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Technological Determinants of Educational Resources Management for Enhancing Students' Performance in Secondary Schools in Vihiga County, Kenya

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Abstract:

Resource utilization is an integral part of the overall management of the school. Education in a school is explored by provision of resources, their maximum utilization and management. Proper management of resources enhances students' performance and achieves the educational objectives. The success or failure of any organization, business or enterprise depends highly on proper management of human and material resources. The purpose of this study was to establish the technological determinants of management of educational resources for enhancing students' performance in secondary schools in Vihiga County. The specific objectives were to assess the technological determinants of educational resources management and their influence on students' performance in secondary schools. A descriptive survey design was adopted. The study population composed of 112 head teachers, 1,120 teachers, 4,480 students and 9 County Quality Assurance and Standards Officers. Simple random sampling method, stratified sampling technique, saturated sampling technique and purposive sampling method were used to select samples. Questionnaires and in-depth interview guides, observation schedules and document analysis were used to collect data. Reliability of instruments was determined through a pilot study conducted in 3 secondary schools. Results of reliability of the instruments were assessed using Pearson's product moment correlation coefficient test. Content validity was established by availing instruments to supervisors. Qualitative data from interviews was transcribed and reported according to emerging themes, categories and sub-categories while quantitative data was analyzed using descriptive statistics such as frequency counts, means and percentages. Pearson's product moment correlation coefficient was used to establish relationships between variables. Findings of the study revealed that the technological determinants of educational resources management were; provision of enhancement courses to teachers frequently and engagement of technical staff in schools to support teachers. From the study, it is concluded that the technological determinants of educational resources management seem to influence availability, adequacy and utilization of educational resources in Vihiga County. The inadequacy and unavailability of educational resources obscures students' performance in KCSE. From the study, it is recommended that schools in the County should strategize on ways of getting funds to enable them acquire adequate educational resources. The findings of the study are expected to guide the county policy makers in formulation and implementation of policies that ensure proper educational resources management in secondary schools.

Keywords: Educational resources, Students' performance, Management of educational resources

1. Introduction

The main aim of education is to bring about desirable change in behavior through acquisition of skills, attitudes, competencies, and imaginative thinking. Teaching is a complex and demanding task that requires highly specialized skills, knowledge and resources so as to influence student learning significantly (Mugure, 2012). Availability and utilization of resources in an organization is important in achievement of its goals and objectives. Students learning outcome is influenced by appropriate management of school resources. Investing in educational resources is the key to ensuring that schools become institutions where students work in unity, gain knowledge from each other and benefit from a supportive school environment, and consequently capitalize on student learning so that all students achieve their full learning potential (Mugure, 2012). Abayomi and Olukayode (2006) noted that student learning outcomes in schools is largely dependent on availability and appropriate management of educational resources, because students acquire relevant skills using these resources.

Karim and Heckman (2005) noted that the learning industry is going through a transformation process through the use of innovative products and tools from the ICT revolution. However, they observed that it is important for the tools to be evaluated for appropriateness, effectiveness and usability from the point of view of the user, since this perceptive can assist teachers in choosing the best product and in managing the tools for optimum benefit. Babette & Reitzes (2011) remarked that integrating technology into teaching and learning is a slow and time-consuming process that requires considerable levels of support and encouragement for teachers. Besides this intrinsic resistance to change, it is alleged that schools also have a

structure that prevents wide spread uses of resources, thus, the structure of the school hampers the power of new technologies for learning. They noted that introduction of computers requires significant changes in the curriculum, reallocation of resources, changes in teaching practices, and perhaps rearranging the fundamental structure of schools. The constant changing nature of technology makes it difficult for teachers to stay up to date with the latest technology, since everyday new software and hardware becomes available (Zhao, Pugh, Sheldon, & Byers, 2002).

Therefore, teachers, find it tricky and discouraging to keep chasing this elusive beast yet they are already struggling for time and energy. According to Becker (2007) technology is inherently unreliable and can break down at any time. He says, teachers who have less time in front of students, are unable spend the time troubleshooting problems that they may or may not be able to get solution. Therefore, unless there is an urgent need for the use of technology and consistent support, teachers may choose not to use it in their teaching. Without continuous technical support, integration of technology in the classroom will never be adequately achieved (Babette & Reitzes, 2011). Other aspects of teachers' conditions of working that are not directly related to technology, such as busy programmes, crowded school curricula and lack of support, have also been recognized as important factors affecting technology uses (Smerdon, Anderson, Iannotti, Cronen, Lanahan and Angeles, 2000)

Otu (2011) indicated that for teaching and learning resources to be effectively managed, teachers require well organized professional development programmes. This time for learning is especially important as schools integrate information and multimedia technologies into the classroom. When a school decides to install these technologies, each teacher must become adept at their use; identify suitable hardware and software for his or her subject content and students, and purpose to work using computer. Learning to use most current technologies well is accomplished best when teachers have time available to learn how to use them. Most teachers are unable to update their knowledge through exposure to conferences, workshops and seminars. Most schools are unable to organize such programmes for teachers. Teachers do not have access to current journals, textbooks and internet facilities. They, therefore, rely on their old textbooks, notes and materials. This lack of exposure on the part of the teacher affects his/her management and utilization of teaching materials. Zhao and Cziko (2001) observed that teachers' pedagogical values and their teaching practices are also factors that seem to influence their uses of technology. They pointed out that technology itself has also been mentioned as the source of a set of factors that influence its uses by teachers. Babette and Reitzes, (2011) noted that there are conflicting ideas about the worthiness of technology; therefore, teachers are given conflicting advice on how technology should be used in schools. He observed that this puts teachers in a state of confusion about how valuable technology is in education; therefore, teachers end up rejecting technology completely and in fact most of them literally refuse to adopt it in their teaching practices.

Resource availability and utilization is an integral part of the overall management of the school. Education in a school is explored by provision of resources, their maximum utilization and management. Advances in science and technology necessitates that the school manager adopts proper methods of facilities management in order to improve the quality of teaching and learning. A direct relationship exists between the quality of school facilities, teaching and learning materials, teaching personnel and the education process. Effective management of resources yields good results.

There has been downward trend in performance in Kenya Certificate of Secondary Examination in Vihiga County (CEO's Office, 2014) as illustrated in table 1:

Mean Score Range	2012		2013		2014	
	f	%	f	%	f	%
2.00 – 3.00	1	2.94%	0	0.00%	0	0.00%
3.01 – 4.00	7	20.58%	6	17.65%	6	17.65%
4.01 – 5.00	9	26.47%	10	29.41%	8	23.52%
5.01 – 6.00	8	23.52%	8	23.52%	9	26.47%
6.01 – 7.00	6	17.65%	7	20.58%	6	17.65%
7.01 – 8.00	2	5.88%	1	2.94%	2	5.88%
8.01 – 9.00	1	2.94%	2	5.88%	2	5.88%
9.01 – 10.00	0	0.00%	0	0.00%	1	2.94%
Average Mean Score	5.01		5.31		5.46	

Table 1: KCSE Performance of Vihiga County between 2012 and 2014

Table 1 illustrates that the lowest and highest KCSE means were recorded in the years 2012 and 2014 respectively. They were 2.667 and 9.8799. 2014 recorded the highest score 9.8799 in the county. The average mean scores were very low. This is an indicator that many schools performed dismally in KCSE exams. This poor performance has been attributed to inadequate number of teachers, inadequate syllabus coverage and high enrolment of students. However, the aspect on appropriate management of educational resources has not been considered with the magnitude it deserves yet it forms a basis for healthy learning. Academic performance of Vihiga County is below average and therefore it shows that poor management of educational resources may be influencing the academic performance of the students. This study therefore sought to assess the technological determinants of educational resources management for enhancing performance in secondary schools in Vihiga County.

2. Theoretical Framework

The current study was guided by Dale's cone of Experience (Dale, 1967), System Resource Theory on Organizational Effectiveness (Yutchman and Seashore, 1967) and reviewed literature. Dale (1967) in his cone of experience made a diagrammatic presentation that shows the importance of using resources in teaching. He classified the resources according to their effectiveness in communication at different levels. According to System Resource Theory on Organizational Effectiveness, effectiveness is an organization's ability to secure an advantageous bargaining position in its environment and to capitalize on that position to acquire, judiciously distribute, and monitor utilization of scarce resources. Yutchman and Seashore (1967) further view organizations such as schools as open systems which acquire inputs, engage in transformation process and generate outputs. This is supported by Bausch and Ault (2008) who equates a school to an industry which transforms given inputs into required outputs. Further, Oni (1995) cited by Akinsolu (2011) noted that the secondary school like any other organization receives inputs from its environment converts or processes the inputs and afterwards discharges output to the environment from where the input is increased. Yutchman and Seashore (1967) system resource theory of organizational effectiveness is relevant to this study because school interaction with its environment is critical for the acquisition of scarce educational resources which when utilized effectively should translate to good performance of students.

3. Methodology

The study adopted the descriptive survey research design. It was conducted in public secondary schools in Vihiga County. The study population included 112 heads teacher from 112 secondary schools in Vihiga county, 1,120 teachers, 4,480 forms four Secondary School students and 9 Quality Assurance and Standards Officers as indicated in table 2.

1344 Form IV students were sampled using stratified sampling method. 34 heads teacher were sampled by purposive sampling method while simple random sampling technique was used to select 336 teachers. Saturated sampling technique was used to sample 9 County Quality Assurance and Standards Officers (COASOs). Data was gathered through questionnaires, in-depth interview guide, document analysis and observation schedules. The validity of instruments in the research was ensured by preparing items in the instruments that cover each of the study objectives and by seeking supervisors' opinions to assess content validity while test-retest method of establishing reliability was used to explore the reliability. The correlation co-efficient of responses were 0.86 and 0.84 for teachers' and students' questionnaires respectively. Quantitative data was analyzed using descriptive statistics such as frequency counts, percentages and means. Pearson's Product Moment Correlation was used to establish the relationship between technological determinants of educational resources and students' performance in secondary schools. A Likert type of scale was used to explore levels of influence by use of mean ratings.

4. Results and Discussion

Teachers were involved in data collection based on technological determinants of educational resources management and results tabulated as illustrated in table 2

S/N	Statement	Strongly Agree		Agree		Undecided		Strongly Disagree		Disagree		Total	
		f	%	f	%	f	%	f	%	f	%	f	%
1.	Teachers are accorded with technical support by technicians.	53	16.7	166	52.2	11	3.5	23	7.2	65	20.4	318	100
2.	Schools use electronic educational resources because they have electricity.	74	23.2	174	54.7	0	0.0	24	7.5	46	14.5	318	100
3.	Schools use internet services because they have internet connectivity.	39	12.3	53	16.7	19	6.0	67	21.1	140	44.0	318	100
4.	Teachers are trained on how to use new software or hardware whenever there is one.	38	11.9	68	21.4	12	3.8	70	22.0	130	40.9	318	100
5.	Frequent in-service training of teachers enhances ability to use charts, maps, laboratory materials, print media and other educational resources	47	14.8	167	52.5	0	0.0	39	12.3	65	20.4	318	100
6.	Schools sponsor teachers to attend conference, workshops and seminars to update their knowledge and skill on use of technology in teaching	87	27.4	136	42.8	4	1.3	8	2.5	83	26.1	318	100
7.	School procures technological resources from trusted suppliers	60	18.9	156	49.1	34	10.7	15	4.7	53	16.7	318	100
8.	Computers are password protected to ensure their security	44	13.8	109	34.3	31	9.7	35	11.0	100	31.4	318	100
9.	Library books cannot be stolen since they have unique catalog numbers	61	19.2	125	39.3	10	3.1	34	10.7	89	28.0	318	100
10.	Electronic educational resources are frequently service to ensure proper maintenance	66	20.8	102	32.1	27	8.5	36	11.3	87	27.4	318	100

Table 2: Technological Determinants of Management of Educational Resources –for teachers

Results in table 2 illustrate that 68.9% of respondents supported the fact that teachers were accorded with technical support by technicians employed in schools. This enabled them to get access to available facilities with ease such as computers, science chemicals and other equipment. The technicians help identifies where a laboratory equipment is found faster when needed. Results from interview with head teachers on the same revealed that some schools (27.7%) lacked technical personnel because they could not afford to pay them. They reported that teachers who needed support from such technical staff but they were not available, could not be efficient in their teaching since they had to do a lot of work to ensure that their lesson was successful. They are likely to be among those who posted poor results. On the other hand, 80 % of head teachers who were interviewed reported that some teachers could not use certain educational resources freely due to the fact that they were not trained on how to use them. It was very difficult for them to operate certain educational resources such as overhead projectors, computers etc. Therefore, they highly depended on technical staff for support.

Seventy-seven-point nine percent (77.9%) of teachers expressed the fact schools used electronic educational resources because they had electricity while 65.1% were in disagreement with the fact that schools used internet services because they had internet connectivity. Only 29.0 % of teachers were of the view that schools were connected with internet services. They said that students used internet to do research work given to them as assignment. It was reported that 62.9 % of teachers disagreed with the fact that teachers were trained on how to use new software or hardware whenever there was one. This means that most of them had difficulties in using the new software and hardware whenever they were purchased by the school. One of the head teachers who were interviewed said:

A great percentage of teachers fumble and learn on their own how to use the new soft ware and hardware. This means that teachers spent a lot of time making their own discoveries at the expense of teaching. They end up wasting teaching time and this has a negative impact on syllabus coverage. It therefore takes them time to learn on their own before passing the new knowledge to the students.

Learning new tasks and conduct of teaching that go alongside with technology integration needs teachers to have opportunities to participate in extended process of professional development. It was reported by 70.2% of teachers that schools sponsored teachers to attend conference, workshops and seminars to update their knowledge and skill on use of technology in teaching. A part from normal teachers' training, 67.3% of teachers said that frequent in-service training enhanced their ability to use charts, maps, laboratory materials, print media and other educational resources during teaching and learning. Unfortunately, teachers used these resources minimally while teaching because of challenges associated with their preparation, use and storage.

With respect to technological advancement 68% of teachers supported the fact that school procured technological resources from trusted suppliers. Fifty two percent (52%) of CQASOs who were interviewed reported that tight regulations put in place by the government about procurement procedures enabled schools to get the right technological resources. In relation to utilization of the computers, 48.1% of teachers reported that computers were password protected to ensure their security. Therefore, accessing them for use was tricky because the computer technicians and computer teachers were the only people who knew the passwords in all schools that had this facility. Unfortunately, 48.1% of teachers observed that students felt that computers were password protected to limit and control their accessibility. Therefore, accessing computers for use was tricky because the computer technicians and computer teachers were the only people who knew the passwords in all schools that had this facility. Additionally, 58.5% of teachers supported the fact that Library books could not be stolen since they had unique catalog numbers. Therefore, there were minimal cases of theft of books and library materials. Teachers reported that the penalties associated with theft of library materials were harsh therefore they discouraged students from attempting to steal them. Surprisingly, most of the interviewed head teachers (55%) reported that some students managed to steal the books. This always contributed to shortage of books in the library. The head teachers acknowledged the fact that it was quite a challenge to send the students home and demand that the parents replace the lost books. With regard to maintenance, 52.9% of the respondents agreed with the fact that electronic educational resources were frequently serviced. This enabled some educational resources to be used for a longer period without breaking down.

Similarly, students were also involved in data collection based on technological determinants of educational resources management and results tabulated as illustrated in table 3.

S/N	Statement	Strongly Agree		Agree		Undecided		Strongly Disagree		Disagree		Total	
		f	%	f	%	f	%	f	%	f	%	f	%
1.	Teachers are accorded with technical support by technicians.	255	19.3	444	33.7	75	5.7	225	17.1	320	24.3	1319	100
2.	Schools use electronic educational resources because they have electricity.	458	34.7	548	41.5	30	2.4	191	14.5	92	6.9	1319	100
3.	Schools use internet services because they have internet connectivity.	154	11.7	198	15.0	37	2.8	637	48.3	293	22.2	1319	100
4.	Teachers are trained on how to use new software or hardware whenever there is one.	142	10.8	225	17.1	148	11.2	476	36.1	328	24.9	1319	100
5.	Frequent in-service training of teachers enhances ability to use charts, maps, laboratory materials, print media and other educational resources	275	20.8	438	33.2	82	6.2	347	26.3	177	13.4	1319	100
6.	Schools sponsor teachers to attend conference, workshops and seminars to update their knowledge and skill on use of technology in teaching	399	30.2	358	27.1	214	16.2	175	13.3	173	13.1	1319	100
7.	School procures technological resources from trusted suppliers	208	15.8	334	25.3	254	19.3	219	16.6	304	23.0	1319	100
8.	Computers are password protected to ensure their security	312	23.7	237	18.0	245	18.6	314	23.8	211	16.0	1319	100
9.	Library books cannot be stolen since they have unique catalog numbers	331	25.1	421	31.9	51	3.9	237	18.0	279	21.2	1319	100
10.	Electronic educational resources are frequently service to ensure proper maintenance	323	24.5	416	31.5	184	13.9	183	13.9	213	16.1	1319	100

Table 3: Technological Determinants of Management of Educational Resources – for students

Results in table 3 illustrate that 53.0% of students supported the fact that teachers were accorded with technical support by technicians employed in schools. It was observed that 76.2% of students expressed the fact schools used electronic educational resources because they had electricity while only 26.7% of students agreed that schools used internet services because they had internet connectivity. Otherwise, 70.5% of students disputed the fact that schools had internet services. Students who accessed internet used it to do research work given to them as assignment. It was observed by 27.9% of students that teachers were trained on how to use new software or hardware whenever there was one while 61.0% were in disagreement. This means that most of them had difficulties in using the new software and hardware whenever they were purchased by the school.

It was reported by 57.3% of students that schools sponsored teachers to attend conference, workshops and seminars to update their knowledge and skill on use of technology in teaching. With respect to technological advancement 41.1% of students supported the fact that school procured technological resources from trusted suppliers while 39.6% were in disagreement. It is worth noting that 19.3% of students did not know whether school procured technological resources from trusted suppliers or not. It seems as if they were not interested with such information. In relation to utilization of the computers, 41.7% of students reported that computers were password protected to ensure their security while 39.8% disagreed. Additionally, 57.0% of students supported the fact that Library books could not be stolen since they had unique catalog numbers. Therefore, there were minimal cases of theft of books and library materials while 55.0% of the respondents agreed with the fact that electronic educational resources were frequently service to ensure proper maintenance.

In order to determine whether technological determinants for educational resources management had any effect on students' performance in secondary schools in Vihiga County, the study set out the following hypothesis;

- HO₁: There is no significant relationship between technological determinants of educational resources management and students' performance in secondary schools in Vihiga County.

A Pearson Product Moment Correlation was run to test the hypothesis at an alpha level of 0.05. The frequencies of responses on each and every item were established. The items which were used included availability of technicians who support teachers, availability of electricity, availability of internet services, provision of in-service courses to update teachers on the changing knowledge and ability of schools to procure technological resources from trusted suppliers. Their scores were run against the average mean scores of Kenya Certificate of Secondary Exam results for the years 2012, 2013 and 2014 for all schools that participated in the study. The results obtained from teachers' responses were computed in a tabular form as indicated in table 4

Correlations			
		1.Technological Determinants of Management of Educational Resources	2.Students' Performance
1.Technological Determinants of Management of Educational Resources	Pearson Correlation	1	.049*
	Sig. (2-tailed)		.003
	N	318	318
2.Students' Performance	Pearson Correlation	.049*	1
	Sig. (2-tailed)	.003	
	N	318	318

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

Table 4: Correlations for Technological Determinants of Management of Educational Resources and Students' Performance -for Teachers

Data in table 4 indicate that there is a positive correlation between technological determinants of educational resources management and students' performance ($r = 0.049$ $n = 318$ $p = 0.003$). Since p value is 0.003 at two tailed level of significance, this value is less than the alpha level of 0.05 ($\alpha < .05$). It is therefore confirmed that the relationship is statistically significant. Similarly, the study also computed correlation between technological determinants of educational resources management and students' performance for responses given by students. The results obtained are illustrated in table 5.

Correlations			
		1.Technological Determinants of Management of Educational Resources	2.Students' Performance
1.Technological Determinants of Management of Educational Resources	Pearson Correlation	1	.075*
	Sig. (2-tailed)		.003
	N	318	318
2.Students' Performance	Pearson Correlation	.075*	1
	Sig. (2-tailed)	.003	
	N	318	318

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

Table 5: Correlations for Technological Determinants of Management of Educational Resources and Students' Performance -for students

Data in table 5 indicate that there is a positive correlation between technological determinants of educational resources management and students' performance ($r = 0.075$ $n = 318$ $p = 0.003$). Since p value is 0.003 at two tailed level of significance, this value is less than the alpha level of 0.05 ($\alpha < .05$). It is therefore established that the relationship is statistically significant. The null hypothesis was rejected. This indicates that if enough technical staff is hired to support teachers in all schools in the County; proper training and in-service courses are offered to teachers through seminars, workshops and conferences; procurement of proper resources is done from trusted dealers; and computers and library resources are protected then schools in Vihiga County are likely to achieve higher scores in KCSE exams in comparison with mean scores achieved in 2012(5.01), 2013(5.31) and in 2014(5.46) as illustrated in table 1. Therefore, in Vihiga County, the technological determinants seem to interfere with effective management of educational resources thereby having a significantly negative impact on students' performance in KCSE exams.

Results from the present study revealed that teachers are not accorded with enough technical support. These findings are similar to those of Zhao et al. (2002) who noted that schools do not have a healthy human infrastructure that supports technology inventions in the classroom. Teachers who have interest in using technology in their teaching often feel that they deserve better support from school than currently available. They observed that teachers don't want to be left stranded with 30 students wondering why nothing is working the way it is supposed to be. They suggest that when teachers are using technology in their classrooms and they encounter difficulties, they need immediate assistance and support from technical staff. Such support should be technical and social. Brody (1995) observes that teachers, who are already struggling for time and energy, find it tricky and discouraging to keep on changing. He notes that assisting technology users while they are actively engaged with technology at their work location is probably the most significant, essential and appreciative support that can be provided. According to Becker (2007) most teachers have heard scary stories about equipment breakdown, software complexity, data loss, embarrassments, and disappointment. Therefore, he points out the need for technical support staff to work hand in hand with teachers. He says teachers, who have less time in front of students, are unable to spend the time troubleshooting problems that they may or may not be able to solve, thus, unless there is an urgent need for the use of technology and reliable support, teachers may decide not to use it in their teaching. Without continuous technical support,

integrating technology in the classroom will never be satisfactorily achieved Babette & Reitzes (2011). Teachers need strong technical support so that they can be sure that they have access to functional equipment and network. Lack of technical support adds to lack of adoption.

The present study revealed that teachers are not updated with current knowledge on the functionality of most of the educational resources. These findings concur with those of Zhao *et al.* (2002) who say that the constant changing nature of technology makes it difficult for teachers to stay up to date with the latest technology because everyday new software and hardware happens to be existing therefore they need frequent in-service courses. Similarly, Porter (2002) indicates that professional development enhanced effective use of resources in the teaching and learning process. He notes that most teachers are unable to update their knowledge due to lack of exposure to conferences, workshops and seminars. He says that teachers do not have access to current journals, textbooks, internet facilities, therefore, rely on their old textbooks, notes and materials. Porter (2002) observes that lack of exposure on the part of the teacher affects his/her management and utilization of teaching materials; therefore, he/she imparts outdated knowledge to the students. This outdated knowledge is likely to affect the learner since he/she may not be able to answer questions accurately thereby performing poorly in exams.

On the same vein Schiller (2003) highlights the link between on-site technical support and staff development, whereby the support can assist teachers who wish to learn as they go, hence developing new technology skills whenever required. Teachers need space and time to acquire technological skills and develop new teaching techniques for integrating technology into the classroom. Similarly, Otu (2011) supports the importance of professional development. He indicates that for teaching and learning resources to be effectively managed, teachers require well organized professional development program. He observes that introducing in-service education programmes in the schools such as seminars and workshops on the use of modern information technology resources, influences teachers attitude towards work. Such programmes make the teachers to form the habit of using the information technology resources in their classes. Teachers therefore need time to attain technology skills and develop new teaching strategies for integrating technology into the classroom through in- service training.

A study done by Cohen and Hill (2002) to establish the level of influence of professional development on the utilization of educational resources in public secondary schools revealed that there is a considerable relationship between professional development of teachers and their use of educational resources. They observed that professional development enhances the use of charts and maps by teachers in the teaching and learning process. Cohen and Hill (2002) established that professional development enhances the use of stationery by teachers in the teaching and learning process. Their study revealed that professional development enhances the use of stationery in schools and recommended that there is need for more staff development programmes to enhance the use of similar resources. Again, O'Bannon (2002) found out that there are significant effects of teacher professional development on the use of school resources especially the chalkboard. He observed that teacher professional development has a very high influence on the use of chalkboard during the teaching and learning process. This means that professional development strongly enhances the use of chalkboard. A similar observation was done by Clifford (2006) who indicates that professional development enhances the use of laboratory materials in teaching thus enhancing student learning. SMASSE (2005) reports revealed that Professional development influences the use of realia in the teaching and learning process. SMASSE training has increased the use of realia, since many mathematics and science teachers emphasize on Activity Student Experiment Improve (ASEI) lessons. Similarly, Guskey (2001) and Clifford (2006) observe that professional development enhances the use of realia in teaching thus enhancing student learning. Porter (2002) indicates that professional development enhances effective use of print media in the teaching and learning process. Therefore, many teachers recognize professional development as an instrument to enhance their effectiveness in instructional duties as observed by O'Bannon (2002). It is paramount for schools to organize and have professional development plan on their school calendar.

The present study also revealed that most schools lacked internet connectivity. This is possibly due to the fact that it was not a priority. This is in contrary with observations made by Anderson (2001) who articulated that students think that the Internet is extremely beneficial to their education, specifically for conducting research and communicating with their peers. However, he notes that a small proportion of students seem to experience academic problems as a result of excessive use of the Internet. This is because students are tempted to visit irrelevant sites. Therefore, teachers need to monitor and control internet usage by students to ensure that they use it correctly. Teachers experience difficulties in finding information suitable for the literacy levels of secondary school's students and which is sufficiently focused on the topics they chose (Bennett, Agostinho & Lockyer, 2004). Teachers locate appropriate educational resources on the Internet with a lot of difficulties and some Web-based resources are too large in scope or too general to be useful in supporting the learning activities (Zhao *et al.* 2002).

Form the present study; it was found out that computers were password protected while books and other library materials were catalogued to ensure their security. These results concur with those of Zhao and Frank (2003) who observed that computers and other electronic devices must be documented and regulated to ensure their security. Tracking and control of items such as these and laptops is important because they are at high risk for theft. They therefore recommend that at any given time, a responsible party should know where these assets are so that they don't walk out of the door, which would be expensive for the school to replace. Therefore, teachers observed that though the computers were assured of security, students could not use them independently.

From the study, it was observed that most schools in Vihiga County had inadequate computers while some did not have them at all. These results concur with those of Collin (1996) who notes that schools have structures that prevents wide spread uses of computers. Most of the structures in schools are quite incompatible with effective use of new technologies thus they have severely obstructed the installation and implementation of new technologies for learning. Merrow (2005) observes that integrating technology into teaching and learning is a slow, time-consuming process that requires substantial levels of support and encouragement for teachers. He notes that the introduction of computers requires serious changes in the curriculum, teaching practices, reallocation of resources, and perhaps rearranging the fundamental structure of schools.

Though there is a positive relationship between technological determinants of educational resources management and performance of students, the resources in Vihiga County come in late. This therefore seems to have ramification on mean scores attained by schools in KCSE exams.

5. Conclusions

From the findings of the study it is concluded that training of teachers through seminars, workshops and conferences and availability of technological resources has influence on academic performance of students in KCSE exams. The County government should organize workshops and in- service trainings for teachers to make them understand the benefits of educational resources and update them on how some educational resources function. This will enable them have a positive attitude towards their use. Engagement of technical support staff in schools in the County will enable teachers perform their duties effectively. Schools should look for alternative sources of power such as generators to be standby so as to be used when there is power blackout.

6. List of Acronyms

- ACOT Apple Classroom of Tomorrow
- ASEI Activity Student Experiment Improve
- ICT Information and Communication Technology
- KCSE Kenya Certificate of Secondary Education
- PPMCC Pearson's product moment correlation coefficient
- TIG Teachers Instructional Guide
- COASO County Quality Assurance and Standards Officer
- SPSS Statistical Package for Social Sciences

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