



**INFLUENCE OF SCHOOL LEADERSHIP ON INFORMATION AND COMMUNICATION TECHNOLOGY INTEGRATION  
IN TEACHING AND LEARNING IN IMLANGO PROJECT SCHOOLS IN MAKUENI COUNTY, KENYA**

**MWANGI JOHNSTONE MUCHIRI, DR. SUSAN WERE**

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<sup>1</sup>Mwangi Johnstone Muchiri, <sup>2</sup>Dr. Susan Were

<sup>1</sup>Msc. Student, Jomo Kenyatta University of Agriculture & Technology (JKUAT), Kenya

<sup>2</sup>Senior Lecturer, Jomo Kenyatta University of Agriculture & Technology (JKUAT), Kenya

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**ABSTRACT**

*Information and Communication Technology (ICT) has gained much prevalence in the recent times. In the education sector, there has been an emergence and introduction of new technologies in teaching and learning. However, it has been noted world over that the same technologies are not put in real use to enhance the teaching and learning processes they are intended for. ICTs are of significant importance to the 21<sup>st</sup> Century teachers and students in order to help them gain the much needed skills and knowledge for a competitive and innovative future. This study undertook a comprehensive research on influence of school leadership on ICT integration in teaching and learning in iMlango project schools. The independent variable, School leadership for ICT is supported by Distributed Leadership theory while the dependent variable, ICT integration is supported by the Diffusion of Innovations theory. The study used a descriptive research survey design. The target population was a total of 185 teachers from the 37 iMlango project schools in Makueni County. 18 schools were selected to participate in the study. Quantitative and qualitative primary data were collected using semi-structured questionnaires. A pilot study was conducted prior to actual data collection in order to test the validity and reliability of the questionnaires. Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS) version 21. Descriptive statistics was used to analyze the basic features of quantitative data. The findings from the research provided evidence for the presence of school leadership for ICT and ICT integration in teaching and learning in iMlango project schools in Makueni County. Besides, the research findings revealed the direct correlation between school leadership for ICT with ICT integration in teaching and learning in these schools. School leadership for ICT was found to determine ICT integration in teaching and learning.*

**Key Words:** *ICT Leadership, Adoption, Head Teacher, Integration, Teaching and Learning*

## INTRODUCTION

Leadership is important in education. Without strong and able leadership, education initiatives tend to stall. School heads as technology leaders need to be visible and support teachers in the process of integrating ICT in teaching and learning. They must work to remove barriers to technology use in order to keep teachers interested in using ICTs. Leaders who are comfortable with use of technology become models of technology use in schools. Leaders who are uncomfortable in using technology are not capable of leading their schools in implementing ICT.

Quest (2014) in her study on how principals perceive implementation of ICT into school activities found that the principals were either computer semi-literate or computer illiterate and hence were not able to act as instructional leaders in ICT implementation in teaching and learning. Leaders of technology encourage use of technology in teaching and learning and help teachers establish goals for implementation of technology in achieving their instructional strategies.

UNESCO (2008) defines ICT as a range of technology that are applied in the process of collecting, storing, editing, retrieving and transfer of information in various forms. Over the past three decades, governments and education systems around the world have regarded the use of ICTs as an important issue for improving the effectiveness of teaching and learning (Plump *et al*, 2009). As more and more technologies such as smart phones, net books, interactive whiteboards, digital video recorders become more available and affordable. There is also rapid expansion of computer networking capability in the educational system and hence there have been continued research efforts in investigating how teachers can use ICT to facilitate student learning (Lebanon *et al*, 2009; Newhouse *et al*, 2002).

Teachers believe in the benefits of ICT integration but did not know how to realize that (Usual *et al*, 2007). However, when both “why and how” are clear the teachers can be able to select appropriate teaching materials, undertake effective lessons using ICT, contemplate effectively about their lessons and be able to undertake class management rules and at the same time overcoming the difficulties encountered in ICT supported environments.

Acquisition of ICTs is one thing while using them in day-to-day teaching and learning is another thing altogether. It is, therefore, not an obvious outcome that the new technologies can help improve knowledge for both teachers and pupils. There has been more attention on acquiring ICT equipment than integrating them for teaching and learning (Ondiegi, 2014). Further, Goko (2012) observed that even in schools with ICT facilities, there is no real use of ICTs. Poor leadership and coordination of ICT in schools are among the key barriers to effective integration of ICT in teaching and learning.

ICTs cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services, and other related information and communication activities. United Nations Education, Science and Cultural Organization ([UNESCO], 2008) defines ICT as a range of technology that are applied in the process of collecting, storing, editing, retrieving and transfer of information in various forms.

The process of adoption, growth and extension of ICT in teaching and learning in Africa is in transition. Governments are giving priority to ICT policy development and reforms in education. Farrell,

Glen and Isaacs (2007) in their survey of 53 African countries on ICT and education noted that ICT has been embraced by most countries. A country like South Africa is a way ahead in terms of ability to implement ICT in education because of its more mature economy and extant infrastructure. North African countries have made excellent progress on ICT that has been enabled by their resources and the stable connectivity they enjoy with Europe. Others are placing a high priority on ICT as they move towards stable economies. The largest group constitutes of countries emerging from authoritarian rule and period of conflict and are looking to leverage on ICTs to help them improve on their socio-economic development. The last group is made up of countries that are still experiencing political instability and internal conflict hence making no progress on ICT in education.

The Kenyan government has been keen in integrating ICT in its' education agenda and has developed a number of strategies to facilitate ICT integration. These include development of the Kenya Education Sector Support Programme ([KESSP], 2005) that aims at prioritizing ICT integration into teaching and learning with the aim of improving the quality of education. Later, in 2006, a national ICT policy framework was developed by the Ministry of Education to guide the implementation of ICT in the education and training sector. The policy section on information technology sets out the agreed objectives and strategies pertaining to ICT and education. Therein the government states that it will encourage "the use of ICT in schools, colleges, universities and other educational institutions in the country so as to improve the quality of teaching and learning" (Kenya ICT policy document, 2006).

### **Makueni County**

The iMlango project schools are as a result of strategic partnership between Department for

International Development (DFID) and the iMlango consortium (Wallace, 2015). There are 37 iMlango project schools (all state owned) and are resourced with ICT facilities including: high speed satellite broadband internet for LAN and wireless network, 2 laptops, 2 projectors, 2 interactive whiteboards for whole class learning and a computer room with 25 networked computers for individual teacher and pupil access for online learning. However, 11 of these schools do not have computer rooms but have all other ICT facilities as highlighted above.

### **Statement of the Problem**

Globalization and the diffusion of ICT is taking place in all spheres of life and has created a social system that is driven by knowledge and powered by technology (Mathipa & Mukhari, 2014). According to Jhurree (2005) reforms on education are occurring world over and one of the principle formulas is by introducing and integrating ICTs in the education system. ICT has the potential to promote acquisition of knowledge and skills to ensure efficient, continuous and lifelong learning.

Despite the said technological changes and subsequent introduction of ICTs in education, full ICT integration in teaching and learning has not been realized. Goko (2012) found that even in schools with ICTs, there is no real use of them. Recent findings by Akarawang *et al* (2015) revealed that in spite of the good internet coverage in Thailand schools there is poor ICT understanding and competence among teachers hence causing lack of ICT use. Ondiegi (2014) observed that there has been more attention on acquiring ICTs than integrating them for teaching and learning in Homa Bay District, Kenya. Interestingly, according to Usual *et al* (2007) teachers believe in the benefits of integration of ICT but do not know how to realize that.

Without a comprehensive understanding of ICT integration in teaching and learning, the problem of underutilization of ICTs will continue to persist. Consequently, this will compromise the acquisition of the much needed skills and knowledge for 21<sup>st</sup> Century teachers and students. There is limited literature on school leadership for ICT integration in Makueni County with the few available studies focusing on the management aspect. In researcher's view, these studies are insufficient in the attempt to address the wide gap that exist in ICT use in schools. In response to this apparent gap and problem altogether, this study critically examined the influence of school leadership on ICT integration in teaching and learning with a focus on iMlango project schools in Makueni County, Kenya.

### **Objective of the Study**

The objective of the study was to examine the influence of school leadership on ICT integration in teaching and learning in iMlango project schools in Makueni County, Kenya.

## **LITERATURE REVIEW**

### **Theoretical Review**

#### **Distributed Leadership Theory**

The distributed leadership theory can be regarded as a social distribution where the leadership function is stretched over the work of a number of individuals and the task is accomplished through the interaction of multiple leaders (Spillane, Halverson, & Diamond, 2001, p. 20). The study of leadership for ICT has drawn considerable interest among educational researchers in recent years (Hadjithoma-Garstka, 2011). Research has found that leadership is an important factor for effective integration of technology in schools hence the concept of distributed leadership is deemed appropriate for this study. Anderson and Dexter (2005), for example, found that technology

leadership, compared to infrastructure and expenditure, was a stronger predictor of technology outcomes, including the level of technology use (Anderson & Dexter, 2005).

From a functional perspective, existing literature of technology leadership tended to focus on school principals as the central figure in leading technology change (Tan, 2010). Arguably, school principals are often not ICT experts and they do not necessarily assume the leadership role in technological implementation. A common practice among principals is to delegate key responsibilities to expert teachers (Dexter, 2008), which seems to be consistent with the concept of distributed leadership. In this study the school head teachers have been observed to delegate the functions of ICT to the respective departmental staff. This theory supports the variable of school leadership for ICT.

#### **Theory of Diffusion of Innovations**

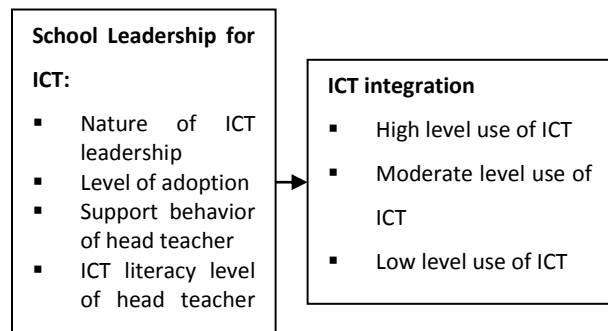
Rogers (2003) defined diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). According to Rogers, an innovation is "an idea, practice, or project that is perceived as new by an individual or other unit of adoption" (p. 12). For Rogers, adoption is a decision of "full use of an innovation as the best course of action available" and rejection is a decision "not to adopt an innovation" (p. 177).

Based on the definition by Rogers (2003), the theory of diffusion of innovations is the most appropriate to support ICT integration in teaching and learning. In this study ICT is considered as the "innovation", integration in teaching and learning as the "diffusion" and the embracement of the innovation by both schools and society at large as the "adoption". In this study the theory predicts that use of ICT will initially be adopted by a small group

of innovative teachers and later diffused to other teachers.

Rogers (2003) used the word “innovation” and “technology” synonymously. For Rogers, “a technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome” (p. 13). It consist of two parts: hardware and software. Hardware is “the tool that embodies the technology in the form of a material or physical object,” and software is “the information base for the tool” (Rogers, 2003, p. 259). Software (as a technological innovation) has a low level of observability hence its rate of adoption is quite slow (Rogers, 2003). The theory has four elements in this order: Innovation, communication channels, time and social system. This theory defines five adopter categories: innovators, early adopters, early majority, late majority and laggards. This theory by Rogers (2003) supports the variable of ICT integration.

### Conceptual Framework



**Independent Variables      Dependent Variable**

**Figure 1: Conceptual Framework**

### Empirical Review

#### School Leadership for ICT

For effective ICT integration in education, there is need for school leadership to be able to guide the whole school into implementing it. A recent study

was conducted by a University of Namibia Masters student, Quest (2014) on how principals perceive implementation of ICT into school activities. The study was carried out in the Khomas Education Region of Namibia and adopted a qualitative case study design. A purposive sampling was adopted and selected 3 schools that met the required criteria together with their respective principals. The principals responded to a semi-structured interview and the findings thereupon revealed that principals in the region have positive attitude towards ICT although they face challenges in the implementation of ICT in school environment. Further, it was found that the principals were either computer semi-literate or computer illiterate. Thus, they were not able to act as instructional leaders in ICT implementation in teaching and learning (Quest, 2014).

Aloysius and Tan (2011) of Nanyang Technological University in Singapore conducted a study to investigate practices of distributed leadership and strategy of system differentiation in technology integration. The study was based on three Singapore schools. Each school adopted a different style of leadership and the findings revealed that: the school that demonstrated a top-down approach where the principal and the heads of department of ICT led the ICT leadership structure by directing and implementing ICT programmes and applications scored the lowest ICT mean score of 3.93; the school that demonstrated a segmentation distributed strategy where heads of departments for various subject domains set directions for technology integration with the principal playing a facilitative role scored an ICT mean score of 4.10; the school that demonstrated a functional differentiation strategy where all the departments were involved in the planning of ICT goals and initiatives at the same time scored the highest ICT mean score of 4.55. Aloysius and Tan (2011) conclude that there seems to be an association

between the various leadership practices and the scale and complexity of ICT integration in schools.

A study by Polizzi (2011) of Kore University of Enna revealed that school principals can foster the use of ICT at a strategic level and support the introduction of media literacy into teaching and hence they play an important role in technology and managing media integration into teaching. Polizzi (2011) conducted a study on the role of attitudes and additional variables of principals in influencing their support for ICT integration in Palermo, Italy. The sample population was 116 public schools and 95 principals responded to a self-assessment questionnaire on support behavior. It was found that support behaviors for principals on ICT integration depended on both individual-level and contextual-level variables. Contextual variables included the amount of ICT equipment available for teachers in their school, competence of teachers and frequency of use and attitudes of teachers towards the ICT usage while individual-level variables included attitudes of principals towards ICT integration into school teaching, exposure of principals to ICT training courses and their own perceptions on ICT competence.

Data analysis revealed that the amount of ICT equipment available for teachers and ICT competence among teachers and frequency of use influence the supportive behaviors of principals the most and no relationship between attitudes of teachers towards ICT integration in teaching and supportive behaviors of principals was established (Polizzi, 2011). Support of principals for ICT integration into teaching is associated with their attendance to ICT training courses; highly competent principals in ICT and frequent users tend to give stronger support for ICT integration and principals possessing positive attitudes towards ICT integration give stronger support than those with negative attitudes (Polizzi, 2011).

University of South Africa doctoral student Makhanu (2010) in her study to investigate the extent of ICT literacy in principals of secondary schools in Western province of Kenya found that there was a positive correlation between school performance and a principal's ICT application in school leadership functions, ICT knowledge and ICT access; about 27 percent of principals applied ICT in school leadership functions, 32 percent of principals were ICT knowledgeable and about 42 percent of principals had access to ICT. It was also found that the level of ICT training was part of the factors that influenced the level of ICT literacy among secondary school principals in Western Province in Kenya. However, the study failed to present accuracy in terms of data presentation since the percentages add up to 101 and not the supposed 100 percent.

#### **ICT Integration**

Wang and Woo (2007) in their study on systematic planning for ICT integration in topic learning considered ICT integration to be as old as other technologies such as televisions or radios. Wang and Woo (2007) describe integration as having a sense of completeness or wholeness by which all essential elements of a system are seamlessly combined together to make a whole. Further, they claim that integration does not only mean the placement of hardware in classrooms and that technologies must be pedagogically sound and go beyond information retrieval to problem solving.

Plomp et al (2009) in their study on cross-national information and communication technology observed that over the past three decades, governments and education systems around the world have regarded the use of ICTs as an important issue for improving the effectiveness of teaching and learning. As more and more technologies such as smart phones, net books, interactive whiteboards, digital video recorders become more available and affordable.

There is rapid expansion of computer networking capability in the educational system and hence there have been continued research efforts in investigating how teachers can use ICT to facilitate student learning (Lebanon et al, 2009; Newhouse et al, 2002). Development in computers, electronics, communication and other multimedia tools provide a wide range of interactive teaching and learning platform. The software packages, animations, simulations to teach various subjects, music, speech, image enhancements, multimedia networks, etc. create virtual realities and experience for the learners, which in turn, help in making learning a more direct, useful, and joyful. Learners' self-engaged learning is conceived as the core of good education.

ICT integration in teaching and learning process is undoubtedly a growing field. However, it seems that the same integration is not a simple application. In this regard Bhasin (2012) on her study on ICT integration in enhancing teaching and learning asks, "How should ICT be used in the teaching and learning process so that it contributes to the learning of the student?" This becomes an increasingly important question and the answers may vary according to the point of view on the integration process. According to Bhasin (2012) there are two points of view that are generally taken by two groups. The first is the technological point of view. This view supports the integration of technological systems and infrastructures into the educational environment. The second is the pedagogical point of view. The view supports the ICT integration materials and programs in terms of social constructivist learning principles (Richards, 2006). The convergence of both points of view support effective connections between suitable technology for pedagogical principles and content to design learning environments.

Bhasin (2012) in her study on ICT integration in enhancing teaching and learning noted that teachers need to know why and how to use ICT resources and applications. A study by Usual et al, (2007) on ICT in the learning-teaching process found that teachers expressed belief in the benefits of ICT integration but did not know how to realize that. However, when both "why and how" are clear the teachers can be able to select appropriate teaching materials, undertake effective lessons using ICT, contemplate effectively about their lessons and be able to undertake class management rules and at the same time overcoming the difficulties encountered in ICT supported environments.

#### **RESEARCH METHODOLOGY**

A descriptive research survey design was adopted for this study. This is because it accommodated both qualitative and quantitative methods of data collection hence acquiring a lot of information through a descriptive process.

The target population of this study comprised 185 teachers; (37 head teachers and 148 class teachers) from the 37 iMlango project schools in Makueni County. The unit of analysis was teachers and head teachers while the unit of observation was iMlango project schools.

The sampling frame consisted of 2 categories of schools as follows: mixed day / boarding and day only schools.

This study involved both qualitative and quantitative data, which was collected by use of semi-structured questionnaires. The study used two questionnaires: questionnaire 1 for head teachers and questionnaire 2 for class teachers. Primary data was collected using self-administered semi-structured questionnaires. Secondary data was collected through rigorous review of literature from past published journals, books and other scholarly and academic articles relating to ICT integration in teaching and learning. Pilot study was conducted to determine if there were flaws, limitations, or other



weaknesses within the data collection instrument to make the necessary revisions prior to the implementation of the study. The study took 10% of the target population not part of the sample for pilot testing. The findings of the pilot study were not included in the actual study.

The study used the test-retest reliability method to measure the reliability of the data collection instruments. The test was administered by giving the same test to the same respondents within two weeks.

The data collected from the respondents were first checked to ascertain completion and accuracy. Quantitative data was analyzed using Statistical Package for Social Science (SPSS) version 21. Analysis of variance (ANOVA) was used to test the significance of the relationship between variables

#### **DATA FINDINGS, ANALYSIS, PRESENTATION AND DISCUSSION**

Out of the 90 questionnaires (18 for head teachers and 72 for class teachers), 73 questionnaires were filled and returned (13 from head teachers and 60 from class teachers). This means that the survey response rate was 81%. On the gender of the respondents, among the 13 head teachers surveyed on, 77% were male and 23% were female. The results indicate that there are more male head teachers in iMlango project schools in Makueni County than there are female head teachers. Among the 60 class teachers surveyed on, 67% are female and 33% are male. It can be seen that there are more female class teachers in iMlango project schools in Makueni County than there are male class teachers. On the age of the respondents, of the 13 head teachers surveyed on, 54% were of age 41-50 years, and 31% were of age 31-40 years. Meanwhile, 15% of them were aged 51 years and above. These results indicate that most of the head teachers in iMlango project schools in

Makueni County were aged between 31 and 50 years. Among the 60 class teachers, 57% were aged between 31 and 40 years and 19% are of age 41-50 years. Meanwhile, 14% of them were aged 51 years and above while only 10% were aged 0-30 years. The results indicate that most of the class teachers in iMlango project schools in Makueni County were aged between 31 and 50 years. On the level of education, among the 13 head teachers surveyed on, 5 had a Diploma and another 5 had a Bachelor's degree as their highest level of education. Meanwhile, 2 of them had a certificate and only 1 had attained a Master's degree as the highest level of education. The results indicated that a greater percentage of the head teachers in iMlango project schools in Makueni County had attained Diploma or Bachelor's degree as the highest level of education. Among the 60 class teachers surveyed on, 47.6% had reached certificate level of education, and 28.6% had Bachelor's degree as their highest level of education. Meanwhile, 19% had diploma and 4.8% had Master's degree as their highest level of education. These results indicate that a greater percentage of the class teachers in iMlango project schools in Makueni County had certificate and bachelor's degree as their highest level of education. On roles of head teachers, 92% indicated that besides being administrators, they were also involved in the teaching role. Meanwhile, only 8% indicated that they were not involved in teaching role. It indicates that most of the head teachers in iMlango project schools in Makueni County also had a teaching role besides them being administrators. It could be because of the limited number of teachers in the respective schools.

On ICT training, among the 60 class teachers surveyed on, 71% had ICT training in computer packages certificate, and 14% have no training in ICT training. Meanwhile, 10% of them had ICT training in other fields, and 5% had diploma in ICT training. These findings indicate that a greater

percentage of class teachers in iMlango project schools in Makueni County had computer packages certificate as the highest level of ICT training. On ICT experience, among the 60 class teachers surveyed on, majority of them, corresponding to 41.7% had 1-5 years' experience in ICT. Second in rank are those with a 1 year experience with ICT, corresponding to 28.3%. Meanwhile, 25.0% had over 5 years' experience with ICT with only 3.0% demonstrating having no period of experience with ICT.

### School leadership for ICT in Makueni County

Among the 13 head teachers surveyed on, 53.8% spent more than 10 days on ICT planning in a term. Meanwhile, 23.1% spent 10 days on ICT planning in a term and another 23.1% spend 5 days on ICT planning in a term. These results indicated that most of the head teachers in iMlango project schools spent more than 10 days on ICT planning in a term. This was an indication of greater support of head teachers for ICT use in these schools.

**Table 1: How many days on average do you spend on ICT planning in a term?**

			Frequency	Percent	Cumulative Percent
Valid	5 days	3	23.1	23.1	
	10 days	3	23.1	46.2	
	above 10 days	7	53.8	100.0	
	Total	13	100.0		

As can be seen from table 2, the mean value of every item in the scale of school leadership for ICT was above 2.0, indicating the presence or evidence of school leadership for ICT in iMlango project schools in Makueni County.

As depicted in table 2, most of the head teachers indicated that they used technology for communicating and networking with teachers and pupils, parents, and the school management and educational administrators. Besides, the findings demonstrated that a majority of the head teachers in iMlango project schools frequently used technology for organising their work and keeping records, preparing lessons, finding digital learning resources, and designing and producing their own digital learning resources. Further, the findings demonstrated that head teachers in iMlango project schools used technology to support various teaching and learning styles, to facilitate the specific concepts or skills, to support activities that facilitate critical thinking, to support creativity and to foster

pupils' ability to use technology in their own learning. These findings indicated that head teachers in iMlango project schools had high ICT literate levels, thus acted as models of technology use in their respective schools. This keeps Quest (2014) postulation that school leaders and head teachers who are comfortable in using technology and who are computer literate act as models of technology use in their respective schools.

According to appendix 8, most of the class teachers surveyed on revealed that ICT resources such as local area network (LAN), internet-wireless network, desktop computers, laptop computers, digital projectors, online content, and interactive whiteboards are available for use in their respective schools. Besides, majority of the class teachers affirmed that they and their pupils had used these ICT resources. However, access to some of these ICT resources was sometimes difficult.

**Table 2: School leadership for ICT**

		N	Minimum	Maximum	Std. Mean	Std. Deviation
Use of technology for communicating and/or networking	13	2.00	4.00	3.6154	.65044	
Use of technology for communicating and/or networking with teachers and pupils	13	2.00	4.00	3.5385	.66023	
Use of technology for communicating and/or networking with parents	13	1.00	3.00	2.4615	.66023	
Use of technology for communicating and/or networking with school management and educational administration	13	2.00	4.00	2.9231	.49355	
Use of technology as a management tool	13	2.00	4.00	3.0769	.64051	
Use of technology as a management tool for organising your work and keep records	13	1.00	4.00	2.8462	.98710	
Use of technology as a management tool for preparing lessons	13	1.00	4.00	2.7692	1.01274	
Use of technology as a management tool for finding digital learning resources	13	2.00	4.00	3.3077	.63043	
Use of technology as a management tool for designing and producing your own digital learning resources	13	1.00	4.00	2.5385	.77625	
Use of technology for future integration of technology	13	2.00	4.00	2.8462	.55470	
Use of technology to facilitate teaching specific concepts or skills	13	2.00	4.00	3.3077	.75107	
Use of technology to support various teaching and learning styles	13	2.00	4.00	3.4615	.66023	

Use of technology to facilitate teaching pupils with disabilities (cognitive, physical, behavioural)	13	1.00	4.00	2.3077	.85485
Use of technology to support activities that facilitate critical thinking	13	2.00	4.00	2.9231	.64051
Use of technology to support creativity	13	2.00	4.00	2.9231	.75955
Use of technology to foster pupils' ability to use technology in their own learning	13	2.00	4.00	3.3077	.63043
Valid N (listwise)	13				

**ICT integration in teaching and learning in iMlango project schools in Makueni County**

To investigate ICT integration in teaching and learning in iMlango project schools in Makueni County, frequency analysis and mean analysis were conducted. The results are as shown in tables 3.

As drawn from table 3, the largest percentage of the class teachers surveyed on, corresponding to 47.6% agreed that in their respective schools the administration gave enough support to teachers for

the ICT integration in teaching and learning. Second in rank, corresponding to 42.9% strongly agreed that in their respective schools the administration gave enough support to teachers for the ICT integration in teaching and learning. Only 4.8% of the respondents disagreed or strongly disagreed that in their respective schools the administration gave enough support to teachers for the ICT integration in teaching and learning. These results indicated the presence of ICT integration in teaching and learning in most of the iMlango project schools in Makueni County.

**Table 3: Administration support for the ICT integration in teaching and learning**

		Frequency	Percent	Cumulative Percent
Valid	strongly agree	27	42.9	42.9
	Agree	29	47.6	90.5
	Disagree	3	4.8	95.2
	strongly disagree	3	4.8	100.0
	Total	60	100.0	

## **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **Summary**

#### **School leadership for ICT in iMlango project schools**

From the descriptive results, the study found that most of the head teachers in iMlango project schools spend more than 10 days on ICT planning in a term. This was an indication of greater support of head teachers for ICT use in these schools. Besides, most of the head teachers used technology for communicating and networking with teachers and pupils, parents, and the school management and educational administrators. Also, majority of the head teachers in iMlango project schools frequently used technology for organizing their work and keeping records, preparing lessons, finding digital learning resources, and designing and producing their own digital learning resources. Further, most of the head teachers used technology to support various teaching and learning styles, to facilitate the specific concepts or skills, to support activities that facilitated critical thinking, to support creativity and to foster pupils' ability to use technology in their own learning. This was an indication of greater support of head teachers for ICT use in these schools. In this respect, the school leadership in most iMlango project schools acted as models of ICT use. This was consistent with Quest (2014) postulation that school leaders and head teachers who are comfortable in using technology act as models of technology use in their respective schools.

#### **ICT integration in teaching and learning in iMlango project schools**

From the study results, it was found that most schools in iMlango project in Makueni County were putting an effort to integrate ICT in teaching and learning. The school leadership, which was

demonstrated through head teachers embracing ICT, ICT support behaviour of head teachers and their ICT literacy levels were some of the key factors demonstrating that ICT was being integrated in teaching and learning in iMlango project schools. According to Aloysius and Tan (2011), school leadership for ICT is a vital factor that supports ICT integration in teaching and learning in schools.

### **Conclusions of the study**

The study established that school leadership for ICT positively impacted on ICT integration in teaching and learning in iMlango project schools. The head teachers in most of these schools were computer literate and thus highly engaged in the use of ICT instruments and place much emphasis on the application of ICT in their teaching and learning. This consequently supported the integration of ICT in teaching and learning in these schools.

### **Recommendations of the study**

The school leadership for ICT in iMlango project schools should be strengthened. In this respect, the head teachers in these schools need to enhance their computer literacy levels through taking refresher computer courses. Besides, they need to interact with and use ICT instruments such as laptops and the internet more often in their leadership and teaching processes. This will help them emphasise more on the need for the teachers in their schools to frequently use the ICT instruments in their teaching processes. This will in turn increase the level of ICT integration in teaching and learning in these schools.

### **Recommendations or further researches**

Based on the findings and conclusions of this research study, it is clear that there is a changing landscape with regards to education management and ICT integration in teaching and learning. What was viewed critical in past years could not

necessarily be the same in current times and even in the future. Thus, it is essential for other studies to be conducted on the emerging trends in the education management and ICT integration in teaching and learning. The current study has contributed to the existing literature through establishing that school leadership for ICT is a key determinant of ICT integration in teaching and

learning in schools in the Kenyan context. However, the study suggests that other factors to be considered such as background in formal computer training, commitment to professional learning, quality of software and hardware, incentives to change, and ease of use of technology among others that can also influence ICT integration in teaching and learning.

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