Government Printers. Nairobi.
- Republic of Kenya (1986). Sessional Paper No 1 of 1986 on Economic Management for Renewed Growth. Government Printers. Nairobi.
- Republic of Kenya (1981). Report of the working party on the establishment of the second University in Kenya. Mackay Report. Government Printers. Nairobi.
- Sherlock (2011). The effects of Financial Resources on Test Pass Rate: Evidence from Vermont's Equal Education Opportunity Act. Sage J. Online 39(3):331-364.
- Sifuna DN, karugu AM (1998) .Contemporary Issues in education in East Africa, Kenyatta University, Kenya.
- UNESCO (2000). World education Forum, on education For all: Meeting our collective commitments. The Dakar Framework for Action. UNESCO Paris.
- Vestegen DA, King RA (1998). The relationship between school spending and student academic achievement; A review and analysis of 35 years of production function research. J. Educ. Financ. 24(2):243-262.