

Role of Information Communication Technology in Enabling Management of Day Secondary Schools

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ABSTRACT

World over, the teaching and learning institutions have been redesigning their methodologies of service delivery using the modern and efficient platform of information technology propelled by the fourth industrial revolution paradigm shift. The study sought to establish the role of information communication technology as an enabler in the management of secondary school affairs. The study sought to: Establish the availability of information communication technology (ICT) used in the day to day teaching and learning services at day secondary schools; Find out the status of day secondary schools' principal's current awareness on the use of ICT in the day to day running of their schools' affairs; and assess the extent of ICT employability in the management of school records. The study employed descriptive survey and systematic random sampling drawing a sample of 110 respondents who responded to interview schedules and questionnaires. The study established that 49% of the teaching force in day secondary schools were had bachelor's degree. On ICT integration, 87% of the sampled academic and examination departments conducted their activities through ICT processes. The study concluded that information communication technology is as an indispensable tool in the daily management of secondary schools, teaching and learning process during the 4th industrial revolution era of information technology. Finally the study recommended that schools should endeavour to retool teachers on ICT skills and competencies as enablers for 21st century pedagogies for teaching and learning.

Key words: Availability, information communication technology, use of ICT, management of school records

INTRODUCTION

The world's rapid technical advancement and economic expansion necessitate a significant investment in education. With the increase of knowledge, technical advancements, and globalization challenges, school administration has become a core component and a major challenge, requiring new planning and technological adaptation to keep up with technological dynamism. Teachers are the implementers, while school principals are the planners and managers, thus both must learn and use new technologies to manage schools and classroom instruction. The principal of a school is vital to the implementation of educational reform (Mulwa, and Kyalo, 2015; and Tezci, 2011).

Over the last three decades, governments and educational institutions all over the world have viewed the use of ICTs as a critical tool for improving teaching and learning. According to research, leadership effectiveness has a significant impact on school and learner results (Lu, Tsai, & Wu 2015). It is well recognized in many areas of the world, including South Africa, that schools require caring leaders and management if they are to provide the best, most promising education for their students. Learners are engaged in utilizing ICT as a tool to learn when teachers know how to infuse and use ICTs in their classrooms for teaching (Lai, 2017). However, there have been little development and awareness in-terms of how teachers conduct lessons today

without use ICT resources. ICTs should be seamlessly integrated into the classroom's regular learning process. ICTs, when correctly employed, have considerable promise for improving teaching and learning, as well as shaping work-force opportunities, according to most education professionals. A school administrator is intended to establish a pleasant learning environment in which students can actively participate in the learning process and achieve success. When a principal employs technological teaching aids like cell phones, laptops, podcasts, Facebook, radios, or television to enhance learning and meet the different requirements of students, he or she can create a pleasant environment (Mulwa, & Kyalo, 2015).

OBJECTIVES

- i. Establish the availability of information communication technology used in the day to day teaching and learning services at day secondary schools.
- ii. Find out the status of day secondary schools' principal's current awareness on the use of information communication technology in the day to day running of their schools' affairs.
- iii. Assess the extent of information communication technology integration in the management of school records.

LITERATURE

ICT management systems aid in financial planning by enhancing financial transactions in schools using tailored management information systems (MIS). In light of local circumstances, the nature of financial management differs from school to school. The school's financial manager (bursar) will be in charge of implementing the school's finance policy, financial processing, and budget monitoring on a daily basis, as well as relieving the head teacher of some additional financial and resource management responsibilities. ICT adoption is quickly becoming an essential aspect of school life and an unavoidable part of financial management. ICTs have proven helpful for storing and evaluating data in school financial administration, which includes budgetary allocations, expenditures, students' fees payment, and general accounting, according to Oyier et al. (2015). Furthermore, according to Barakabitze (2019), the budgeting process in schools, as a component of financial planning and control, necessitates the availability of multiple sources of information, which may be best accessed through the integration of ICT into school management systems.

Tanui (2016) argued that ICT has enabled job allocation, attendance, and leave management, as well as performance appraisal, resulting in increased efficiency in task distribution, data collecting, and management. ICT assists in staff management, according to Gavua, Okyere-dankwa, and Offei (2016), by processing massive records in a quick, meticulous, and flawless manner, making data retrieval easier. Tonui, Kerich, and Koross (2016) argued that ICT can aid in the provision of a good communication system for acquiring and disseminating timely information to internal and external users in all institutions, including schools.

Maki (2018) claims that the Cyprus Ministry of Education deployed a computer application developed in Greece to handle information in secondary schools in regard to students and teachers' data in a paper given in Cyprus on ICT for administration and management of Cyprus secondary schools. Schools in Cyprus use ICT for managerial purposes such as student management, (enrollment, absenteeism, grades, final exams), personnel management (absenteeism), human resource management and timetabling.

The administration departments in secondary schools deal with complex programs involving student information such as date of birth, year of entrance, class, and fees paid and balance. The department also handles other aspects of the school, such as the number of instructors, the subjects they teach, and other details, as well as non-teaching personnel details. The vast majority of schools have built and maintained a record-keeping system. School administrators, along with the principal and accounting clerks, are in charge of preparing the school budget, which begins with the creation of some basic assumptions about the

institution, which are usually based on previous experiences with the school's financial situation. When financial records are computerized, ICT assists administrators in retrieving, evaluating, and adjusting information pertaining to the school budget (Tonui, Kerich and Koross 2016).

Teachers have been encouraged to keep better records and, more crucially, to use the information obtained as a consequence of using computers to simplify the process (Mutisya and Mwanja, 2017; and Gavua, Okyere-dankwa, and Offei, 2016). There is a considerable positive correlation between administrators' usage of ICT and their communication efficacy. ICT aids in the simplification of human resource management operations, particularly in the area of communication. ICT can help with instructional supervision by making the decision-making process easier, as well as planning, organizing, communicating, influencing, coordinating, and assessing it. Information and communication technology (ICT) is a critical instrument for disseminating information. This is because it allows the employees to share whatever knowledge is accessible to them as soon as they log in, as they read, learn, and act (Gavua, Okyere-dankwa, and Offei 2016).

The goal of instructional management is to improve teaching and learning processes by focusing on approaches to instill excellence in instruction quality. According to Wahome (2017), today's improvements in ICT need instructors presenting a more efficient and current instructional management to equip students with information and skills that promote creativity and spur progress. This is in keeping with Muchangi's (2015) argument that schools are created to educate students, train for job, and foster innovation, and that management systems cannot be complete without including ICT. According to Tonui, Kerich, and Koross (2016), the instructional process is rapidly changing as a result of the integration of ICT, with blackboards being replaced by smart boards, books and notebooks being replaced by flash discs and memory cards, overhead projectors being replaced by data projectors, and text-based assignments being replaced by presentations and slide shows, which are more stimulating and imaginative. According to Lu, Tsai, and Wu (2015). Instructional management is guiding and persuading teachers and students to strive for acceptable teaching and learning behaviors in order to meet educational goals and objectives, a gap that ICT is successfully addressing. Lu, Tsai, and Wu (2015) believe that ICT can help schools streamline instructional management and improve the use of physical and human resources in order to effectively lead teachers and students. Secondary schools can handle internal and external examination activities more efficiently by using ICT to schedule classrooms and other resources.

In January 2006, Kenya issued a National ICT strategy with the goal of improving Kenyans' livelihoods by assuring the availability of accessible, efficient, and inexpensive ICT services. "To integrate ICT in education and training for improved access, learning, and administration," reads the policy's mission statement (MoE. 2018-2022 and Republic of Kenya, 2020). The policy is divided into various sections, but the section on Information Technology lays out the goals and strategies for using ICT in education. The National ICT Strategy for Education and Training, a stakeholder-driven five-year strategy document, was introduced by the Ministry of Education in June 2006. The document was created in accordance with Kenya's national information and communication technology strategy, the Kenya Education Sector Support Program (KESSP), the E-Government Strategy, and the Millennium Development Goals (MDGs).

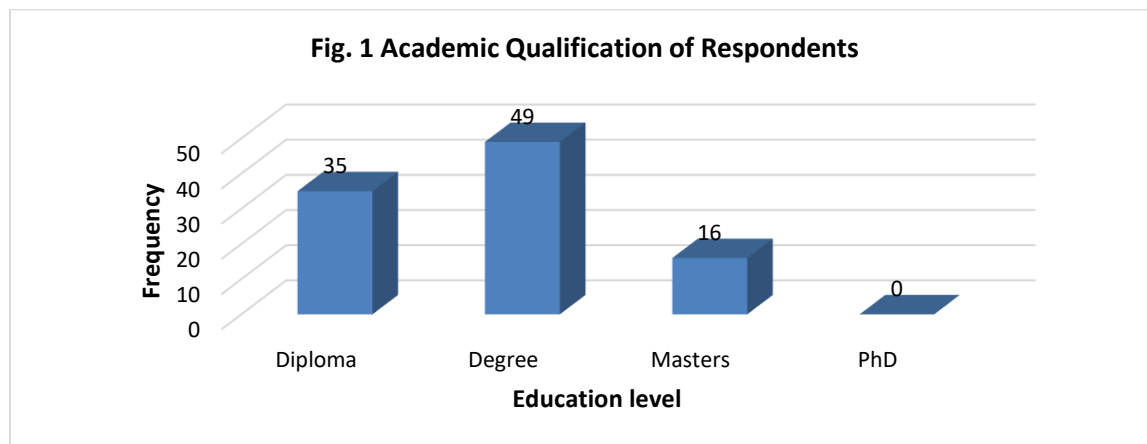
METHODOLOGY

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 used systematic random sampling and purposive sampling techniques to obtain a total sample of 110 respondents comprising of school principals, heads of departments, class teacher in-charge and board of management members. The study used to interview schedules, questionnaires and document analysis to collect data.

FINDINGS

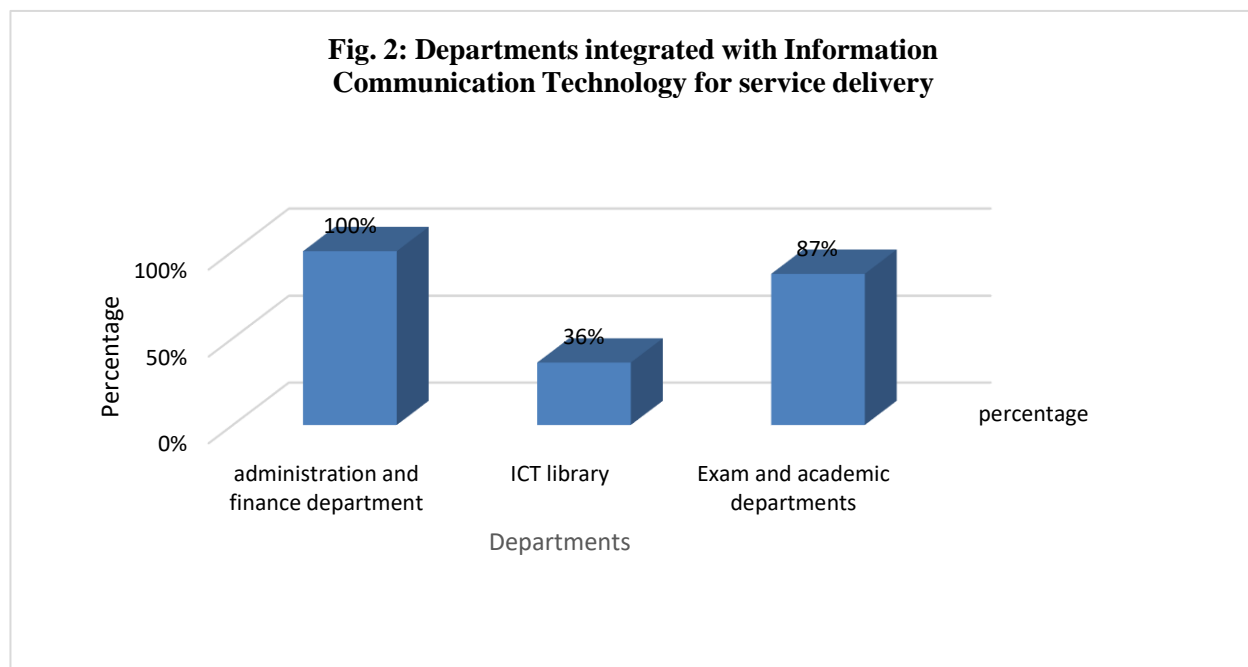
Educational qualifications of Respondents

The study sought to establish the level of education of the respondents. The findings are shown in the figure 1.



From the figure 1 above, the respondents with degree formed the majority with 49%, diploma having 35% and Masters having 16%. From these findings it is clear that all the respondents were trained and were therefore able to understand and articulate strategies that could improve implementation of ICT integration in their schools. There were more principals with master’s degrees compared to senior teachers and assistant teachers. This means that a good number of the principals had passed through a system of education where different communication channels about the use of ICT have been employed hence, they were aware of technological changes in the educational sector. This was likely to influence the ICT integration.

Departments integrated with Information Communication Technology for service delivery



Departments integrated with ICT

From figure 2; 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. However, the researcher during filed

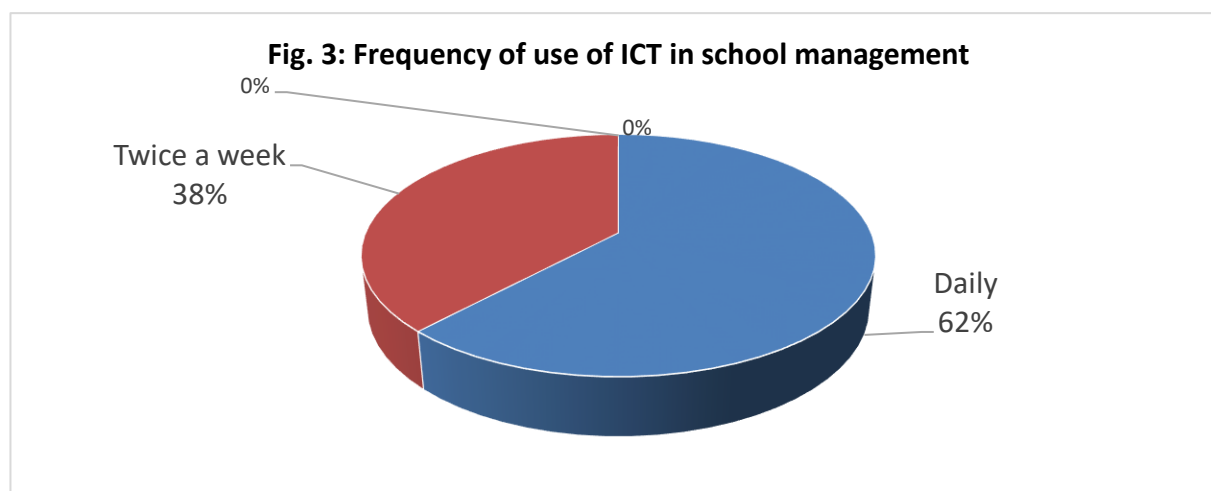
inquiries in schools observed that a number of schools had quite numbers of computers but most of them were not in use. It was established that some teacher had their personal computers including laptops and tablets and other ICT devices like printers. The researcher tried to ask as to why they preferred 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.

Therefore, Maki (2018) stipulates that ICT integration plays a vital role in supporting powerful and efficient management and administration in the education sector. Consequently, the use of ICT in managing teaching, learning and other school data is the way to go under the present generation of soft information.

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.

Frequency of use of ICT in school management



From figure 3 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 Lai (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. Lai (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 1.

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

Source: Field data 2022

The data in 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.

The results of this study concur with those of Manduku, Kosgey & Sang (2018) who confirm that ICT is mostly used for record storage purposes, timetabling, communication and secretarial work such as typing examinations and staff meeting minutes in that order. Analysis of both academic results and financial accounting, use of internet and power point presentations recorded very low ratings. World Bank (2017), indicate that computers have made it possible for teachers to maintain accurate student records, track and analyze performance and use the resulting information to make decisions about how to individualize instruction. These results are in agreement with Maki (2018) who identify five attributes of innovations that help to explain different rates of adoption. The first attribute states that the innovation must have some relative advantage over an existing innovation or the status quo. Therefore, if an individual perceives that the innovation has greater advantages, then its adoption will be rapid.

Status of Principal’s current awareness on the use of Information Communication Technology in the daily running of school’s affairs

Through interviews with principal respondents, it was evident that many school principals have low levels of confidence and competence for effective use of ICT in school leadership. School principals not only need formal training, but also sustained and ongoing support from their colleagues to help them learn how best to integrate technology into their administrative duties. There is dire need for creating awareness in the minds of principals of secondary schools on the application of ICT in daily administration of schools and the need for developing competency in the use of ICT appliances for effective administration of schools. Some principals expressed their fears in the use of ICT in managing schools data. One principal lamented that: a

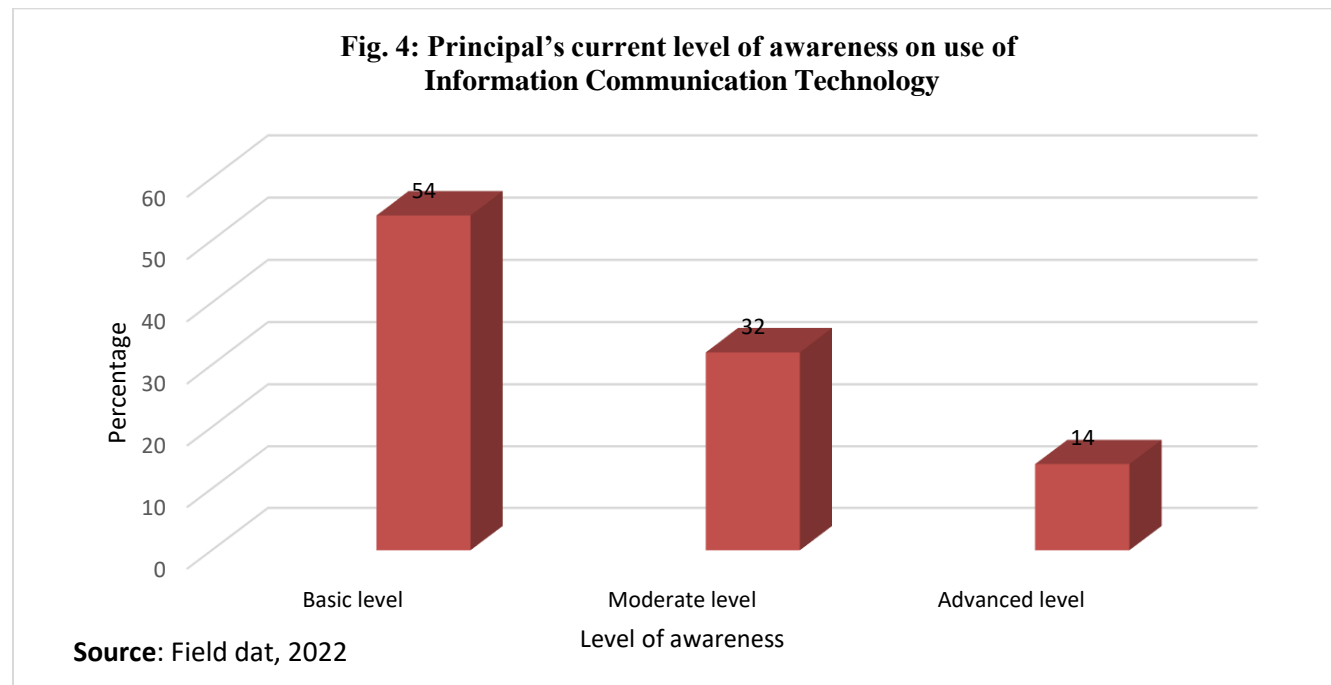
school could lose its data to unwanted persons because today there are no trustworthy and reliable persons to safeguard the public good. Even in most revered institutions, what we hear is information is being leaked right and left by employees of such organisation due its ease of accessibility through computers. While these sentiments could be true, the developers of ICT have developed strong mechanism for data security at all times, however, its dependent upon the user's compliant to the security system (Rosencrance, 2020).

Therefore, school principals as leaders in the school must be aware of developments and be equipped with ICT knowledge. This knowledge can be changed into an endless ordinary reserve for any nation, and key to building it is that students develop 21st century skills, namely technology and media literacy (Ngugi, 2012). According to Edward (2015), the ICT literacy among the principals influences the integration of ICT in administrative task areas. This is manifested by the fact that principals who have integrated ICT in their administrative task areas are found to have participated in ICT training program. School leaders should use technology themselves, develop an awareness of how technology can be used and model the practice to the school staff.

Current level of awareness on the use of Information Communication Technology in the daily running of school's affairs

A school principal is expected to create a positive learning environment that enables learners to participate actively and to achieve success in the learning process. Thus, his level of awareness and ability to use ICT is greatly affects the level of integration of ICT in management of schools. This study aimed at determining the status of principal's current level of awareness on the use of ICT in the daily running of school's affairs. Figure 9 shows the principal's current level of awareness.

Principal's current level of awareness on use of Information Communication Technology



From figure 4, 54% of principals stated that they have basic level of awareness on use of ICT, 32 percent had moderate level of awareness while 14 percent had advanced level of awareness on use of ICT in daily running of school's affairs. The findings show that majority of the principals have basic level of awareness

on the use of computers in school management. The level of awareness of the staff especially the managers on the use of technology encourages their attitude to embrace the adoption of technology in management.

Principals need to be trained on how to use the modern types of ICT. Through training, the principals are able to acquire new skills on the technology use and this will make them charm for the adoption of technology in management. Adequate training according to Wahome (2017), is the training that one can rely on and can feel competent and confidence with the kind of training. Inadequate training is equivalent to no training since it even confuses the trainees more and makes them getting the real concept hard for them. From the findings, it is evident that principals do not get enough training on the use of computers in management practices and thus, majority have basic level of awareness.

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

In the recent past, there has been a rapid increase in the use of ICT in educational management. This is attributed to its efficiency and effectiveness in managing educational data. Initially, ICT was purposely used to automate school office activities such as data entry and storage. However, the power of ICT to aid in analysis, planning, and decision making has changed the perception of a majority of school managers who now view ICT as a valuable tool.

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)

CONCLUSIONS

The study concluded that firstly, information communication technology is as an indispensable tool in the daily management of school, teaching and learning process during the 4th industrial revolution era of information technology.

Secondly, that teachers teaching in secondary schools should adopt a paradigm shift from classical methods of teaching to modern methods of teaching in order to implement ICT integration effectively. This will enable them to cater for the needs of 21st century learners.

Finally, it was concluded that availability of ICT infrastructure, training and principals' level of awareness greatly influenced the integration of ICT in managing public day secondary schools.

RECOMMENDATIONS

Finally the study recommended that schools should endeavour to retool teachers on ICT skills and competencies as enablers' of 21st century pedagogies for teaching and learning. Secondly, the principles

through boards of management should plan and equip schools with ICT facilities to enable delivering of the school mandate. The principals as head of institutions should lead the paradigm shift from classical methods of service delivery to modernized ICT ways of delivering services in school.

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