

The Impact of Head Teachers' Administrative Factors on Performance in Secondary School Science Subjects in Eldoret Municipality, Kenya

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Abstract

The study sought to determine how secondary school head teachers' administrative factors influence performance in the science subjects in the Kenya Certificate of Secondary Education (KCSE) examinations in Eldoret Municipality, Kenya. Stratified random sampling was used to draw a sample of 14 head teachers, 56 teachers and 308 Form Three students. Stratification was based on the schools' performance in KCSE science subjects for the period 2001-2005 to obtain 7 schools in the low performing schools and 7 schools from the high performing schools. The purpose of the study was to establish if leadership factors (leadership styles, supervision, decision-making and delegation) were among factors that influence performance in science subjects. The study was significant as performance in science subjects in Eldoret Municipality has been poor for a long time, hence the need to find out the causes. Data was collected using three questionnaires administered to the head teachers, teachers and students. Descriptive statistics were used to analyse and summarise the data. T-test was used to test for significant differences between means of low performing and high performing schools. Correlation was used to show relationships between performance and the research variables. Majority of the head teachers were found to be fully qualified, experienced and practicing participative leadership. However, a few in the low performing schools were reported to employ dictatorial leadership styles. The effect of the leadership style was not as significant predictor of performance in sciences at KCSE as the correlation between leadership and performance was not very significant. It was recommended that there should be more and frequent in-servicing of both head teachers and teachers on ways of inspiring and enhancing the teaching/learning of science. The study should help Quality Assurance and Standard Officers in advising heads of schools and teachers on leadership styles and teaching methods respectively to improve performance, not only in sciences, but also in all the other subjects. Importance of the study to scholars, readers and the general public lies in the fact that science is the foundation of industrial, technological and economic development. Hence the need for awareness of factors that affect performance in science, including leadership qualities and characteristics, in order to prevent or find means of alleviating poor performance.

Keywords: impact, head teachers' administrative, factors, performance, secondary school science subjects, Eldoret municipality, Kenya.

INTRODUCTION

It has often been said that schools are as good as their head teachers. Sergon (2005) says that schools' success depends on the head teachers. According to Sergon (*ibid.*), a leader gets things done and has the ability to inspire, moderate, guide, direct and listen. These qualities are crucial for head teachers to be effective in their work. Managing a school is like charting a ship through turbulent waters.

According to Wekesa (as cited in Ngala, 1997), the process of certifying, recruiting, hiring and promoting teachers does not fully emphasize on teacher traits essential for classroom performance. This responsibility is left to the head teacher. However, Sackney and Johnston (1981) have reported that principals might not do effective supervision due to lack of confidence, lack of knowledge and skills in clinical supervision and, lack of knowledge in

curriculum and teacher effectiveness. This could not be truer for arts-based head teachers inspecting science teachers. For instance, a science-based head teacher will easily know which topics should be taught practically and expect to see this in the schemes of work, in class and in the record of work covered. An example of the effect of a head teacher's teaching subjects on performance in science has been found in Mr. Gakumu, of Nguviu Boys High School in Embu (Wachira, 2005).

Ndege (as cited in Cheruiyot, 2003) says that teachers are likely to perform well if they trust in their principal. A head teacher whose credentials have a bias for sciences stands a better chance of bringing harmony between the administrative wing and the science department, a factor that is essential for high performance.

Head Teachers' Leadership Style

Koontz and Wehrich (1998) define leadership as the art or process of influencing people so that they strive willingly and enthusiastically toward the achievement of group goals. They add that people should be encouraged to develop not only willingness to work, but also, with zeal and confidence. Several studies have been done about leadership leading to many theories. Many theorists have speculated that the secret to leadership problems lies in the style of the leader, the nature of the task, and the situation plus his personality (Rono, 2002). The leadership theories fall under three categories. These are: the traits theories, styles theories and contingency theories.

Traits Theories

These assume that the individual's qualities determine success in leadership. The traits, according to Koontz and Wehrich (1998), include: physical traits, intelligence, personality drive and social traits. However, research has shown that not all leaders possess all the traits and, many non-leaders may possess most or all of them. Furthermore, there is no specification of how much of each trait a leader should have. Only 5 of the identified traits have been found to be common. Thus, traits that lead to success of a leader differ depending on the situation. Stodill (as cited in Rono, 2002) says that leaders exhibit certain characteristics such as intelligence, initiative, self-assurance and socio-economic position. Cole (1993) states that of all the traits which appear more frequently, intelligence, energy and resourcefulness are the most representative. A head teacher who possesses such traits is more likely to steer the school to produce good results.

Contingency Theory

Fred Fiedler's model cited by Koontz and Wehrich (1998) suggests that group performance or effectiveness is dependent upon the interaction of leadership style and the extent of control the leader has over the environment (situation). He gives the situational variables as leader staff relations, task structure and position power.

The second key variable is the leader. Fiedler suggests two basic leader orientations, which are: relationship oriented (staff centred) and task oriented (task centred). In Fiedler's view, the leader-group relationship is most important. The Contingency concept of leadership was developed by Professor John Adair (Cole, 1993). This model of leadership incorporates concern for the task and concern for people. It further distinguishes the concern for individuals from concern for groups and stresses that effective leadership lies in what the leader does to meet the needs of the task, group and individuals within the prevailing conditions. In a school setting, the task functions a head teacher needs to fulfil include planning, allocation of responsibilities and

setting appropriate standards of performance. The group tasks include team-building for instance a formidable science department, motivation and communication while individual tasks include in-service and motivation.

Style Theories

Style theories consider leadership as an aspect of behaviour at work rather than personal qualities (Cole, 1993). The theories are expressed in terms of authoritarian versus democratic styles, or people-oriented versus task-oriented. The best known styles theories are: the Authoritarian-democratic, and the People-task orientations. The authoritarian-democratic theories include three approaches which are: McGregor's theory X and theory Y manager, the Rensis Likert's four management systems and the Tannenbaum and Schmidt's model. McGregor's theory X manager is tough, autocratic and supports controls with punishment-reward systems, hence authoritarian. On the other hand, the theory Y manager is benevolent, participative and believes in self-controls, hence democratic. Likert's four management systems are: the exploitative-authoritative system, which is the epitome of the authoritarian style; the benevolent-authoritarian system which is basically paternalistic style; the consultative system which moves towards greater democracy and team work and finally, the participative group system which is the ultimate democratic style. Tannenbaum and Schmidt's model is a continuum of leadership styles ranging from authoritarian behaviour at one end and to democratic behavioural at the other end.

The three approaches imply that managers have a choice between being either authoritarian or democratic and that the ideal is a democratic one. This then gives rise to the concept of leadership styles, whereby it is believed that people work harder under leaders who employ given styles of leadership. Leadership style refers to a particular behaviour applied by a leader to motivate staff to achieve the organizational objectives. The styles form a continuum and no single leadership style can be employed over a given situation. Likewise, leader success cannot be derived from leadership style alone, and this is where the contingency theory comes in.

Pioneer studies conducted in Iowa State University by Kurt Lewin *et al.* (as cited in Rono, 2002) have revealed that autocratic leaders perform highly, but only as long as they (leaders) are present to supervise. However, group members are displeased and hostilities usually develop. Democratic leaders are almost as good as the autocratic ones, but there was job satisfaction and workers needed less supervision (White & Lippitt, as cited in Rono, 2002). Due to participative leadership and decision-making in

democratic leadership, there is a higher co-operation. Orlosky *et al.* (as cited in Ngala 1997) say that: "teachers will not optimize schools without help. It's collaborative and shared purpose that will bring about the achievement that schools are currently striving to reach". This being the case, one can confidently argue that laissez fair leadership may not achieve much. Chubb and More (1990) say that leadership, personnel and practice are more important than either ability or socio-economic backgrounds in determining performance.

In addition to the traits, styles and the contingency theories of leadership, there is the skills approach to leadership. This refers to the skills that are essential for effective management. A technical skill leads to ability to work proficiently while human skills enable one to work efficiently in a group. On the other hand, conceptual skills enable one to see the organization as one whole unit. Katz (1955) states that human skills enable one to work with people, conceptual skills involve ability to work with ideas and concepts while technical skills refer to knowledge, competency and proficiency in a specific work or activity, for instance, the use of computers. Mbiti (1974) concurs when he says, a head-teacher, like a captain, must be fully skilled in such things as official procedure, delegating duties, communication, human relations, and modern educational techniques so as to lead his team successfully in both curriculum and other matters. Commenting on the same, Orora (1997) says school managers need technical skills in the methods, processes, procedures and techniques of education, including specific knowledge in finance, accounting, scheduling, purchasing, construction and maintenance. Concerning human relations, school managers require self-understanding and acceptance as well as appreciation, empathy and consideration for others.

The conceptual skills, on the other hand, entail effective mapping of interdependence for each of the components of the school as an organization. Relating this to performance in science, a head teacher needs to be acquainted with what goes on in the science department, work well with the science teachers and take note of all the factors that are related to and affect the science subjects.

Supervision

The TSC code of regulations (1996) states that a head teacher is responsible for the day-to-day assigning of duties to and supervision of teachers. A head teacher needs to supervise science subjects, right from planning for instruction to classroom teaching, evaluation and reporting. According to Mbiti (1974), supervision concerns the tactic of efficient and proper management of personnel. But Eshiwani (1982) warns that it should be for the purpose of advising and not policing. In most schools, supervision is

wanting. Sarason (1982) says most principals spend most of their time on administration, housekeeping and maintaining order. This is understandable because there is no prosecution for underperformance in exams as one just gets a transfer or a demotion. The implications of lack of supervision include: failure to scheme, no keeping of record of work covered hence poor syllabus coverage, and teaching of science subjects theoretically. These lead to poor performance in sciences.

Decision-making, Team Work and Delegation

Okumbe (1999) says that although educational organizations are bureaucratic, the teachers who occupy the bottom of the hierarchy are highly educated professionals, sometimes even more educated than the head- teachers. Thus teachers are supposed to be effectively involved in decision-making in their schools due to their specialized training. This could not be truer for science teachers. They are specialists in their subjects and their views and ideas should be held in high esteem by the head-teachers. For instance, when they say their workload should be reduced so as to leave them with some time for planning and conducting practical lessons and, marking extra exercises, this should be taken seriously. According to Koontz and Weinrich (1998), managers should be receptive and willing to give other peoples' ideas a chance. They further say that decision-making involves some discretion and the subordinate's ideas may differ from the manager's. Therefore, the manager must not only be able to welcome ideas of others but also help them and compliment them on their ingenuity. Head teachers hesitate to involve the teachers especially in purchasing, as they do not want them to be privy to financial details of the school.

This is stated as one of the barriers to delegation by D'Souza (1989), who adds that some matters one simply can't delegate. For others, it is a case of feeling insecure, especially if the teachers are assertive or more qualified than the head teacher (*ibid.*). For instance, with the current provision for study leave, many teachers have gone back to college for masters and even PhD. Head teachers whose schools are doing well have demonstrated that they know too well the significance of involving everyone in the search for success.

Lack of, or poor delegation in schools is a possible cause of poor performance in science subjects. Orora (1997) notes that in Kenya today, talents, skills and abilities of almost all the employees in most organisations lie fallow because of lack, or inadequate involvement, of staff members in task performance and decision-making. Consequently, productivity and employee satisfaction remain extremely low. Schools are no exception. If the head teacher over-delegates, under-delegates or fails to

delegate to the head of department and science teachers, poor results could be the outcome. Studies have shown that many managers fail in their duties because of poor delegation.

Koontz and Weinhrich (1998) say that just in the same way one cannot do all the tasks in an enterprise necessary for accomplishment of group purpose, it is impossible for one person to exercise all the authority for making decisions in an enterprise. Orora (1997) adds that poor delegation makes the chief executive the only member of an enterprise. In addition, an enterprise' plans, decisions and tasks are enormous and any attempt by anyone to operate them singly leads to failure. Absence of a well structured science department where there is no teamwork and participatory decision-making leads to poor performance.

STATEMENT OF THE PROBLEM

The problem of poor performance in science subjects is global as indicated by studies done by Valverde and Schmidt (1997) in USA, Landry (1998) in Canada, Fonseca and Conboy (2006). This problem is made worse in developing countries by the existing digital divide, poverty and other problems unique to the third world. A study by Kizito (1986) in Kenya attributes poor performance in KCSE science subjects mainly to poor teaching of the subject at primary level. This concurs with the findings of a study by Atieno (2000) on factors affecting performance in KCPE science paper in Bondo Division. Kizito (ibid.) gives other causes of poor performance as poorly trained teachers, negative attitude and a big workload. In Eldoret Municipality, performance in KCSE science subjects is very poor as majority of the students score C- (Minus). This is a poor grade as it bars learners from entry into science- based degree and diploma courses. This problem has persisted for a long time leading to very low district mean grades in these subjects. All these issues led the author to examine whether there was any relationship between the head teachers' administrative factors and the level of performance in the KCSE science subjects in Eldoret Municipality Kenya.

LIMITATIONS OF THE STUDY

The topic was sensitive, especially in the low performing schools, where one could be mistaken as being on a fault finding mission. This is because it required probing for inner details about schools, which could be misconstrued as witch-hunting. To overcome this, the author did not just post questionnaires but visited the schools physically asked for the principals' permission to conduct the research in their schools. The author explained about the research to the principals' and in the process developed rapport, hence opening a way for the principals to be interviewed. Some head teachers' and teachers' also showed reluctance to avail records and offer support during interviews or

observation of facilities. This, together with the failure by some respondents to return questionnaires, was taken care of by having two extra schools included in the sample. This increased the response rate.

MATERIALS AND METHODS

The study was conducted in Eldoret Municipality in Uasin Gishu County which is the Rift Valley Province of Kenya. The town is 310 kilometres north-west of Nairobi. This author employed the ex-post facto survey design. Both non-probability sampling and probability sampling techniques were employed. There were twenty-one secondary schools that were presenting students for KCSE at the time of research in the municipality. Of these, eleven (11) were private while ten (10) were public schools. The author purposively selected the top seven (7) and bottom seven (7) schools in the municipality based on the 2005 KCSE results ranking. All the Head teachers of the fourteen (14) schools were selected. Four science teachers were selected at random in each school as well as twenty-two (22) Form Three students from each school to give a sample size of 56 teachers and 308 students.

Observations, questionnaires and content analysis were the methods of data collection. The author observed the available physical facilities for teaching/learning science subjects. The questionnaire was generated and involved closed-ended and open ended questions. Some of the closed-ended questions were scored on a Likert scale of 1 to 5 for responses such as strongly disagree to strongly agree. Basic demographic data was also collected on the teachers' age, experience, and qualification and teaching subject. Questionnaires were given to head teachers, teachers and students. The document analysis involved sourcing secondary data on results of KCSE for the period 2001-2005 which were obtained from the DEO's office in Uasin Gishu and analyzed with regard to performance in the science subjects.

The author used descriptive statistics as well as inferential statistical methods. The descriptive statistics involved computation of frequencies and means. The inferential statistics used were t-test and correlation. T-test was used to show if there were significant differences between the means of the low performing schools and the high performing schools. Correlation was used to find out if any relationship existed between performance in KCSE sciences results and the research independent variables at $p < 0.05$ level of significance.

RESULTS AND DISCUSSION

The study sought to investigate the relationship between performance in sciences and the administrative factors in the sampled schools. This was in order to determine the effect of specific administrative factors of: head teachers'

qualifications, experience, leadership styles, degree of supervision, delegation, teamwork and involvement of teachers in decision-making on performance in sciences within Eldoret Municipality

Delegation

The teachers were asked to respond to the item: “*delegation of academic duties is done effectively*”. Out of the 40 valid responses 29(72.5%) agreed that delegation of academic duties was done efficiently. There was general agreement to this statement on delegation ($M=3.73$, $SD=1.109$). However, correlation of delegation and KCSE performance in sciences indicated that there was no significant correlation ($r=.056$, $p=.730$). This implies that delegation is not a key factor in determining performance in science in the schools under study, and contradicts the findings of Orlosky *et al.* (as cited in Ngala, 1997), that it is collaborative and shared purpose that brings achievement in schools. This also differs with the feelings of Orora (1997) and D’Souza (1989) that poor delegation leads to failure. An independent-samples t-test was calculated comparing the mean score of schools identified as high performing schools and schools identified as low performing schools. No significant difference was found ($t_{(38)} = -.115$, $p>0.05$) in the means of this item between the high performing schools and the low performing schools. The mean for the low performing schools ($M=3.71$, $SD=1.197$) was not significantly different from the mean of the high performing schools ($M=3.75$, $SD=1.000$). This implies that delegation of duties is done in more or less the same way in the two categories of schools and cannot therefore account for the differences in performance.

Teamwork

The respondents were asked to respond to the item: “*teachers work as a team in the teaching of sciences*”. There was a general agreement that teachers worked as a team ($M=4.07$, $SD=.787$). Indeed, 34(82.9.0%) agreed or strongly agreed with the statement. A spearman ρ correlation coefficient was calculated for the relationship between teamwork and performance in KCSE sciences. A weak correlation that was not significant ($r=.232$, $p>0.05$) was found. Thus teachers’ perception of their teamwork was not related to performance in sciences at KCSE. This implies that teamwork was not a major factor among those that affect performance in these schools. This contradicts Ngala’s (1997) view that in effective schools, teachers and administrators plan, design, research, evaluate and prepare teaching materials together and administrators allocate time and resources consistent with the priorities agreed upon. An independent-samples t-test was calculated comparing the mean score of schools identified as high performing and those identified as low performing schools. No significant difference was found ($t_{(39)} = -1.113$, $p>0.05$) in the means of this

item between the high performing schools and the low performing schools. The mean for the low performing schools ($M=3.96$, $SD=.859$) was not significantly different from the mean of the high performing schools ($M=4.24$, $SD=.664$). This shows that the two categories of schools apply more or less the same degree of teamwork. Hence it is not the cause of the difference in performance in science between them.

Involvement in Decision-making

Teachers were asked to state all the people involved, first in the planning for requisitions and secondly, in the actual purchase of science materials and equipment. The results suggest that there are cases where the head teacher does not involve the teachers in planning and actual purchases of science materials. This item had poor responses from teachers as seen from the number of missing cases. This could be attributed to the fact that some answers to this question could easily be misconstrued as complaints, criticism or personal attacks on the head teachers’ way of handling financial matters. The missing cases could also imply indifference to the issue, that is, why talk of things that don’t concern me (things I’m not involved in)?

A second item required the teachers to respond to the statement: “*I am involved in decision-making on matters pertaining to the teaching of sciences*”. Most of the teacher respondents, 30(75.0%), either agreed or strongly agreed with this statement, implying that most of the teachers were involved in decision making on matters pertaining to the teaching of sciences. This agrees with the findings on the leadership style where most of the teachers, 30(71.4%), stated that their head teachers practised participative leadership. The means for the high performing schools and low performing schools were obtained and compared. The mean for low performing schools ($M=3.71$) was not very different from that of the high performing schools ($M=3.81$). An independent samples test was done and no significant difference was found ($t_{(38)} = -.289$, $p>0.05$) in the means of low and high performing schools. This therefore means that the difference in performance between the two categories of schools is not caused by the degrees of involvement of teachers in matters of teaching science.

A third item required teachers to respond to the statement: “*I am involved in the requisition of science chemicals and apparatus*”. Most of the teacher respondents, 28(68.3%), either agreed or strongly agreed with this statement, implying that teachers were generally involved in requisition of science chemicals and apparatus. The author sought to find out if there were differences between the low and high performing schools on this issue. The findings showed that there was a small difference between the

means for low performing schools (M= 3.79, SD=1.103) and high performing schools (M=3.35, SD 1.272). Teachers in the two groups were generally undecided about this issue.

This implies that not all teachers are fully involved equally in the low and high performing schools, and this is likely to affect their enthusiasm in teaching. A t- test was done to determine if there was a significant difference between the high and low performing schools. The results showed that there is no significant difference ($t_{(39)}=1.178, p> 0.05$) in the means of the low and high performing schools in terms of involvement in requisition of science chemicals and apparatus, implying that the difference in performance is not caused by this factor.

A fourth item required teachers to respond to the statement: “Lessons are shared in a democratic way where I am involved”. Most of the teacher respondents, 30(75.0%), either agreed or strongly agreed with this statement, implying that teachers were generally involved in decision making on the sharing of science lessons democratically. A comparison was made between the low and high performing schools. The mean for high performing schools (M=4, SD= .894) was slightly higher than that for low performing schools (M=3.75, SD=1.073) implying a higher degree of democracy on this issue in the former than the latter.

A t-test was done to establish the significance of this difference. There was no significant difference ($t_{(38)} = -0.770, P > 0.05$) in the means of the low performing schools and high performing schools in relation to involvement in sharing of lessons. Correlation analysis of performance in KCSE sciences and the three concepts of involvement in decision-making did not yield any significant correlation as lesson sharing ($r=0.092, p>0.05$), decisions in sciences ($r=0.044, p>0.05$) and requisitions ($r=-0.074, p>0.05$) all had weak associations that were not significant.

The mean for “I am involved in decision making on matters pertaining to the teaching of sciences” and “Lessons are shared in a democratic way, whereby I am involved” were higher for the high performing schools than in the low performing schools. However, for “I am involved in the requisition of science chemicals and apparatus” was higher for the low performing schools than in the high performing schools. This implies that teachers in high performing schools are slightly more involved in the three issues collectively compared to the low performing schools, hence the difference in performance.

Three independent-samples t-tests were calculated testing for differences in the three aspects of involvement in decision making between schools identified as high performing schools and schools identified as low performing schools. No significant differences were found in the means of sharing of

lesson ($t_{(38)} = -0.770, p>0.05$), decision making ($t_{(38)} = -.289 p>0.05$), and requisition ($t_{(39)} = 1.178 p>0.05$) between the high performing schools and the low performing schools. This implies that these three factors are not among the factors that cause differences in performance in the low and high performing schools. This contradicts the findings of Orlosky *et al.* (as cited in Ngala, 1997) who say that collaborative and shared purpose brings about achievement in schools.

Leadership Style

The head teachers were asked to state their leadership style, whether they considered themselves as being task or people-centred. The findings suggest that out of the 12 responses, there was divided opinion on their leadership style, with 6(50.0 %) for each style. An exploration of the correlations of leadership style and KCSE science performance did not yield any significant correlation ($r=-.437, p=.155$). This then required further investigation of the differences in leadership style between the high performing schools and the low performing schools. The results suggest that there were no significant differences ($t_{(10)} = 0.195, p=.260$) in the leadership style categorized as task or people centred between the high performing schools and the low performing schools. This implies that the difference in performance in the two categories of schools is not caused by the types of leadership. Similar data on leadership style was investigated from the teachers’ responses. The teachers were asked to state what they considered the leadership style of their head teachers based on a classification of participative, Leases fair and dictatorial. The data is presented in Table 1. Most of the teachers, 30(71.4%), perceived that their head teachers used participative styles, while only 3(7.1 %) stated that their head teachers were dictatorial. Correlation of leadership style on a scale of 1= *Participative*, 2= *Leissez fair*, 3= *Dictatorial* and the performance in KCSE science yielded a correlation of $r= -.356 (p<0.05)$ suggesting that as the leadership style moved towards dictatorial tendencies, the performance in science subject declined.

Table 1: Teachers’ responses on Perceived Leadership Style of their Head teachers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Participative	30	61.2	71.4	71.4
	Leases fair	9	18.4	21.4	92.9
	Dictatorial	3	6.1	7.1	100.0
Total		42	85.7	100.0	
Missing System		7	14.3		
Total		49	100.0		

The data on cross tabulation suggests that the only dictatorial tendencies among the head teachers were from low performing schools; while for the high performing schools 14(93.3%) of the teachers reported that their head teachers used participative styles. This would suggest differences in the leadership styles used. An independent-samples t-test was calculated comparing the leadership style used by the head teachers of schools identified as high performing schools and schools identified as low performing schools. A significant difference was found ($t_{(36,255)} = 3.006, p < 0.05$) in the means of this item between the high performing schools and the low performing schools. This implies that leadership styles are one of the factors that affect performance as well as causing differences in performance in the two categories of schools under study.

It confirms the findings of Decenzo and Robbins (1988) and Fuller (1986), who argue that the type of management practices under which teachers work affects their productivity. It also confirms what Griffin (1994) says, that is, poor leadership results in poor discipline, which in turn causes poor performance.

Head Teacher's Qualifications

The study further sought to investigate the relationship between the head teacher's qualification and the performance in science subjects. In response to an item on whether they were trained teachers or not, all the head teachers responded that they were professionally trained teachers. The head teachers' were further asked to state their highest academic qualifications. All the head teachers had a bachelor's degree in education where by 9(75.0%) had the bachelors as their highest qualification, while the rest were either working on their masters or had a masters degree. Correlation analysis of highest education level and performance in science was done. The analysis did not yield any significant correlation ($r = -0.141, p = .662$) and the independent sample t-test also did not yield any significant differences ($t_{(10)} = -4.972, p > .05$) between the high performing schools and the low performing schools based on the head teachers qualifications. This implies that the head teacher's qualification is not a major factor in influencing performance in the schools investigated in the study.

Head Teacher's Experience and Length of Stay in the Station

The study further sought to investigate the relationship between the head teachers' experience and the performance in science subjects. The results showed that there was no significant correlation between the length of stay in the station ($r = .313, p = .378$) and teaching experience ($r = .172, p = .592$) with performance in KCSE science subject. This implies that the head teachers' experience and stay in a station was not an important factor in influencing

performance in these schools. Independent sample t-tests were done and the results revealed that there was no significant difference in the length of stay ($t_{(8)} = -1.438, p = .1880$) and teaching experience ($t_{(10)} = -1.047, p = .320$) among the high performing schools and the low performing schools. This contradicts what would be expected because, as was said by Mbiti (1974) and Orora (1997), a head teacher needs skills for effective management. One would therefore expect that the more experienced a head teacher is and the more he/she stays in a station the more skilful and better placed they would be to produce better results.

Head Teacher's Supervision of the Teaching of Science

The study also investigated the relationship between the head teachers' supervision and the performance in science subjects. The teachers were asked to state their response on an item "there is adequate supervision of sciences by the Head teacher". The data was scored on a Likert scale of 1=*strongly disagree* to 5=*strongly agree*. Most of the teacher respondents, 20(52.7%), $m = 3.18, sd = 1.136$, agreed that there was adequate supervision of sciences by head teachers. This contradicts the sentiments by Sarason (1982) that most head teachers spend more time on supervision of financial and discipline matters than supervision of curriculum instruction. Correlation between the head teachers' supervision and performance in sciences did not yield any significant correlation ($R = -.113, P = .499$). This contradicts the findings of Ngala (1997), that poor administration in well established schools in Kenya has been the cause of low standards.

The mean for the low performing schools ($M = 3.18, SD = 1.181$) was not significantly different from the mean of the high performing schools ($M = 3.19, SD = 1.109$). This means that many teachers in both low and high performing schools were generally undecided as to whether the supervision was adequate or not. An independent-samples t-test of supervision by the head teacher was calculated comparing the mean score of schools identified as high performing schools and those identified as low performing schools. No significant difference was found ($t_{(36)} = -.015, p > 0.05$) in the means of this item between the high performing schools and the low performing schools. This implies that the degree of supervision in the two categories of schools is not likely to be among the major factors causing a difference in performance in science subjects in the schools under study.

CONCLUSION AND RECOMMENDATIONS

Majority of the head teachers were found to be fully qualified, experienced and practicing participative leadership. However, a few in the low performing schools were found to employ dictatorial leadership

styles as reported by the teachers. The effect of the leadership style was not as significant predictor of performance in sciences at KCSE as the correlation between leadership and performance was not very significant. There were no significant differences between the high performing schools and the low performing schools.

The study found no significant relationship between supervision, delegation, and teamwork, and the dependent variable of performance in science subjects. There were no significant differences between the high performing schools and the low performing schools in terms of these variables. The author suggests that other factors that improve performance in the science subjects, such as availability of resources and teacher quality, should be enhanced. For instance, there should be more and frequent in-servicing of both head teachers on ways of enhancing the teaching/learning of science. Moreover, the teaching of science subjects should be totally practical-oriented. To ensure this, text books should be revised such that the practical lessons are done first then the discussion and conclusions come later. To assist the teacher with the additional workload occasioned by increased practical lessons, the government should also take the responsibility of training and hiring of laboratory technicians on a better scheme of service. This will separate them from the subordinate staff, elevate their morale and create a better working relationship between them and the teachers.

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