

The Administrative Use of Information Communication Technology in Management of Secondary Schools

Joseph W. Kimani

*Department of Education Science;
Meru University of Science & Technology*

Ibuathu C. Njati

*Department of Education Science;
Meru University of Science & Technology*

Hilda N. Omae

*Department of Education Science;
Meru University of Science & Technology*

Abstract

This research sought to determine the management of public day secondary schools through infusion of information and communication technology. The study was carried out in Githunguri Constituency, Kiambu County, Kenya. The objective of the Study were to: determine the departments of day secondary school that have been functionally integrated with ICT, establish the strengths of integrating ICT in the running of a day secondary school. The study used descriptive research design. The study sample was 270 participants derived from the 22 public day secondary schools through stratified techniques. The study's main findings were inadequate awareness by principals on the need for use of ICT integration in management, inadequate ICT resources and related infrastructure and lack of technical support for heads of departments as well as low resource mobilization by board of management influenced ICT integration in public secondary schools to a great extent. The main conclusions of the study is poor attitude towards ICT integration and inadequate resources and lack of technical support were the main hurdles towards ICT integration in school. The study recommended that principals of secondary schools work with the ministry of Education together with the Kenya Institute of Curriculum Development should come up with tailor made ICT integration programs to impart relevant skills, knowledge and attitude to school administrators. Therefore further studies could be done on the effectiveness of use of ICT in managing secondary school affairs.

Keywords: *Management, infusion, information technology, functional integration, strengths*

Date of Submission: 04-04-2022

Date of Acceptance: 19-04-2022

I. Introduction

The importance of ICT in the educational management is quite evident worldwide (Empirica, 2006). Principals therefore have no option but to embrace the use and integration of ICT in their schools. Information and Communication Technology is rich and has new knowledge likely to keep school managers versed with technological techniques in problem solving and as part of injecting the best management practices. The Teachers Service Commission and the ministry of education also requires that school principals implement the use of ICT in managing school resources as well storage of school vital information such as staff information, financial records and students' information. He emphasizes that ICT serves as a tool for increased productivity and effective decision making. He further observes that in the school system today, it seems impossible to ignore the place of ICT hence school managers are faced with the challenge of incorporating ICT into the management of schools in meaningful and productive ways (Kiilu, 2016).

Kenya has deliberately made a number of attempts to develop a national ICT policy. The culmination of these efforts has been the development of the E-government Strategy, National ICT Draft Policy, and the issuance of the National Access Report (Outa, Eta & Aligula, 2006). In the education sector, ICT policy in Kenya is embedded in the E-government Strategy and National ICT draft Policy documents. These documents form the basis for the policy guidelines in the Sessions Paper No. 1 of 2005 which is the policy document that guides ICT integration in education in Kenya (Hennesy, 2010). This policy document is operationalized through the National ICT Strategy for Education and Training (2006) which contains the strategies for integration of ICT

in the education sector. It has an elaborate implementation timeframe that spans five years starting from the year of inception, 2006. The ICT for education strategy document indicates that there are a number of challenges concerning access to and use of ICT in Kenya including limited rural electrification, high poverty levels and frequent power disruptions.

Due to ICT's importance in the society and possibly in the future of education, identifying the possible obstacles and enablers to integration of these ICT projects in schools would be an important step in improving the quality of teaching, learning and management. This study sought to examine the management of public secondary schools through infusion of information and communication technology in Githunguri sub-county, Kiambu County, Kenya.

Statement of the Problem

In Kenya, ICT integration in education has focused mainly on learners rather than the managers. This has been done through sensitization of teachers on ICT integration in teaching through Strengthening Mathematics and Sciences in Secondary Education projects (SMASSE) (County Director of Education report, 2015). However, sensitization of principals on ICT integration has not been prioritized. Studies done in the Country have focused on the integration of ICT in teaching and learning in secondary schools (Kuvuuka, 2013; Mulwa, 2012; Ndirangu, 2013). However, little studies have been done to establish the status of management of public day secondary schools through infusion of information and communication technology in Kenya.

Due to ICT's importance in the society and possibly in the future of education, identifying the possible obstacles and enablers to integration of these ICT projects in schools would be an important step in improving the quality of teaching, learning and management. It is in this background that this study sought to establish the extent of ICT integration in school management. The study sought to establish the status of management of public day secondary schools through infusion of information and communication technology in Githunguri Sub-County, Kiambu County, Kenya. The selection of Githunguri Sub-County, Kiambu was due to its infrastructural access advantage different from other public schools in Kenya.

Study Objectives

The expected study outcomes are to:

- i. Determine the departments of day secondary school that have been functionally integrated with ICT for service delivery.
- ii. Establish the strengths that could be exploited in integrating ICT in the running of a day secondary school.

Study Questions

- i. Which departments of day secondary school that have been functionally integrated with ICT for service delivery?
- ii. What are the strengths that could be exploited in integrating ICT in the running of a day secondary school?

II. LITERATURE REVIEW

Theoretical Literature Review

This study adopted the Open System Theory. According to Dishaw and Strong (2015), open system theory was initially developed by Ludwig von Bertalanffy in reaction to earlier theories of organizations which treated the organization largely as a self-contained entity. After its development, the theory immediately became applicable in all disciplines. It is mainly formed on the concept of a system. This is whereby all bodies or organizations are systems that come into existence within the combination of various other parts whose relations make them interdependent. In other words, the concept best conceptualizes that organizations or any other system is strongly influenced by their surrounding (Dishaw & Strong, 2015). Incorporating ICT applications in some of the environments that form up the school system may help in increasing the success of the school. This is because the school administration is the key player in maintaining and coordinating the other parts of the school system.

Empirical Literature Review

Departments of day secondary school that have been functionally integrated with ICT for service delivery
Usage of ICT in administrative management involves harnessing technology for better planning, setting standards, effecting change and monitoring results of the core functions of secondary schools. According to Mulwa & Kyalo (2015), ICT is used in maintenance of records, communication and documents management. A study carried by Barakabitze (2019) noted that influence of ICT on management systems have changed nature of administration in secondary school by allowing information to be transferred, stored, retrieved, and processed by

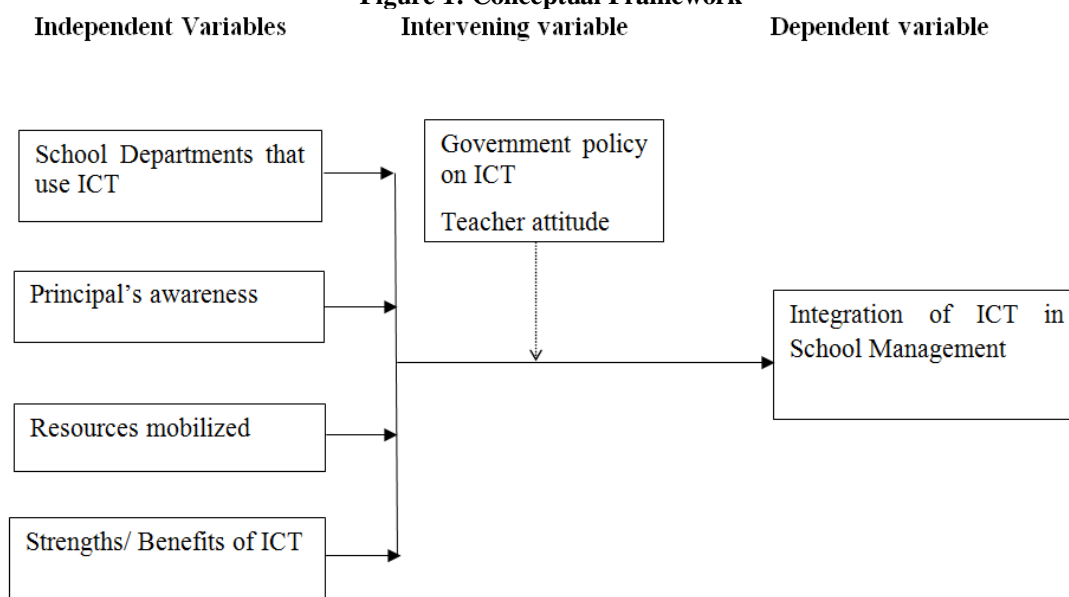
almost all who work, study or interact within and outside the institutions. This according to Tanui (2016) has improved efficiency in day-to-day school operational activities especially in managing information about students, staff and resources. Based on this realization Mulwa & Kyalo (2015) asserted that integration of ICT into secondary administrative processes enhance overall students' records by making it more accessible to many.

Strengths that could be exploited in integrating ICT in the running of a day secondary school

The uses of ICT are making major differences in the learning of students and teaching approaches. The use of computers has also helped school administrators to plan and allocate human resource and physical resources more effectively. The ability to connect computers through networks helps principals to work together and share information and thus promoting school-community relationship. ICT plays a key role in the planning and management of complex information flow and integration of such information towards effective policy formulation and planning towards the utmost maximization of human capital and potential in the school environment. Integration of ICT is rapidly becoming an indispensable part of school life and an inevitable in financial management. In support of this position, Wahome (2017) noted that ICTs has become valuable for storing and analyzing data in school financial planning which includes budgetary allocations, expenditures, students' fees payment and general accounting.

Conceptual Framework

Figure 1: Conceptual Framework



Departments within a day secondary school

Secondary school teaching is organized in departments functioning as collaborative teams. A department is one of the sections in an institution that allow for a more detailed overview of the performance of each unit within the institution. They provide a higher level of organization by dividing school activities by their functions, for example, Institution office, Finance and Credit Control Department, Teaching Departments, Science Departments, Humanity Department, Technical Departments, Languages Department, Games and Sports Department, Guidance Department, IT Department, and Academic/Examination Department. Integrating ICT in these departments ensures that these department collaborate well as are more effective in their duties. Using ICT in the teaching process makes the learners knowledgeable, reduces face to face instruction and provide a learning environment where teachers can assist learners with special needs. In addition, use of ICT will motivate the learners and help them develop a favorable attitude towards learning.

Strengths of ICT

ICTs can be valuable for storing and analyzing data on education indicators; students' assessments; educational, physical and human infrastructure; and cost and finance. ICTs can help school administrators and school principals to streamline operations, monitor performance and improve use of physical and human resources. More than other technologies, computer related technologies have the potential to support the planning of complex, standards-related instructional processes in relatively simple ways. They can also promote communication among schools, parents, central decision makers and businesses thus fostering accountability,

public support, and connectivity with market place. ICT is used to improve the delivery and access to education. ICT benefits schools in enhancing learning in classroom, improved management of school. It helps in timetabling, record storage, secretarial work like, typing staff meeting minutes, examinations and letters, improves accountability, efficiency and effectiveness in school activities, use of PowerPoint presentations and internet. This approach to ICT in education can improve education on the margin by increasing the efficiency by which instructions are given.

ICT can be used to improve students understanding, improve the quality of education, and thereby increase the impact of education on the economy. Its use in education also contributes to knowledge creation, technology and technological innovativeness, and knowledge sharing. All these contribute to the transformation of education system and to sustain economic growth and social development. Evidence shows that the use of ICT and its increasing acceptance and adoption by the society has provided opportunities and is seen as potential for promoting education on a large scale.

III. Research Design and Methodology

Research Design and locale

The study was conducted using descriptive survey design. This design was suitable for this study because it describes the characteristics or behaviors of a particular population in a systematic and accurate fashion and uses questionnaires and interviews to collect information about people's attitudes, beliefs, feelings, behaviors, and lifestyles. The study was carried out in Githunguri Sub County. The location was selected because it has varied levels of socio-economic status hence the findings will not be skewed on any economic level of schools. The sub-county was chosen for this study because it had a large number of schools designated as district or provincial schools. It was envisaged that it would yield a significant population of teachers which could yield an adequate sample size for this study. Due to large number of schools it would also be possible to assess the computer adequacy and extent of use for teaching and learning.

Sample Size and Sampling procedure

Bryman (2015) define a sample as a part of the total population. In this study the researcher surveyed some of the principals, deputy principals, senior teachers, class teachers, heads of departments and accountants of public day secondary schools in Githunguri sub-county was selected for the study because the researcher was interested in both category of schools that have integrated ICT and those that have not. This enabled the researcher to establish the level of ICT integration in Githunguri sub-county. Further five principals, one from each ward was randomly chosen for interview.

The researcher used three sampling techniques namely; purposive sampling, stratified sampling and simple random sampling. Purposeful sampling ensured that the selected schools are only those that were existing before the introduction of ICT policy in 2006. Stratified sampling ensured all school categories are covered in the sample to ensure that the sample covers all the various departments in all the schools. Purposive sampling ensured that all head teachers of the selected schools shall be involved. The simple random sampling was used to select the teachers that participated in the study. This is as indicated in table 2;

Table 2: Sample Size

Category	Target Population	Sample Size	Percentage %
Principals	22	11	8
Deputy Principals	22	11	8
Senior teachers	26	13	10
Class teachers	88	44	33
Accountants	22	11	8
Heads of department	90	45	33
Total	270	135	100

Source: Table 1

Research Instruments

Questionnaire

Questionnaires were used to collect data. Questionnaires were preferred for this study because they generate quantifiable data ready for statistical analysis (Mugenda, 2012). Questionnaires also allow each one of the respondents to read and answer identical questions, thereby ensuring consistency of the demands (Saunders 2017).

Interview schedule for secondary school principals

According to Cooper & Schindler (2014), interview guides provide in-depth information about cases of interest to the researcher. The essence of the qualitative interview is to capture the perspectives of the respondents through verbal interaction between the interviewer and the interviewee (Mugenda & Mugenda 2012; Saunders, 2017). In depth interview was conducted with the school principals, senior teachers and some of heads of academics Department in order to get more information on the benefits resulting from integrating ICT in school management.

Observation Schedule for school equipment and tools in information communication technology

In this study, observation was done using the observation schedule during visits. Field notes were taken during the visits to the schools in order to ascertain information asked for in the questionnaire. The researcher booked an appointment with the principals of sampled schools for interviews. Interviews were conducted with the sampled principals as per the pre-constructed interview guide. The interviewer took short notes to capture all the important information. Immediately after each interview, the researcher reviewed the notes to ensure dependability of the data collected. The purpose of observation was to collect data on the ICT equipment that have been installed in each school and how they are being used. Table 3 below was used to make observations

Data Analysis Methods and Procedures

Data analysis techniques are statistical methods which were used to analyze data so that it could be interpreted. The data collected from the respondent were both quantitative and qualitative in nature. Quantitative data were coded tallied and analyzed using descriptive statistics such as mean, frequency and percentages. The result of data analysis was reported in summary form using frequency tables, bar graphs and pie charts.

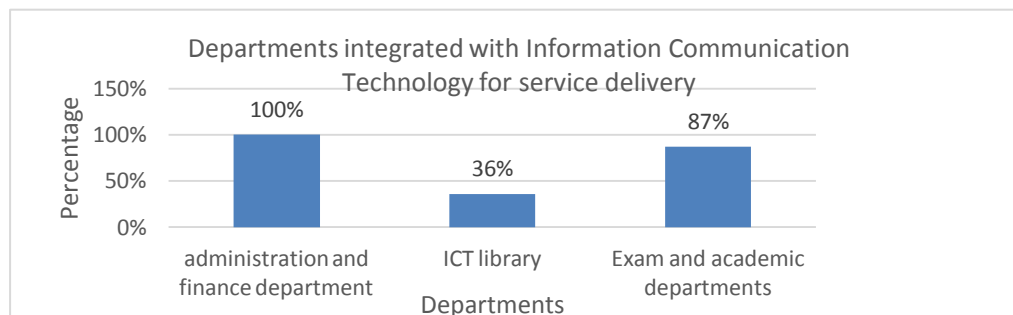
IV. Data Analysis, Presentation and Discussion

Departments that have been functionally integrated with information communication technology for service delivery

Departments integrated with Information Communication Technology for service delivery

Figure 7: Departments integrated with ICT

Out of the twenty-two public day secondary schools visited, all of them had integrated ICT in their



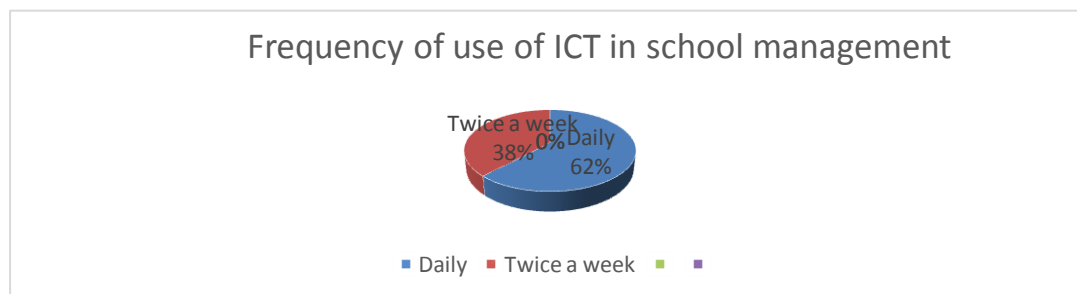
administration and finance departments for service delivery, 87% had integrated ICT in exams and Academic department while 36% had ICT in library department.

The researcher during the movements in schools observed that a number of schools had quite numbers of computers but most of them were not in use. However, the researcher came across some teachers who had their personal computers including laptops and tablets and other ICT devices like printers. The researcher tried to ask as to why they preferred personal computers. Respondents said that the school computers were not operational and the few that were operational lacked important content in terms of software and planning applications.

Frequency of use of ICT in the management of school

The study sought to understand the frequency with which the respondents use ICT in the management of school. Figure 8 illustrates the frequency of use of ICT in school management.

Figure 8: Frequency of use of ICT in school management



From figure 8 above, 62 % of the respondents use ICT on daily basis to manage school affairs while 38% of respondents use ICT twice a week in the management of school. This is in agreement with Koh et al. (2017), who researched the concept of the integration of ICT in the professional development process in pedagogical content for teachers. The study consisted of 37 teachers from a school in Singapore who were placed in seven lesson design teams. The study was researched for one year. Koh et al. (2017) found that the teachers reported positive effects on teachers' confidence with integrating ICT into pedagogical content.

Extent of ICT integration in the management of school records

The respondents were further required to indicate the extent to which they had integrated ICT in the management of school records by indicating; 1 – Great extent, 2- some extent. 3 – Undecided, 4 – less extent and 5-No extent on the given resources. The results are presented in Table 6.

Table 6: Extent of ICT integration in the management of school records

ICT integration	1		2		3		4		5		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
Accounting	48	48	32	32	7	7	10	10	3	3	100	100
Personnel management	49	49	41	41	3	3	5	5	2	2	100	100
Student registration records	38	38	42	42	5	5	12	12	3	3	100	100
Timetabling	77	77	13	13	4	4	5	5	1	1	100	100
Internal exams	62	62	23	23	5	5	7	7	3	3	100	100
Record of physical materials	12	12	42	42	3	3	38	38	5	5	100	100
Library records	20	20	53	53	10	10	13	13	4	4	100	100

Table 6 shows that majority of the respondents (principals, deputy principals, senior teachers and accountants), used ICT for timetabling and internal exams to a great extent. This was followed by the respondents who used ICT for accounting and personnel management purposes to great extent. According to the results some respondents used ICT for students' registration records to some extent. Some respondents also reported use of ICT in recording physical materials to some extent while other reported using ICT in library records to some extent. This may be attributed to the fact that principals are certain that ICT integration in management enhances job satisfaction. This can be supported by Rogers (2016) who argues that innovation must have some relative advantage for it to be adopted.

Strength that could be exploited in integrating Information Communication Technology in the running of a day public secondary school

ICT in educational management is used to overcome the barriers of distance and time and significantly improves the accessibility of information and knowledge. Information is made available to parents and the public at large through central administration websites and in some cases through direct access to central databases by school personnel. This study sought to establish the strength that could be exploited in integrating Information Communication Technology in the running of a day public secondary school.

While technology has increased teachers' training and professional development needs, it has also offered part of the solution. Information and communication technology (ICT) has improved pre-service teacher training, by providing access to better educational resources, offering multimedia simulations of good teaching practice, catalyzing teacher-to-trainee collaboration, and increasing productivity of non-instructional tasks. ICT has also enabled in-service teachers' professional development at a distance, asynchronous learning, and individualized training opportunities (Mutisya, & Mwanja, 2017)

Strength of integrating Information Communication Technology in the running of a day public secondary school

The respondents were asked to state some of the strengths of integrating ICT in running of schools. While they used different words, their responses were summarized as below:

- a) The majority (85%) stated that ICT could be used as a learning tool.
- b) 75% of respondents agreed that there is a positive change of attitude towards learning when using ICT.
- c) 98 % of respondents stated that ICT integration improves the effectiveness and efficiency of school management.

In terms of effective management, most school principals agreed that they would benefit greatly if integration of ICT was enhanced. Training principals in ICT was emphasized by the respondents as a way towards faster integration of ICT in management of public secondary schools.

Extent to which these benefits have been achieved from the use of Information Communication Technology in schools.

The study sought to understand the extent to which benefits of integrating ICT in school management have been achieved. Table 11 shows the findings.

Table 11: Extent to which these benefits have been achieved from the use of Information Communication Technology in schools

Benefits	Agree	Disagree	Not sure	total
ICT promotes autonomous learning	67	10	23	100
Through ICT we have a differentiated curriculum	53	30	17	100
ICT promotes student-centered learning	68	11	21	100
ICT helps in cooperative learning	62	19	19	100
Use of ICT promotes higher order thinking and problem-solving	76	10	14	100
ICT improves the effectiveness and efficiency of school management	85	5	10	100

From table 11 above, 67 % of the respondents agree that ICT promotes autonomous learning, 23 % are not sure while 10% disagree. 53 % agree that ICT promotes a differentiated curriculum, 30% disagree while 17 % are not sure. 68 % of the respondents agree that ICT promotes student-centered learning, 21 % of respondents are not sure and 11 % disagree. 62 % of the respondents agree that ICT helps in cooperative learning, 19 % are not sure while 19 % disagree. 76 % of the respondents agree that the use of ICT promotes higher order thinking and problem-solving, 14 % of respondents are not sure while 10% disagree. 85% of the respondents agree that ICT improves the effectiveness and efficiency of school management, 10 % of the respondents are not sure while 5% disagree. In general, ICT integration offers many benefits that far outweigh the cost of integration.

V. Summary, Conclusions and Recommendations

Summary of the main findings

The research sought to determine the management of public day secondary schools through infusion of information and communication technology. The study was carried out in Githunguri Constituency, Kiambu County, Kenya. From an analysis and review of the research data and additional data gathered through the respondents and informants, a number of issues became apparent.

Departments that have been functionally integrated with information communication technology for service delivery

Out of the twenty-two public day secondary schools visited, all of them had integrated ICT in their administration and finance departments for service delivery, 87% had integrated ICT in exams and Academic department while 36% had ICT in library department. 62 % of the respondents use ICT on daily basis to manage school affairs while 38% of respondents use ICT twice a week in the management of school. Figure 7 shows that majority of the respondents (principals, deputy principals, senior teachers and accountants), used ICT for timetabling and internal exams to a great extent. This was followed by the respondents who used ICT for accounting and personnel management purposes to great extent. According to the results some respondents used ICT for students' registration records to some extent. Some respondents also reported use of ICT in recording physical materials to some extent while other reported using ICT in library records to some extent. This may be attributed to the fact that principals are certain that ICT integration in management enhances job satisfaction.

Strengths that could be exploited in integrating Information Communication Technology in the running of a day secondary school.

The majority (85%) stated that ICT could be used as a learning tool. 75% of respondents agreed that there is a positive change of attitude towards learning when using ICT. 98 % of respondents stated that ICT integration improves the effectiveness and efficiency of school management. 67 % of the respondents agree that ICT promotes autonomous learning, 23 % are not sure while 10% disagree. 53 % agree that ICT promotes a differentiated curriculum, 30% disagree while 17 % are not sure. 68 % of the respondents agree that ICT promotes student-centered learning, 21 % of respondents are not sure and 11 % disagree. 62 % of the respondents agree that ICT helps in cooperative learning, 19 % are not sure while 19 % disagree. 76 % of the respondents agree that the use of ICT promotes higher order thinking and problem-solving, 14 % of respondents are not sure while 10% disagree. 85% of the respondents agree that ICT improves the effectiveness and efficiency of school management, 10 % of the respondents are not while 5% disagree.

Conclusions

The linking of computers to school management across the world is known to many people because it is believed that ICT has a crucial impact on school management, teaching and learning. Therefore, Educational Institutions are witnessing a paradigm shift brought about by the use of ICT that others have even started seeing ICT as an indispensable tool in the daily management of school, teaching and learning process. As a result, the research findings revealed that as principals and teachers are continually exposed to the capabilities of ICT, their perceptions towards change.

The teacher's involvement in use of and perception have also change positively towards use of ICT in teaching and learning. It is evident from the findings in the study that some schools that have put more effort to integrate ICT in teaching and learning. With this, teachers are faced with the responsibility to utilize ICT. The findings also reveal that teachers in this era should adopt a paradigm shift from old traditional methods of teaching to new methods of teaching in order to implement ICT integration effectively. This will enable them to cater for the needs of 21st century learners.

Recommendations from the Study

It was recommended that schools need to integrate ICT in education which is the way so far viable to prepare learners to operate in the modern knowledge economy which is expected to further advance in future. Schools should play a leading role to implement ICT at the school with self-help initiative. Teachers should show initiative and the school leadership should support and create an enabling teaching learning environment for teachers and students. Based on the findings, the study recommended the following:

- i. Since some schools were having inadequate ICT infrastructure, school principals to liaise with educational officials and the government should endeavor to provide adequate ICT infrastructure in all the schools.
- ii. There is need for schools' principals to support teachers for profession growth studies in the line of ICT. Teachers should also make effort to acquire ICT skills so that they can employ the same in resource planning.
- iii. The principals of public secondary schools should also interact more with ICT resources so as to be familiar with the challenges arising from using them as well as the benefits accrued from using them such as effective ICT integration in school administration.

Recommendations for further research

This study sought to establish the management of public day secondary schools through infusion of Information and Communication Technology in public day secondary schools in Githunguri Sub County, Kiambu County, Kenya. Following the research findings, the researcher makes the following suggestions for further research:

- i. A study on factors influencing head teachers' integration of Information Communication Technology in school administration in public secondary schools.
- ii. A study on effectiveness ICT training among school administrators on ICT integration in public secondary schools.
- iii. A study on influence of ICT integration in teaching and learning on student academic achievements in public secondary schools.

References:

- [1]. Barakabitze A. A. (2019). "Transforming African Education Systems in Science, Technology, Engineering, and Mathematics (STEM) Using ICTs: Challenges and Opportunities," *Educ. Res. Int.*, vol. 2019.
- [2]. Chepkonga, S. (2015). A preliminary study of relationship between principal's gender and ICT integration in management of public secondary schools in Nairobi County perspective, Kenya. *International journal of Education and Research*. 3 (5), 425-432.
- [3]. Davis, F. D. (1986). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- [4]. Dishaw, M., & Strong, D. (2015). Extending the technology acceptance model with task technology fit constructs. *Journal of Information and Management*, 36 (1), 9-21.
- [5]. Edward, R. (2015). Principals characteristics influencing integration of Information and Communication Technology in management of secondary schools in Makueni County, Kenya; (Master's Thesis), University of Nairobi.
- [6]. Empirica. (2006). Use of computers and internet in schools in Europe: Country brief, European Commission Information Society and Directorate General. Lisbon, Germany. Accessed on November 10, 2020 at http://ec.europa.eu/information_society/Europe/i2010/benchmarking/index_en.htm.
- [7]. Hennessy, S. et al., (2010). *Developing the use of information and communication technology to enhance teaching and learning in East African Schools: Review of the Literature*. Research report, 1. Nairobi: Centre for Commonwealth Education & Aga Khan University Institute for Educational Development.
- [8]. Kiilu R. (2016). "An E-Learning Approach to Secondary School Education": E- Readiness Implications in Kenya. Masinde Muliro University. Retrieved January, 2021 from <http://www.iiste.org/Journals/index.php/JEB/article/viewfile/3707/3756>
- [9]. Kuvuuka, B. (2013). Factors affecting information communication technology integration in teaching and learning in public secondary schools in Mutito Constituency, Kitui County Kenya, (Master's Thesis): University of Nairobi, Kenya.

- [10]. Mulwa, A. S., & Kyalo, D. N. (2015). *The Influence of Principals', Teachers' and Students' attitude on Readiness to Integrate e-Learning in Secondary Schools in Kitui District, Kenya*. European Scientific Journal, 9(5).
- [11]. Ndirangu, J. K. (2013). Adequacy and sustainability of secondary schools' Computerization in meeting instructional needs in selected schools in Kitui County, Kenya. Master's Thesis, Unpublished: Kenyatta University.
- [12]. Outa, G., Etta, F. & Aligula, E. (2006). Mainstreaming ICT Research Perspectives from Kenya, Nairobi: Mvule Africa Publishers.
- [13]. Tanui, M., (2016) *Principals' Role In Promoting Use and Integration Of Information and Communication Technology In Public Secondary Schools In Wareng Sub-County, Kenya*. Unpublished Master's Thesis, Catholic University of East Africa.
- [14]. Wahome S. K. (2017) Challenges Facing Effective Information and Communication Technology (ICT) Implementation in Selected Public Secondary Schools in Nakuru North District Nakuru County, Kenya.

Joseph W. Kimani, et. al. "The Administrative Use of Information Communication Technology in Management of Secondary Schools." *IOSR Journal of Research & Method in Education (IOSR-JRME)*, 12(02), (2022): pp. 19-27.