

**Instructional Supervisory Skills used for Academic Performance by Head teachers in Kenya
Certificate of Secondary Education (KCSE) in Public Schools in Machakos County**

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Abstract

Supervisory skills are important in ensuring curriculum implementation. Education system in Kenya is examination oriented and its quality is measured in terms of the number of students passing national examinations. The issue of poor academic performance in examination signifies a critical impediment in any country since education is a major contribution to economic growth. The declining performance of students in KCSE in the country was worrying since majority of the students could not be considered for further education. The purpose of this study was to investigate the relationship between instructional supervisory skills used by Headteachers and students' academic performance in KCSE in Machakos County. The research adopted a correlational study research design of the ex-post facto method. The target population was 270 schools and the sample for the study was 41 schools equivalent to 41 headteachers. Data was analysed using quantitative and qualitative techniques. The statistical significance of the difference between the sample means was tested using two sample t-test of equal variance while the relationship between dependent and the independent variables was tested using Pearson product moment correlation. A coefficient value of 0.7289 was obtained and this was good enough to judge reliability of instrument (Grinnel, 1993). Findings on the relationship between supervisory skills and students' academic performance revealed that there was a significant relationship between supervisory skills used by Headteachers and students' academic performance in KCSE in Machakos County which was shown by the P-Value of 0 which was less than 0.1. This implied that students' performance improved depending on the headteachers' application of instructional skills. The study recommended that capacity building should be incorporated in teacher colleges and universities as this would enhance better performance in KCSE.

Keywords: Instructional Supervisory Skills, Academic Performance, Headteachers, Critical Factors, Capacity Building, Quality of Education

1. Introduction

Academic achievement in Kenya is measured by academic performance in national examination. There is much emphasis on people excelling in National Examination (Eshiwani, 1993). In Kenya schools are ranked based on academic performance but then people fail to look into instructional skills used by the headteacher (supervisor). Good performance is attributed to headteachers, subject teachers, head of departments and also the deputies who are in charge of discipline in schools. Education and the general public tend to believe that there are several factors that influence students' academic performance. A well planned programme of education can be said to be successful only if efficient supervisory skills are applied at all levels, without this, the process of planning can be seriously handicapped (Halliday, 2005). Supervisory skills are therefore basic components of administration which stimulates teachers' greater effectiveness and productivity in terms of good performance. According to the report of the presidential working party on education and man-power training for the next decade and beyond (1988), it advocated for provision of government guidelines on supervision to ensure quality and relevant in the growth and provision of education in the country. It recommended for the strengthening of school supervision and inspection by recruiting school inspectors.

The quality of education as measured by students' academic achievement in national examinations is considered as below average standard (Ongiri and Abdi, 2004). This fact concurs with what the Government of Kenya noted in its master plan of education and training (1997-2010). The plan decries that majority of schools fall short of providing for the learning needs of their students leading to poor academic performance. Republic of Kenya, (2004) reported that majority of country's 4,000 public secondary schools post bad examination results year in year out and that there are only 600 public secondary schools that excel and if a student is not in any of these schools he or she is not expected to get a credible grade. This study was carried out to investigate if supervisory skills have any relationship with students' performance in KCSE. Performance in national examination in public secondary schools in Machakos county has been consistently lower than the neighbouring Makueni County and it is assumed that all counties in the country have adequate and well trained teachers, fairly qualified pupils from primary schools as well as trained and qualified Headteachers surveys on examination performance have shown that a majority of schools which display good performance each year have good supervisory skills, adequate facilities and good human resources. Certainly the same cannot be sent of Machakos County because the county has consistently posted poor results.

Studies related to instructional supervision have been conducted elsewhere such as those of Mtune (2005), in Nakuru District, Anyango (2005), in Migori district and Kimosop (2002) in Baringo District. Some of them used different methodologies and their findings concentrated on attitudes towards supervision and not relationship between instructional supervisory skills used by the Headteachers and students' academic performance in KCSE in Machakos County and this led to justification of the study. The purpose of this study was to investigate the relationship between instructional supervisory skills used by the Headteachers and students' academic performance in KCSE in public secondary schools in Machakos County.

The general objective of the study was to investigate the relationship between instructional supervisory skills used by the Headteachers and students' academic performance in KCSE in Machakos County. Specifically the study sought to establish the effect of basic skills such as

conceptual skills, human relations skills and technical skills on students' academic performance in KCSE in Machakos County. The study was guided by one hypothesis namely HO1, there is no significant relationship between the instructional supervisory skills used by the Headteachers and students' academic performance in KCSE in Machakos County. The findings of the study may serve as reference points for teachers of schools in Machakos County on skills that would lead to improvement of students' performance in national examination.

Methodology

The research adopted a correlational study research design. This research design describes quantitative terms the degree to which variables are related. It involves collecting data in order to determine whether and to what degree a relationship exists between two or more quantifiable variables Mugenda and Mugenda (1999). Correlational study research design was appropriate for the study since it established if a relationship exists between instructional supervision and student performance in K.C.S.E in Machakos County. The method used for the study was ex-post facto. In ex-post facto method, the researcher starts with observation of the dependent variables in retrospect for their possible relationships and the effect of the independent variables. The design was recommended for this study because it involved studying conditions or events that had already occurred. The dependent variable (KSCE performance) had already occurred while the factors influencing the level of performance in KCSE could not be manipulated (Independent variables).

The study targeted all public secondary school Headteachers in Machakos County. According to Machakos County Education Director, there are 270 public secondary schools. Therefore the target population was 270 Headteachers. According to Mugenda and Mugenda (2003) a sample is a small group obtained from the accessible population. This sub-group is carefully selected so as to be representative to the whole population.

To obtain a representative sample of schools, systematic sampling procedure was used. The schools in the eight sub-counties were arranged randomly. By list every n^{th} item ($n^{\text{th}} = 7$) was selected from the list. A total of 41 schools were selected which translated to 15% (Best and Khan, 2004). The entire sampling procedure yielded a total of 41 subjects for the study (41 Headteachers). The necessary data was collected using questionnaires. The questionnaires were preferred for their suitability to this study. They were suitable because they allowed the researcher to reach a larger sample within a limited time. They also ensured confidentiality and this gathered more cordial and objective replies. The questionnaires were prepared for Headteachers. Borge *et al* , (1993) observed that questionnaires are often used to collect the basic descriptive information from a large sample.

Questionnaires were designed with questions and statements related to the objectives of the study. The questionnaires consisted of 3 sections. Section A solicited for personal data, section B, captured educational and professional training and preparation and section C dealt with supervisory activities they carry out. The validity and reliability of the instruments were done as they were used in the actual study.

Kothari (2005) defines validity as a criteria which indicates the degree to which an instrument measures what is supposed to measure. It was necessary to ascertain the validity of the

instruments used to collect data so that the research findings could be reliable. In order to ascertain content and face validity, the questionnaires were presented to two lecturers in the department of educational management and curriculum instruction at Maasai Mara University who are experts in the area for scrutiny and advice. The contents and impressions of the instruments were improved based on the experts' advice and comments. The questionnaires items were then constructed in a way that they related to the questions.

Grinnel (1993) observed that reliability measures the degree of accuracy in the measurements an instrument provides. It ensures that instrument generate similar data when used by independent researchers to ensure reliability of the questionnaires. The researcher piloted the instruments in one randomly selected public secondary school in Machakos County before the actual study. The school was not included in the main study. Questionnaires were subjected to pilot study through test-retest method. One headteacher participated in the piloting of instruments. The answered instruments were scored manually. The same instruments were administered to the same subject after a period of two weeks and responses between the answers obtained in the first and second tests was made. The procedure to be used in pre-testing the instruments was identical to those that were used in the actual study. To establish the co-efficient of the internal consistency of the research instruments, split half method was used. The results were analyzed and reliability co-efficient was calculated using Spearman Brown formula.

$$a = \frac{2r}{1+r}$$

Where a = reliability coefficient

r = actual correlation between halves of the items.

“r” was calculated using the Pearson product moment formula.

$$r = \frac{\sum(X_1 - \bar{X})(Y_1 - \bar{Y})}{\sum\sqrt{(X_1 - \bar{X})^2} \sum\sqrt{(Y_1 - \bar{Y})^2}}$$

Where X stood for scores from first half and Y stood for scores from the second half of the pilot sample. \bar{X} and \bar{Y} were their respective means. Pearson Product Moment formula for test-retest was employed to compute the correlation co-efficiency in order to establish the extent to which the content of the questionnaire were consistent in eliciting the same responses every time the instruments were administered. The reliability yielded a coefficient of 0.7289 and this was deemed to be reliable (Orodho, 2008).

A letter was obtained from the Department of Curriculum and Educational Management to help the researcher get a research permit from the National Council for Science and Technology. The District Education Officers (DEOs) and District Commissioners (DCs) of various districts in Machakos County were contacted before the commencement of the study. The Headteachers of the schools who participated in the study were informed about the study. The researcher also requested the offices to issue her with an introduction letter to the schools. The questionnaires were administered personally during piloting and the actual study to allow the respondents to have ample time to study and respond appropriately. The researcher and the research assistants visited the respondents on the agreed dates and then issued the questionnaires personally to the Headteachers. The researcher and the research assistants collected the instruments after they were completely filled.

Data analysis was facilitated by use of SPSS (Statistical Package for Social Sciences) computer package. The research questions elicited both qualitative and quantitative data. Quantitative data analysis was analyzed using descriptive statistics and presented in tables, charts and percentages. The level of significance for the study was set out at 0.05 level of confidence. The statistical significance of the difference between sample means with respect to specific variables were tested using two sample t-test. The relationship between the dependent and independent variables (student performance and instructional supervisory skills) was tested using Pearson Product Moment and chi-square test and a coefficient of 0.7289 was realized.

2. Analysis and Discussion

This sought to test the hypothesis that there is no significant relationship between instructional supervisory skills used by Headteachers and students' academic performance in KCSE in Public Schools, Machakos County. In regards to supervisory skills in possession of the Headteachers and their supervisory activities, the Headteachers' information provided the best responses, since they could objectively assess their supervisory skills. Hence, for this section of analysis and in testing anything regarding supervisory skills and administrative activities, the study relied upon the information provided by the Headteachers. This was with an exception of whether a headteacher had received training in instructional supervision or/and human relations which could adequately be captured by relying on the headteacher's response.

Table 3.1: Two-sample t-test with equal variances for students' academic performance by Headteachers training in instructional supervision

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Yes	29	3.586207	0.23021	1.239736	3.114636	4.057777
No	12	3.583333	0.31282	1.083625	2.894831	4.271836
Combined	41	3.585366	0.18471	1.182701	3.21206	3.958672
diff		0.002874	0.41113		-0.82871	0.834454

Diff = mean (yes) - mean (no)

Ho: diff = 0

Ha: diff < 0

Pr (T < t) = 0.5028

Ha: diff! = 0

Pr (T > t) = 0.9945

t = 0.0070

degrees of freedom = 39

Ha: diff > 0

Pr (T > t) = 0.4972

A two sample t-test with equal variance showed that schools with head teachers who said they had received training in instructional supervision, scored an average of 3.59 points while those without the training had a score of 3.58 points, which was almost the same and even from the credible t-test for the difference, it was evident that the difference (0.003) was statistically equal to zero. Hence students' academic performance was the same irrespective of whether the head teacher possessed training in instructional supervision or not.

Table 3.2: Two-sample t-test with equal variances for students' academic performance by Headteachers training in human relations

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]
Yes	26	3.576923	0.22987	1.172112	3.103497 4.050349
No	15	3.6	0.320714	1.242118	2.912138 4.287862
Combined	41	3.585366	0.184707	1.182701	3.21206 3.958672
diff		-0.02308	0.38834		-0.80857 0.762415

Diff = mean (yes) - mean (no)

Ho: diff = 0

Ha: diff < 0

Pr(T < t) = 0.4765

Ha: diff != 0

Pr(T > t) = 0.9529

t = -0.0594

degrees of freedom = 39

Ha: diff > 0

Pr(T > t) = 0.5235

Similar findings emanated from a two-sample t-test for students academic performance in relation to whether the school head teacher had received training in human relations or not. The statistical test showed that the mean was the same for the two categories and hence the performance did not change with the head teachers training on human relations. Other trainings seemed not to be adding much to Headteachers in terms of supervisory skills because already they had been trained and the training received in colleges was enough both instructional supervision and in human relations.

Table 3.3: Headteachers' response on the instructional supervisory skills

Instructional supervisory skills used		Yes	No	Index
		(1.0)	(0.0)	
Are you able to acquire information pertaining instructional supervision	Frequency	34	7	
	Per cent	83.83	16.17	83.83
Are you able to analyze the information acquired during instructional supervision	Frequency	33	8	
	Per cent	80.86	19.14	80.86
Are you able to interpret the information acquired during supervision	Frequency	34	7	
	Per cent	81.85	18.15	81.85
Do you understand the internal school environment that affects instructional supervision	Frequency	34	7	
	Per cent	83.83	16.17	83.83
Do you understand the external school environment that affects instructional supervision	Frequency	34	7	
	Per cent	82.84	17.16	82.84
Are you able to interact with teachers in the school	Frequency	32	9	
	Per cent	79.21	20.79	79.21
Do you discuss his/her observations with you after supervision	Frequency	32	9	
	Per cent	78.88	21.12	78.88
Are you good in relating with other teachers	Frequency	31	10	
	Per cent	74.92	25.08	74.92

Are you able to apply supervisory skills during supervision	Frequency	31	10	
	Per cent	76.57	23.43	76.57
Are you able to make sound judgments' on supervision	Frequency	33	8	
	Per cent	79.54	20.46	79.54
Average percentage score		80.23	19.77	80.23

From the frequencies on the Headteachers instructional supervisory skills, about four in every five headteachers concurred that they had the skills and used them in discharging their duties.

Table 3.4: Pearson chi-square test on association between headteachers' supervisory skills and students academic performance

Supervisory Skills	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7(C+)	Total
Are you able to acquire information pertaining instructional supervision?	0	0	0	1	0	0	1
Are you able to analyze the information acquired during instructional supervision?	0	0	0	0	0	0	1
Are you able to interpret the information acquired during supervision?	0	0	0	0	0	0	1
Are you able to understand the internal school environment that affects instructional supervision?	0	0	0	0	0	0	1
Are you able to understand the external school environment that affects instructional supervision?	0	0	0	0	0	0	1
Are you able to interact with teachers in the school?	0	1	1	0	0	0	3
Do you discuss observations with your staff after supervision?	1	1	1	0	0	0	2
Are you good in relating with other teachers?	1	1	0	0	1	0	2
Are you able to apply supervisory skills during supervision?	1	2	0	0	0	0	4
Are you able to make sound judgments' on supervision?	1	1	1	1	0	0	5
Does supervision improve examination results in your school?	1	10	5	2	1	0	21
Total	6	17	10	5	2	1	41

Pearson $\chi^2(50) = 95.7197$ Pr = 0.000

In testing for the existence of association between Headteachers supervisory skills and students academic performance, the study utilized a chi square test. In the case of the weighted index for instructional supervisory skills used by the head teacher, a p-value of 0.000 was realized. This indicated that the null hypothesis of no association was rejected, implying that the two variables were related. Specifically, students' academic performance depended upon the weighted score of the head teachers instructional supervisory skills. Hence, as the weighted index score increased this led to improvement in students' academic performance

Table 3.5: Pearson chi-square test for the association between students' academic performance and the headteachers' ability to acquire information pertaining to instructional supervision

Are you able to acquire information pertaining instructional supervision?	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7 (C+)	Total
no	1	2	1	1	0	1	7
yes	5	15	9	4	2	0	34
Total	6	17	10	5	2	1	41

$$\text{Pearson } \chi^2 (5) = 12.5088 \quad \text{Pr} = 0.028$$

A chi-square test for the association between students' academic performance and whether the headteacher was able to acquire information pertaining to instructional supervision produced a p-value of 0.028. This meant that the null hypothesis of no association was rejected at the five per cent level of significance and hence students' academic performance depended on the head teachers' ability to acquire information pertaining instructional supervision.

Table 3.6: Pearson chi square test for the association between students' academic performance and the Headteachers' ability to analyze the information acquired during instructional supervision

Are you able to analyze the information acquired during instructional supervision?	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7 (C+)	Total
no	2	2	2	1	0	0	8
yes	4	15	8	4	2	1	33
Total	6	17	10	5	2	1	41

$$\text{Pearson } \chi^2 (5) = 9.2153 \quad \text{Pr} = 0.101$$

A chi square test for the association produced a p-value of 0.101 showing that the null hypothesis of no association could not be rejected at the five per cent level of significance. This implied that students academic performance did not depend on the head teachers' ability to analyze the information acquired during instructional supervision.

Table 3.7: Pearson chi square test for the association between students' academic performance and headteachers' ability to interpret the information acquired during supervision.

Are you able to interpret the information acquired during supervision?	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7 (C+)	Total
no	2	2	2	1	0	0	7
yes	4	15	8	4	2	1	34
Total	6	17	10	5	2	1	41

$$\text{Pearson } \chi^2 (5) = 8.5870 \quad \text{Pr} = 0.127$$

The test for the association between students' academic performance and head teachers ability to interpret the information acquired during supervision revealed a p-value of 0.127, showing that the null hypothesis of independence cannot be rejected at the five per cent level of significance. This implied that students' academic performance did not depend on head teachers' ability to interpret the information acquired during supervision.

Table 3.8: Pearson chi square test for the association between students' academic performance and the headteachers' understanding of the internal school environment

Do you understand the internal school environment that affects instructional supervision?	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7 (C+)	Total
no	1	2	2	2	0	0	7
yes	5	15	8	3	2	1	34
Total	6	17	10	5	2	1	41

$$\text{Pearson } \chi^2 (5) = 7.1889 \quad \text{Pr} = 0.207$$

In testing for the association between the two variables using the chi square test, a p-value of 0.207 was realized, which showed that the null hypothesis of no association could not be rejected at the five per cent level of significance. This implied that students' academic performance did not depend on whether the head teacher understood the internal school environment that affected instructional supervision.

Table 3.9: Pearson chi-square test for the association between students' academic performance and the headteachers' understanding of the external school environment

Do you understand the external school environment that affects instructional supervision?	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7 (C+)	Total
no	1	2	2	2	0	0	7
yes	5	15	8	3	2	1	34
Total	6	17	10	5	2	1	41

$$\text{Pearson } \chi^2 (5) = 16.3294 \quad \text{Pr} = 0.006$$

A chi-square test for the association between students' academic performance and whether the head teacher understood the external school environment that affected instructional supervision produced a p-value of 0.006. The null hypothesis of no association was hence rejected at the five per cent level of significance. This implied that students' academic performance depended on the understanding of the external school environment by the headteacher.

Table 3.10: Pearson chi-square test for the association between students' academic performance and Headteachers' ability to interact with teachers in the school

Are you able to interact with teachers in the school?	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7 (C+)	Total
no	1	4	2	2	0	0	9
yes	5	13	8	3	2	1	32
Total	6	17	10	5	2	1	41

$$\text{Pearson } \chi^2 (5) = 2.3176 \quad \text{Pr} = 0.804$$

The test for the association between Headteachers ability to interact with teachers in the school and students academic performance yielded a p-value of 0.804. This meant that the null hypothesis of no association could not be rejected and hence students' academic performance did not depend on the ability of the head teachers to interact with teachers in the school.

Table 3.11: Pearson chi-square test for the association between students' academic performance and whether the headteacher discusses his/her observations with the teachers after supervision

Do you discuss your observations with your staff after supervision?	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7 (C+)	Total
no	1	3	2	2	1	0	9
yes	5	14	8	3	1	1	32
Total	6	17	10	5	2	1	41

$$\text{Pearson } \chi^2 (5) = 5.0375 \quad \text{Pr} = 0.411$$

Concerning the association between students' academic performance and whether the head teacher discussed his/her observations with the teachers after supervision, yielded a p-value of 0.411. This led to the rejection of the null hypothesis of no association at the five per cent level of significance, implying that students' academic performance did not depend on whether the head teacher discussed their observations with the teachers after carrying out supervision.

Table 3.12: Pearson chi square test for the association between students academic performance and how well headteacher relates with other teachers

Are you good in relating with other teachers?	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7 (C+)	Total
No	2	3	3	2	0	0	10
Yes	4	14	7	3	2	1	31
Total	6	17	10	5	2	1	41

$$\text{Pearson } \chi^2 (5) = 6.8534 \quad \text{Pr} = 0.232$$

In testing the existence of association between how well head teachers related with other teachers and students' academic performance gives a p-value of 0.232, hence leading to the rejection of the null hypothesis of independence in the two variables. This implied that students' academic performance did not depend on how well the head teacher related with other teachers in the school.

Table 3.13: Pearson chi-square test for the association between students' academic performance and headteachers' ability to apply supervisory skills during supervision

Are you able to apply supervisory skills during supervision?	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7 (C+)	Total
no	2	4	2	1	1	0	10
yes	4	13	8	4	1	1	31
Total	6	17	10	5	2	1	41

$$\text{Pearson } \chi^2 (5) = 2.7151 \quad \text{Pr} = 0.744$$

The chi-square test for the association between students' academic performance and head teachers ability to apply supervisory skills during supervision gave a p-value of 0.744 clearly indicating the null hypothesis of no association could not be rejected. This implied that students' academic performance didn't depend on head teachers' ability to apply supervisory skills during supervision of teachers.

Table 3.14: Pearson chi-square test for the association between students' academic performance and headteachers' ability to make sound judgments' on teachers' supervision

Are you able to make sound judgments' on supervision?	2 (D-)	3 (D)	4 (D+)	5 (C-)	6 (C)	7 (C+)	Total
no	2	2	2	1	1	0	8
yes	4	15	8	4	1	1	33
Total	6	17	10	5	2	1	41

$$\text{Pearson } \chi^2 (5) = 9.5168 \quad \text{Pr} = 0.090$$

A test for the association between students' academic performance and head teachers ability to make sound judgments' on teachers' supervision revealed a chi square statistic of 9.62 with

associated p-value of 0.09. This meant that at the five per cent level of significance the null hypothesis of no association could not be rejected though at the 10 per cent level of significance it was rejected. Hence from these findings, it was deduced that students' academic performance marginally depended on the head teachers' ability to make sound judgments' on supervision of teachers.

3. Conclusion and Recommendation

This study adopted a correlational research design. The sample for the study was 41 Headteachers. The data was collected using questionnaires and was analyzed by use of two sample t-test for the differences between the group means and the relationship was tested using Pearson product moment and chi-square test.

Data revealed that there was a significant relationship between instructional supervisory skills used by the headteacher and student's academic performance in KCSE in public schools in Machakos County. This was shown by a p-value of 0 which was less than 0.1. The hypothesis that Ho1 there is no significant relationship between instructional supervisory skills used by Headteachers and students' academic performance at KCSE in Machakos County was therefore rejected. This implied that students' performance improved depending on the Headteachers' application of instructional supervisory skills. Based on the findings of the study, it was concluded that there was a significant relationship between the instructional supervisory skills used by the Headteachers and students' academic performance in KCSE in Machakos County. The following recommendation was made; capacity building should be incorporated in teacher colleges and universities as this would enhance better performance in KCSE.

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