INFLUENCE OF TEACHER PROFESSIONAL DEVELOPMENT ON THE USE OF EDUCATIONAL RESOURCES IN PUBLIC SECONDARY SCHOOLS IN KENYA

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Abstract
When educational resources are well utilized, it is expected that performance in Kenya Certificate of Secondary Education (K.C.S.E) examination should improve. Professional development (P.D) is meant to enhance proper use of resources by teachers. The number of students who achieved quality grades in K.C.S.E examination in Mumias District was on decline as in 2008, 2009 and 2010, 17.51%, 15.53% and 13.84% of the candidates respectively were selected by Joint Admissions Board (JAB) to join Public Universities. The purpose of this study was to establish the level of influence of P.D on the use of resources in public secondary schools in Mumias District. The objective of the study was to find out influence of P.D on the use of resources in the teaching and learning process. The study adopted descriptive survey design. The population of the study consisted of one District Quality Assurance and Standards Officer (DQASO), 33 Head teachers, 165 Head of departments (HODs), 393 teachers and 4786 Form 3 and 4 students drawn from 33 schools. Saturated sampling technique was used to select one DQASO, 30 Head teachers and 150 HODs. Simple random sampling technique was used to select 131 teachers while 360 students were selected based on Israel's formula of determining sample size. Data were collected by use of questionnaire, interview schedule, document analysis guide and Focus Group Discussion (FGD) guide. To ensure reliability of the instruments of data collection, a pilot study was carried out on 3 headteachers, 15 HODs, 13 teachers and 36 students drawn from 3 schools that were not used in the actual study. Validity of the instruments was determined by research experts at the Department of Educational Management and Foundations of Maseno University. Quantitative data from closed-ended parts of the questionnaire were analyzed using descriptive statistics in form of one-way Analysis of Variance (ANOVA), percentages, frequency counts and means while qualitative data from open-ended parts of the questionnaire, interview schedules, document analysis and FGD were analyzed on an on-going basis as themes and sub-themes emerged. The main findings of the study were that P.D highly influenced; use textbooks, chalkboard and stationery. It was concluded that P.D positively influenced teacher effectiveness by enhancing use of resources. It was recommended that organizers of P.D should focus more on use of video, radio, internet, television and computer.

Key Words: Professional Development, Teaching and learning process, Educational resources, Use of Resources, Teacher Effectiveness

Introduction

Overall, professional development programmes refer to designed training programmes or activities intended to enhance employees' productivity in this case, teachers (Cohen & Hill, 2002). Effective professional development focuses on the knowledge, skills and attitude required by the teachers, managers and other school employees to make them more effective so that students can learn and perform at high levels (Clifford, 2006). Researchers have also shown that there are several effects of teacher professional development. Porter (2002) proposed that education managers must ensure that the teaching practice is geared towards enhancing teacher effectiveness in schools and that this can be achieved through teacher professional development. Scholars have reported strong association between participation in professional development programmes (after pre-service training) and teachers' effectiveness. Otu (2011) said that with proper in-service training, teachers can deliver content in a better way. On the other hand, Zame, Warren and Hope (2008) indicated that for teaching and learning resources to be effectively managed, teachers required well organized professional development programmes. In addition, Nigerian education system being examination oriented, many teachers perceive professional development as an instrument to enhance their effectiveness in instructional duties (O'Bannon, 2002).

In management studies, professional development is an essential personnel function for managers, in case of public secondary schools, headteachers. Teachers' productivity is largely contingent on personnel management practices; other factors held constant; there exists a correlation between professional development and teacher effectiveness (Towse, Kent, Osaki & Kinia, 2002). Some works on achievement have also associated student academic achievement with teachers' effectiveness; for example, Nannyonjo (2007) and Kagumire (2009) said that teacher mismanagement practices are many in Uganda and that teachers continue to complain about management practices by headteachers including denying teachers the opportunity to participate in professional development programmes thus rendering them ineffective in their duties. The government of Kenya (GOK) has considered the significance of teachers' education not only as a pre-requisite for entry to the teaching profession, but also as a critical criterion for upward mobility for serving teachers (Government of Kenya, 2008). Noteworthy indeed is the fact that professional development programmes (PDP) in Kenyan secondary schools have been correlated to teacher effectiveness by a host of government policy documents. The chairperson, Kenya Federation of Employers aptly put it that management should enhance the development of people and not just give directives (Government of Kenya, 2009).

In Kenya, secondary school graduates get to universities by excelling in the Kenya Certificate of Secondary Education (K.C.S.E) examination. This is done by the Joint Admissions Board (JAB). The K.C.S.E examination results are released every year after which JAB meets to set the cut off points for direct entry to public universities which are reviewed annually. In the year 2011, students with aggregate grade of "B" of 63, 62 and 61 points for male, female and those from marginalized areas respectively were selected for admission to universities (Government of Kenya, 2011). The number of students nationally who qualified for admission to public universities is shown in Table 1 below:

Table 1.1: Number of Students Nationally Selected by JAB for Admission to Public Universities

Year	Entry	Number that Qualified	Percentage (%)
2006	243,612	12,258	5.03
2007	276,239	16,120	5.84
2008	305,995	9,179	3.00
2009	337,404	24,221	7.18
2010	357,488	32,611	9.12

Source: Joint Admissions Board (2011).

From Table 1, it is clear that the percentage (%) of the number of candidates who were selected by JAB to join public universities increased from 2006 to 2007 and dropped in 2008. In 2009 and 2010, there was an increase where 7.18% and 9.12% of the candidates respectively were selected by JAB nationally to join public universities.

According to the District Education Officer (2011), there were several teacher professional development programmes in Mumias District, sponsors rose to the occasion and organized workshops for teachers. A good example is the Catholic Diocese of Kakamega which organized courses for teachers that could improve subject performance. The Government of Kenya in conjunction with Japanese government offered teachers in-service course for mathematics and sciences in secondary education (SMASSE). Publishers such as Macmillan, Oxford and Longhorn also organized and offered in-service courses for teachers in all subject areas especially on the difficulties that students faced in the specific subjects. In addition, some teachers went for Kenya Education Staff Institute (KESI) courses which were offered during school holidays and were sponsored by the schools. Individual schools also invited KNEC officers who gave training to teachers on new examination trends and rules in specific subjects. This was to make sure that teachers taught updated knowledge to the students so that they could perform better. Mumias district had many teacher professional development programmes organized with the aim of improving student academic achievement. However it is worth noting that this had not been realized. In fact, two schools did not have even a single candidate who qualified for admission to the universities. In addition, the number of students who qualified for university education had dropped for three consecutive years. Despite the fact that nationally, there was a rise in the number of students who were selected for admission in Public Universities as from 2008 to 2010; this was not the case in Mumias district as shown in Table 2 below.

Table 2: Number of Students from Mumias District Selected by JAB for Admission to Public Universities

Year	Entry	Number that Qualified	Percentage (%)
2006	1301	191	14.68
2007	1474	233	15.81
2008	1633	286	17.51
2009	1739	270	15.53
2010	2045	283	13.84

Source: District Education Office (2011).

From Table 2, it is evident that the percentage of the number of candidates who were selected by Joint Admissions Board (JAB) increased from 2006 to 2008. In 2009 and 2010, there was a drop

whereby, 15.53% and 13.84% of the candidates respectively were selected by Joint Admissions Board to join public universities.

Statement of the Problem

Despite the fact that Mumias District Secondary School teachers had access to all fore mentioned professional development programmes geared towards improving student academic achievement, the number of students who qualified to public universities was on decline. This was shown in Table1.2 where in 2008, 2009 and 2010, 17.51%, 15.53% and 13.84% of the candidates respectively qualified for admission in public universities. This was contrary to the upward national trend for the same period as shown in Table 1.1 where 3.0%, 7.18% and 9.12% of the candidates in 2008, 2009 and 2010 respectively were selected by JAB to join public Universities. This study therefore, was meant to shed more light on the practices related to teacher professional development programmes in public secondary schools in Mumias district and establish their influence on the use of resources in the teaching and learning process.

Purpose and Objective of the Study

The purpose of this study was to establish the level of influence of professional development on the use of educational resources in public secondary schools in Mumias District, Kenya. The specific objective of the study was to find out influence of teacher professional development on the use of resources in the teaching and learning process.

Significance of the Study

The findings of the study could be significant to: (i) Policy makers and school managers in revising the existing guidelines on professional development programmes for teachers to enhance proper use of resources. (ii) Headteachers and teachers in evaluating and revising guidelines on professional development programmes in their schools and (iii) Future research by providing baseline information.

Scope of the Study

The proposed study was to deal with influence of professional development on use of educational resources in public secondary schools in Mumias District. The study was conducted between January 2011 and October 2012 using a descriptive survey design.

Research Methodology

This section covers research design, description of the area of study, study population, sample and sampling techniques, instruments of data collection and methods of data analysis.

Research Design

The study adopted a descriptive survey design. Descriptive survey is an observational research design that focuses on determining the status of a defined population, phenomenon, situation or condition being studied. Its primary advantage is that one can gather a great amount of data from members of a population in order to determine the status of the population with respect to one or more variables (Mugenda & Mugenda, 2003). It was appropriate for this study because the study dealt with a large amount of data from the population regarding influence of professional development on use of educational resources in public secondary schools in Mumias District.

Area of Study

This study was conducted in Mumias District which is one of the Districts of Kakamega County in the then Western Province of Kenya. Mumias District was curved out of the then larger Butere-Mumias District in August 2007. It is one of the 10 districts of Kakamega County. It borders Butere District on the South, Ugenya District of Siaya County on the South West, Matungu District on the North and Kakamega North District on the East. Mumias District has a population of 246,553 people (Mumias District Commissioner, 2010). The District lies between latitudes 0^0 30' North and 0^0 25' North and longitudes 34^0 East and 35^0 East with an average elevation of 1258 metres above sea level. The district headquarters is in Mumias town. Mumias District is the former Wanga Kingdom. King Mumia, who came to power in 1880, was the last sovereign king of Wanga. After his death in 1949, his son Shitawa succeeded him and ruled till late seventies. He was then succeeded by Mumia II who is in power currently. Mumias has a noticeable Muslim Community, unique in Western Kenya which is derived from trade links between Wanga state and coastal Kenya. The Mumias town was then known as Lureko until it was renamed Mumias (Pearson, 2010). The main cash crop in the District is sugarcane which is grown on large scale. The climate also supports other crops such as sorghum, millet, cassava, yams, bananas, sweet potatoes and various types of vegetables.

Study Population

The population of the study consisted of one DQASO, 33 Headteachers, 165 head of departments, 393 teachers and 4786 Form III and IV students drawn from the 33 public secondary schools in Mumias district.

Sample and Sampling Techniques

The study population was sampled on the basis of saturated sampling technique allowing one DQASO, 30 Headteachers and 150 head of departments to respond. Furthermore, 131 teachers were sampled by simple random sampling technique. This sample was considered appropriate based on the view of Dooley (2001), which indicates that a study which probes deeply into the characteristics of a small sample, will often provide more knowledge than a study which looks at the same problem by collecting shallow information from a large sample. Additionally, Mugenda and Mugenda (2003) suggested that a sample of a third is sufficient for a small population of less than 1000. The simple random sampling was used to give each respondent an equal chance to respond and involved the use of random numbers table to select the respondents. In addition, 360 Form III and IV students were picked to respond based on Israel (n.d)'s formula of determining sample size as follows: Where,

n = sample size, N = population size, e = the level of precision

$$n = \frac{N}{1 + N(e)^2} \quad n = \frac{4786}{1 + (0.05)^2 4786} \quad = \frac{4786}{12.965} = 369$$

$$\text{Number of students per school} = \frac{369}{30} = 12.3 \approx 12$$

This formula was considered appropriate based on the view of Israel (n.d), that the formula could be used to determine a sample size for a larger population of over 2000. Form III and IV students were selected because they had more experience with the teachers in their schools and could give necessary information compared to their Form I and II counterparts who had less experience.

Table 3 Sample Size

Category of Respondents	Population (N)	Sample Size (n)	Percentage (%)
DQASO	1	1	100.00
Headteachers	33	30	90.91
Head of departments	155	150	96.77
Teachers	393	131	33.33
Form III and IV students	4786	360	7.52

Instruments of Data Collection

The instruments that were used by the researcher to collect data included: questionnaire, interview schedule, document analysis and Focus Group Discussion.

i. *Head of departments' Questionnaire:*

The head of departments' questionnaire contained both open and closed-ended questions and was used to collect information from head of departments on influence of teacher professional development on use of resources in public secondary schools in Mumias District.

ii. *Teachers' Questionnaire:*

The teachers' questionnaire contained both structured and unstructured questions and was used to collect information from teachers on influence of teacher professional development on use of teaching and learning resources in Mumias District.

iii. *The DQASO Interview Schedule:*

The DQASO interview schedule was used to get clarification of issues which needed probing as well as assess the accuracy and genuineness of responses given by headteachers, head of departments and teachers on influence of teacher professional development on use of resources.

iv. *Headteachers' Interview Schedule:*

The headteachers' interview schedule was used to get clarification on issues which needed probing as well as assess the accuracy and genuineness of responses given by head of departments and teachers on influence of teacher professional development on use of resources.

v. *Focus Group Discussion Guide*:

The Focus Group Discussion guide consisted of questions that had either been repeated or rephrased as they were in the questionnaire. There were 360 students from the 30 public secondary schools in Mumias District who discussed in groups of 12 each drawn from Form three and four. There was one focus group per school. This helped the researcher to gather more information on the influence of professional development on use of resources.

vi. *Document Analysis Guide:*

The instrument was used to check records from the headteachers, teacher professional development and the teachers' supervision records of the school.

Validity of Instruments

Face validity of the questionnaire, interview schedule and Focus Group Discussion guide was determined by presenting them to research experts at the Department of Educational

Management and Foundations at Maseno University. They gave comments and suggestions which were used to revise the instruments.

Reliability of Instruments

To ensure reliability of the instruments, the questionnaire, interview schedule and Focus Group Discussion guide were piloted. This was done by administering the instruments to 3 Headteachers, 15 Head of Departments, 13 teachers and 36 students drawn from 3 schools that were not used in the actual study. This helped the researcher to identify the unclear and ambiguous parts of the instruments. The anomalies were then corrected to make the instruments reliable.

Data Collection Procedures

The researcher sought permission from the National Council of Science and Technology through the school of graduate studies (SGS) of Maseno University, before proceeding to the field to collect data. Letters notifying the sampled schools of intended study were dispatched to the schools to administer the questionnaires to 150 head of departments and 131 teachers. Interviews with one DQASO and 30 Headteachers were conducted personally. Focus Group Discussion was also conducted among 360 students in groups of 12 each. The responses were written down in a notebook. The responses were also tape-recorded. Records on staff development programmes, teachers' supervision for the previous 3 years were perused and relevant data written down. The researcher involved two research assistants who were trained to familiarize themselves on how to use the instruments before data collection.

Methods of Data Analysis

The sources of analyzed data included questionnaires, interview schedules, Focus Group Discussions and school records on teacher professional development and teachers' supervision. The quantitative data obtained from close-ended parts of the questionnaire were analyzed using descriptive statistics in form of frequency counts, mean ratings, percentages and a one-way Analysis of Variance (ANOVA) technique. The ANOVA technique was used to compare the means of the responses of the head of departments and teachers so as to establish their statistical significance. Qualitative data obtained from open-ended parts of the questionnaire, interview schedule, Focus Group Discussion and document analysis were analyzed on an on-going basis as themes and sub-themes emerged. Data from interviews and Focus Group Discussion were transcribed. Open-ended parts of the questionnaire and transcripts of interviews and Focus Group Discussions were read through then connections were drawn between discrete pieces of data to developed themes and subthemes. The qualitative data were then categorized into the themes and subthemes. The dependent variable was use of teaching and learning resources while the independent variables were the various professional development programmes available for teachers. A Likert type of scale was used to determine levels of influence by use of mean ratings. The ratings were as follows: strongly agree = 5.00, agree = 4.00, neutral = 3.00, disagree = 2.00 and strongly disagree = 1.00.

Results and Discussions

The research question responded to was: How does teacher professional development influence the use of resources in the teaching and learning process? To address this research question, the

study sought to establish the rating of influence of teacher professional development on the use of resources in the teaching and learning process. The responses were as shown in Table 4.

From Table 4.5, it can be observed that the head of departments and the teachers indicated that professional development influenced the use of textbooks at mean ratings of 5.00 and 4.82 respectively. During Focus Group Discussion, a student also reported, "Teachers who attend professional development were very strict when it comes to the use of textbooks."

Another student, Cyprian Omalla (Pseudonym) said,

> "These teachers who attend professional development are too strict when it comes to the use of textbooks. It is like they are trained on better use of textbooks. I remember last year when Mr. Sodium came back from Nairobi after a one week seminar and started using several textbooks unlike earlier when he only used a book published by KLB."

Table 4: Influence of Teacher Professional Development on the Use of Resources as indicated by Head of Departments (n = 150) and Teachers (n = 131)

Teaching and Learning Resources	Mean Rating	
	Head of Departments	Teachers
Textbooks	5.00	4.82
Chalkboard	4.81	4.54
Stationery	4.55	4.48
Realia	4.38	3.87
Charts and Maps	4.37	4.33
Laboratory apparatus and materials	4.34	4.18
Resource persons	4.30	3.58
Computers	2.89	2.88
Televisions	2.85	2.19
Newspapers and Magazines	`2.85	2.77
Internet	2.47	2.17
Radios	1.38	1.16
Videos	1.38	1.13

Key:

Classification of Influence

4.1 - 5.0	=	Very High influence	2.1 – 3.0	=	Low influence
3.1 – 4.0	=	High influence	1.0 – 2.0	=	Least influence

These sentiments were echoed by the DQASO, who said, "Most of the sponsors of teacher professional development programmes in this district are Publishers who emphasized on the use of their products (textbooks) in dealing with challenges that teachers faced." These high mean ratings indicated by the head of departments and the teachers imply that professional development has a very high influence on the use of textbooks. This means that textbooks can be very well used by teachers who attend teacher professional development programmes. It may also be because textbooks were more emphasized by the professional development programmes in Mumias District. These findings concur with those of Cohen and Hill (2002) who discovered that professional development enhanced the use of textbooks by teachers in the teaching and learning process and Darling-Hammond (2003) who indicated that changes in textbooks make

little difference if teachers do not know how to use them well and that it is through professional development that this can be enhanced.

Regarding the use of chalkboard, the head of departments and the teachers acknowledged that professional development influenced the use of chalkboard at the mean ratings of 4.81 and 4.54 respectively. The same sentiments where echoed by the headteachers and during interviews with them. One headteacher indicated,

> "Some teachers have been taking the use of chalkboard for granted but I have seen my teachers who frequently attend professional development programmes improve in terms of writing on the board, they do it neatly and in an organized way. They are these small things that produce results."

These findings imply that teacher professional development had a very high influence on the use of chalkboard during the teaching and learning process. This means that professional development strongly enhanced the use of chalkboard. The findings are in agreement with those of O'Bannon (2002) who discovered significant effects of teacher professional development on the use of school resources especially the chalkboard.

On the use of stationery, the head of departments and the teachers indicated that teacher professional development influenced the use of stationery at mean ratings of 4.55 and 4.48 respectively. Similar sentiments were reiterated by headteachers during interviews. One headteacher said,

> "The cost of stationery has reduced by almost half due to proper use by the teachers; I can attribute this to frequent participation in professional development programmes. Today, all staff in this school print students' work back to back. This was achieved after I took them for a two day workshop."

The mean ratings indicated by the head of departments and the teachers imply that professional development had a very high influence on the use of stationery in the teaching and learning process. The findings concur with those of Cohen and Hill (2002) who discovered that professional development enhanced the use of stationery by teachers in the teaching and learning process and Wekesa (2001) who revealed that professional development enhanced the use of stationery in schools and recommended that there was need for more staff development programmes to enhance the use of similar resources.

Regarding use of realia, the head of departments and the teachers indicated that professional development influenced the use of realia in the teaching and learning process at mean ratings of 4.38 and 3.87 respectively. During Focus Group Discussion, one student indicated, "The SMASSE training has increased the use of realia, for many mathematics and science teachers were emphasizing on Activity Student Experiment Improvise (ASEI) lessons." Similar sentiments were echoed by headteachers and the DQASO who said, "This SMASSE training emphasized that teachers must have lesson plans that conform to ASEI and Plan Do See Improve (PDSI) meaning that the plans must have activities that are student centered which involve more use of realia." The mean ratings of the head of departments implied that professional development had a very high influence on the use of realia in the teaching and learning process while the teachers' rating implies that professional development has a high influence on the use of realia. These findings imply that teacher professional development enhanced the use of realia

in the teaching and learning process. These findings agree with those of Guskey (2001) who indicated that professional development enhanced the use of realia in teaching and Clifford (2006) who indicated that professional development enhances the use of realia in teaching thus enhancing student learning.

Concerning the use of charts and maps, the head of departments and the teachers indicated that professional development influenced the use of charts and maps at the mean ratings of 4.37 and 4.33. However, Focus Group Discussion revealed different results, one student indicated, "Teachers did not use charts and maps in teaching, may be the professional development programmes did not enhance the use of charts and maps." The mean ratings indicated by the head of departments and the teachers implied that teacher professional development had a very high influence on the use of charts and maps. These findings show that despite the response by the head of departments and teachers that professional development had a very high influence on the use of charts and maps; this may not actually be in practice. The findings disagree with those of Cohen and Hill (2002) who discovered that professional development enhanced the use of charts and maps by teachers in the teaching and learning process and Kagumire (2009) who revealed that professional development enhanced the use of charts and maps in the teaching and learning process which had great impact on student learning.

On the use of Laboratory apparatus and materials, the head of departments and the teachers indicated that professional development influenced the use of laboratory apparatus and materials at mean ratings of 4.34 and 4.18 respectively. The sentiments were supported by the headteachers. One of them said, "Professional development encouraged practical activities especially in the science based subjects." During Focus Group Discussions, one student indicated, "Teachers who attended SMASSE training changed almost all lessons into practical lessons which involved the use of the laboratory apparatus and materials." These findings imply that professional development had a very high influence on the use of laboratory apparatus and materials. These findings concur with those of Clifford (2006) who indicated that professional development enhanced the use of laboratory materials in teaching thus enhancing student learning and those of National Commission on Teaching and America's Future (2001) which indicated that professional development enhanced the use of laboratory resources by the teachers.

Regarding the use of resource persons, the head of departments and the teachers indicated that professional development influenced the use of resource persons in the teaching and learning process at mean ratings of 4.30 and 3.58 respectively. Similar sentiments were echoed by headteachers during interviews. On the other hand, the DQASO said, "I am not sure whether professional development programmes in this district enhanced the use of resource persons." During Focus Group Discussion, one student, Brian Oketch (Pseudonym) stated,

> "There is a rise in the number of resource persons being invited but I am not sure whether to attribute this rise to teacher professional development. May be it is because of the many friends that our Principal has."

These findings imply that there is no specific teacher professional development programme that dealt with the use of resource persons, thus the influence could be brought about by the cumulative effects of professional programmes. The mean ratings indicated by the head of

departments and the teachers imply that professional development had higher and high influence respectively on the use of resource persons. The findings agree with those of Gamoran (2006) who said that professional development improved the use of resource persons in the teaching and learning process.

On the use of computers, the head of departments and the teachers indicated that professional development influenced the use of computers at mean ratings of 2.89 and 2.88 respectively. During interviews with headteachers and the DQASO, they indicated that it was only the SMASSE training that had incorporated Information Communication Technology (ICT) in teaching which involved the use of computers. They added that they had not yet experienced the effects of the same because of inadequate computer and ICT resources. They added that Teachers Service Commission (TSC) had collaborated with organizations like Safaricom and financial institutions like Equity Bank to offer teachers computers at competitive rates. During Focus Group Discussion, a student indicated, "My class teacher is computer illiterate". These findings imply that teacher professional development programmes had not succeeded in enhancing the use of computer in the teaching and learning process for the head of departments and the teachers indicated that professional development had low influence on the use of computers. The findings agree with those of Clifford (2006) who indicated that professional development enhances the use of computers in teaching thus enhancing student learning and Wenglinsky (2006) who discovered that the effect of professional development on the use of technological equipment like computers and projectors was great.

Regarding the use of television (TV), the head of departments and the teachers indicated that professional development influenced the use of television in the teaching and learning process at mean ratings of 2.85 and 2.19 respectively. During Focus Group Discussion, one student indicated, "We use TV for entertainment and not learning." The same sentiments were repeated by headteachers and the DQASO during interviews. The low mean ratings indicated by head of departments and teachers imply that professional development had least influence on the use of television in the teaching and learning process. These findings disagree with those of Clifford (2006) who indicated that professional development greatly enhances the use of television in teaching thus enhancing student learning.

Concerning newspapers and magazines, the head of departments and the teachers indicated that professional development influenced the use of newspapers and magazines at mean ratings of 2.85 and 2.77 respectively. During interviews, the headteachers and the DQASO were not sure whether professional development enhanced the use of newspapers and magazines in the teaching and learning process. During Focus Group Discussion, one student, Carren Shieunda (pseudonym) indicated,

> "We use newspapers and magazines in languages such as English, French and Kiswahili and especially when teachers are busy and cannot come for the lessons. In fact that is the time I usually sleep while in the library."

These findings imply that professional development had low influence on the use of newspapers and magazines in the teaching and learning process. The findings disagree with those of Kagumire (2009) who revealed that professional development strongly enhanced the use of newspapers and magazines in the teaching and learning process which had great impact on

student learning and Porter (2002) who indicated that professional development enhanced effective use of print media in the teaching and learning process.

Regarding internet, the head of departments and the teachers indicated that professional development influenced the use of internet in the teaching and learning resources at mean ratings of 2.47 and 2.17 respectively. The DQASO during interview said,

> "Teachers in this district are encouraged to use internet to supplement textbooks despite the fact that very few schools had internet services. Today, even KNEC embraced the use of internet in preparing marking schemes."

These sentiments were echoed by the headteachers during interviews, one of them reported, "Over 50% of my teachers have no access to internet because of lack of adequate funds. I only have one point of accessing the internet in the school, which is in my office because some teachers could misuse the service." During Focus Group Discussion, a student said, "We only accessed internet facilities while at home on vacation." One other student said, "I used to browse while in primary school but on joining this school, I was surprised that there was no internet." The mean ratings indicated by the head of departments and the teachers imply that professional development had a low influence on the use of internet in the teaching and learning process. These findings could be attributed to the fact that internet services were only available in a few schools. The findings imply that professional development had no influence on the use of internet. The findings disagree with those of Porter (2002) who indicated that professional development enhanced effective use of internet facilities.

Concerning radio, the head of departments and the teachers indicated that professional development influenced the use of radio in teaching and learning process at mean ratings of 1.38 and 1.16 respectively. During Focus Group Discussion, one student indicated, "Radio was only used by Music and French classes." Interviews with the DQASO and headteachers indicated that the use of radio was not emphasized by the professional development programmes. These findings imply that professional development had least influence on the use of radio in the teaching and learning process. The findings disagree with those of Guskey (2001) who indicated that professional development greatly influenced the use of radio in the teaching process.

As regards video, the head of departments and the teachers indicated that professional development influenced the use of video at mean ratings of 1.38 and 1.13 respectively. During Focus Group Discussion, one student said, "I doubt if professional development dealt with the use of video because our teachers never used video in teaching." Similar sentiments were reiterated by headteachers and the DQASO who indicated that professional development programmes were not keen on the use of video in teaching and learning process. The findings imply that professional development had least influence on the use of video in the teaching and learning process. The findings disagree with those of Clifford (2006) who indicated that professional development enhanced the use of video in the teaching and learning process and Porter (2002) who indicated that professional development enhanced effective use of video in teaching.

A one-way Analysis of Variance (ANOVA) was done at a level of significance (α) of 0.05 to compare means of responses given by the head of departments and the teachers on influence of

teacher professional development on the use of teaching and learning resources and the results are summarized in Table 4.6.

Table 5: Comparison of Responses on Influence of Teacher Professional Development on the Use of Resources by use of Analysis of Variance (ANOVA)

	Sum of Squares	Df	Mean Square	F	p-value
Between Groups	1.892	1	0.473	1.915	0.022
Within Groups	68.037	276	0.247		
Total	69.929	277			

From Table 5, it is clear that the F-ratio (between groups mean square) was 1.915 and the p-value was 0.022. The probability of F-ratio (p-value) of 0.022 was less than the level of significance (critical value) of 0.05. Therefore, the difference in the means of the responses of head of departments and teachers was statistically significant. This indicates that there was significant difference between the mean of the opinions of the head of departments and that of the teachers as far as the responses they had about influence of teacher professional development on the use of teaching and learning resources were concerned.

Conclusion

This study found out that Teacher professional development had high influence on the use of resource persons and very high influence on the use of textbooks, chalkboard, stationery, realia, charts, maps, laboratory apparatus and materials. Professional development had low influence on the use of computers, television, internet, newspapers and magazines in the teaching and learning process. Professional development had least influence on the use of radio and video.

Recommendations

i. Organizers of SMASSE training, workshops and seminars should improve on the quality of the programmes that focus on the use of video, radio, internet, newspapers, magazines, television and computer in the teaching and learning process. This would ensure that professional development programmes emphasize the use of these resources in the teaching and learning process.
ii. Headteachers should encourage teachers to attend quality professional development programmes that focus on the use of video, radio, internet, newspapers, magazines television and computer in the teaching and learning process.
iii. A study should be carried out on; Teacher professional development: challenges and opportunities for headteachers and teachers. Such a study is likely to provide findings on the challenges and opportunities that headteachers and teachers in Mumias District experience while planning and participating in professional development programmes. This may help develop strategies of dealing with the challenges and taking advantage of the available opportunities so as to improve on effective use of teaching and learning resources.

References

Clifford, M. (2006). *Staff Development*. New York: MDRC.

Cohen, D., & Hill, H. (2002). *Instruction Policy and Classroom Performance: The Mathematics Reform in California*, Teachers College Record, 102 (2) pp 294 – 343.

Darling–Hammond, L. (2003). *Doing What Matters Most: Investing in Quality Teaching*. New York: National Communication Teaching and America's Future.

District Education Officer. (2011). *Mumias District Trends in K.C.S.E performance*. Mumias: District Education Officer.

Dooley, K. (2001). *Statistical Sampling, 3rd Ed.* Boston: McGraw-Hill.

Gamoran, A. (2006). *Methods of Developing Staff Members*. California: Corwin Press.

Government of Kenya. (2008). *Totally Integrated Quality Education and Training.* Nairobi: Government Printers.

Government of Kenya. (2009). *Proceedings of the Administration and Managerial Seminar, P21*. Nairobi: Government Printers.

Government of Kenya. (2011). *Expansion of University Education*. Nairobi: Government Printers.

Guskey, T. (2001*). Evaluating Professional Development.* Thousand Oaks CA: Corwin Press.

Israel, G.D. (n.d). *Determining Sample Size*. http://edis.infas.ufl.edu/pdffiles/PD00600. Retrieved on June 1, 2011.

Joint Admissions Board (2011). *Criteria for Admission to Public Universities*. Nairobi: Author.

Kagumire, B.Y. (2009). *Teacher Education Programmes and Teacher Effectiveness in Uganda*. Kampala: Makerere University.

Mugenda, O., & Mugenda, G. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: ACTS Press.

Nannyonjo, H. (2007). *Education Inputs in Uganda: An Analysis of Factors Influencing Learning.* International Journal of Educational Management, 8(4), pp 131-143.

National Commission on Teaching and America's Future. (2001). *What Matters Most: Teaching for America's Future*. New York: Author.

O'Bannon, B. (2002). *What are Instructional Methods?* Retrieved May 22, 2011 from http://edtech.tennessee.edu/bobannon/instructionalmethods.

Otu, J.A. (2011). *Teachers in Ghana: Issues of Training, Remuneration and Effectiveness*. International Journal of Educational Development, 26(1), pp 38-51.

Pearson, P.C. (2010). *Rough Guide to Kenya, 8th ed.* London: Rough Guides Ltd.

Porter, A. (2002). *Effects of Professional Development on Teachers' Instruction: Results from a three-year longitudinal study*. Sociology of Education, 84 (1), pp 137 – 156

Rowan, B. (2002). *What Large-Scale Survey Research tells us About Teacher Effect on Student Achievement: Insights from the Prospects Study of Elementary Schools.* Ann Arbor: University of Michigan (Unpublished).

Towse, P., Kent, D., Osaki, F., & Kinia, N. (2002). *Non-Graduate Teacher Recruitment and Retention: Some Factors Affecting Teacher Effectiveness in Tanzania.* Teaching and Teacher Education, 18(6), pp 637-652.

Warren, C., & Hope, T. (2008). *Educational Reforms in Ghana: The Leadership Challenge.* International Journal of Educational Management, 22(2), pp 115-128.

Wekesa, W. (2001). *The Impact of Headteacher Leadership on Student Academic Achievement.* Unpublished PhD dissertation, Teachers College, Columbia University.

Wenglinsky, H. (2006). *Does it compute? The Relationship between Educational Technology and Student Achievement in Mathematics*. Princeton N.J: ETS Policy Information Centre.