INFLUENCE OF PRINCIPALS' DIGITAL COMMUNICATION LITERACY ON ICT INTEGRATION MANAGEMENT OUTCOMES IN PUBLIC SECONDARY SCHOOLS IN KITUI CENTRAL SUB COUNTY, KENYA

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IPRJB
INTERNATIONAL PEER REVIEWED
JOURNAL AND BOOK PUBLISHING

INFLUENCE OF PRINCIPALS' DIGITAL COMMUNICATION LITERACY ON ICT INTEGRATION MANAGEMENT OUTCOMES IN PUBLIC SECONDARY SCHOOLS IN KITUI CENTRAL SUB COUNTY, KENYA

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Abstract

Purpose: Integration of ICT in educational management is becoming an effective factor in running schools in Kenya and yet there are many public secondary schools which are still stuck in the inefficient analogue methods in Kitui Central. The aim of this investigation was to look at the influence of principals' digital communication literacy on ICT integration management outcomes in public secondary schools in Kitui Central Sub County, Kenya.

Methodology: The study was guided by Connectivism and Diffusion of Innovations theories. The study embraced the concurrent triangulation design. The target population was 301 participants which comprised of 50 principals, 200 Heads of departments, 50 BoM chairpersons and 1 ICT Sub County Director. The sample was 172 participants comprising of 28 principals, 115 HoDs, 28 BoM chairpersons and 1 ICT director. The principals were sampled using purposive sampling as well as the BoM chairpersons. The HoDs were randomly sampled. There was questionnaire for HoDs and and interview schedule for principals. Quantitative data was analyzed in descriptive statistics and presented in tables, frequencies and percentages. Qualitative data was analyzed thematically and presented in verbatim citations as well narratives.

Findings: From the findings, it was accepted that most principals were familiar with computer operations. However, there were issues when it came to typesetting, Skype, organizing, copying, pasting and navigation of files using windows. Consequently, there was need to beef up digital communication among the principals.

Unique Contribution to Theory, Policy and Practice: The Connectivism and Diffusion of Innovations theories were used. The first one is about making decisions on the fast-changing realities while the second is on generalizing inventions in communities and accepting or rejecting them. The theories helped making decisions and accepting new changes. The study established that principals still lacked digital communication literacy, calling for more training in ICT. The theories were validated in that there was need to make decisions on new technology and more importantly, accept these changes like ICT. It was recommended that the government should put in place modalities of improving digital communication literacy.

Key Words: *Communication, Digital, ICT, Integration, Literacy*

INTRODUCTION

Computer literacy and ICT integration management outcomes are currently being discussed as modern ways of educational institutions' leadership. The real novelties in Information and Communication Technologies started by expansion of electronics being in solid state integrated circuits. They have electric power in small forms which facilitates generating, receiving, recording, storage, processing, transmitting or displaying of analogue digital information (McHenry, 2016 & Business Dictionary, 2018). Computer variations have progressed and every one reflects a modification to the hardware of diminished magnitude but with enlarged abilities to regulate computer operations as seen by Hwee *et al* (2017). Electronics contraction henceforth microelectronics reduction and the calculating capabilities of computers and the worldwide reach of telecommunication services, have significantly changed people's ability to independently obtain, stock, do manipulation, utilize and distribute information in numerals and texts, pictures as well as sounds as it has been established by (Freeman, 2016).

The demands of the twenty-first century dictate that learners, teachers and administrators in educational institutions must be well prepared to sufficiently face the demands of the new info era (Anderson & Dexter, 2015). The 21st Century skills set for life and work are best developed using the intense learning opportunities presented by computer electronics communication. Osunwusi and Abifarin (2017) stress that the capability to discover, operate and utilize information should essentially be based on computer literacy, that, in its elementary stage, included the capability to utilize the modern technology of computers to efficiently perform a diversity of responsibilities linking to the storing, processing, and manipulating material. Computers are scientific machines used to do tasks or calculations following set commands or programming (Business Dictionary, 2018).

As regards worldwide acceptance of ICT in education universally, Singapore and Sweden are on the top positions according to Global Information Technology Report (2010-2011) as the most innovating and digitalized states. There are similar countries in Europe and North America. There are nations in Asian countries who are likewise leading in utilizing ICT to improve their economy. Key theme in education system in Singapore is her focusing on incorporation of ICT in the class level. Teachers, institutional heads and students' usage of ICTs is from the foundation of education system in Singapore (Hwee *et al*., 2017).

The institutional management is a significant aspect in the workable incorporation and management of ICT in school administration (Afshari, 2017). As managers of institutional progress and ICT incorporation management, heads are expected to be proficient in computer use (Thannimalai & Raman, 2018). In a similar sentiment, Roblyer and Doering (2016) posit that heads are supposed to work as technological experts and instructors as implementors, to offer the skills and knowledge for education in this current century. They further noted that, a head's duty was getting even more problematic as institutions were expected to equip the students with the essentials in ICT technology ready to meet the demands of digital economy. Therefore, in order to motivate, guide and spearhead initiatives for teachers to incorporate technology in teaching, principals should possess adequate ICT knowledge and skills. However, Thannimalai and Raman (2018) observe that, though principals have been formally entrusted to offer leadership in

technology development, a great number of them have basics or proper skills to make them assured while working with technology.

Statement of the Problem

Influence of principals' digital communication literacy on ICT integration management outcomes in public secondary schools in Kitui Central Sub County should be witnessed. Referring to Census Report 2015/2016 (MoE, 2018) Kitui Central Sub County public secondary schools had the most varied report concerning the extent of ICT integration management outcomes in school administration, teaching and learning. The report indicated that while some schools were well endowed in computers and ICT connectivity, 70 % of them operated with only one or no computer at all. Several studies have been done in the area focusing the extent of ICT incorporation in institutional management including learning and teaching (MoEST, 2017) and principals' related factors on ICT integration management (Angeline *et al*, 2017). However, none of these studies have focused on the school principals' computer literacy influence on ICT integration management hence creating a knowledge gap. Therefore, there was a need for this study to unearth the interventions that may enable the principals to acquire necessary computer skills to ease the problem. If this is not done, there would be negative consequences which will make the school leaders and management incompliant with the digital world especially during and post COVID-19 as ICT integration in management has proven to be a necessity. If nothing is done to address this issue, there will be dire consequences since the school systems will not operate efficiently and promptly.

LITERATURE REVIEW

This section begins with the theoretical framework of the two theories use in the study. These are the connectivism and diffusion of Innovation theories.

Connectivism Theory

Connectivism is led by the understanding that making decisions is grounded on fast-changing practicalities. Innovative information is recurrently attained. The capability to draw differences between significant and insignificant information is quite important. The capability to identify when new information changes the scenery founded on decisions made in the past is likewise vital. This theory allows adults to arrange themselves and learn at their own pace. The commencement of Connectivism is the person concerned. Personal knowledge includes a networking, which feeds into establishments and schools, which in turn will feed again into the networking, and continue to offer learning to the person. This cycling of knowledge growth, personal to networking to organization permits students to stay informed in their area by these connections they have initiated. An actual test for whatever learning theory is to activate knowledge that is known at the point of application. When knowledge, nevertheless, is needed, but not known, the capability to plug into sources to reach the necessities becomes a critical skill. As knowledge grows continuously and develop, attainment to what is required is more vital than what the learner presently has.

Diffusion of Innovation Theory

The study was premised on Diffusion of Innovations Theory (DOI) by Everett Rodgers (1962). The DOI theory as explicated in the book *Diffusion of Innovations*, is a group of generalizing concerning the distinctive spreading of inventions and inclinations within a communal organization and consequently, clarifies why a number of innovations are accepted while others are disregarded or take a longer to be accepted (Rodgers, 1995). More significantly, DoI clarifies how communication networks and opinion leaders shape acceptance of concepts and technologies in a group like the institutions (Koperlainen, 2014). Diffusion is the procedure in which an invention is linked to particular channels over time amongst the associates of a societal system while invention is an opinion, procedure, practice or device professed as novel by a person or societal unit of adoption (Rogers, 1995).

The theory forecasts that media and interpersonal contacting of a lead person such as a principal, offer info and effects views and judgments of prospective utilizers and facilitators. Principals, since they are opinion leaders, can exercise impact on staff, students and other school members to adopt an innovation. It therefore, follows that when a principal is proficient in computer use and embraces ICT, there is a likelihood of high rate of diffusion of innovation among all members in the school community. The study was angered on DOI theory which supports computer literacy and ICT.

DoI theory portrays a weakness by simply categorizing adopters short of explaining the fundamental clarifications as to why and how persons accept various technological innovations (Chile, 2012). It is simplified to emphasize only on an innovation ignoring the multifaceted societal, cultural and economic features while endeavoring to explain failed attempts of diffusion. Poor institutions find little significance for social networking and latest wireless internet. Moreover, DoI can kindle acceptance by groups that don't want the innovation making it unmanageable after change proponents like when a head goes on transfer. This requires the description of the responsibilities of the head to guarantee continuousness of acceptance regardless of if the early adopter or opinion leader is absent or not.

Principals' Digital Communication Literacy on ICT Integration Management Outcomes

Afzaal (2017) avers that, as chief administrators, school principals must use the basic computer skills in accomplishing school administrative and managerial tasks. For effective school management and leadership, principals need to be in constant communication with teachers, pupils, parents, Boards of Management (BoMs), MoE, TSC, school suppliers, and other stakeholders. Ghavifekr, Afshari, Siraj and Seger (2016) observed that the principal use of email to inform teachers of a meeting, send a memorandum, send important internal and national policy documents has several advantages.

The email system is fast and convenient, retains evidence of the sent information, can accommodate any length of the uploaded material, can effectively be used to send visual and audio-visual materials and above all is cost effective as compared to the traditional method of using paper written information. Additionally, Oulo (2017) notes that, a school manager who is computer literate can typeset most of the information meant for different stakeholders without involving secretaries. In so doing, the necessary confidentiality can be maintained. Omotayo

(2015) argues that through Skype, principals can initiate a fruitful engagement with members of school alumni who are not able to visit the school physically or are residing abroad.

Through the Skype, the principal can maintain better rapport with school sponsors and other stake holders who can enrich the principal's skills in management. Principals act as role models to the entire school community when they apply computer technology to administrative and managerial tasks. When principals apply power point presentation to enhance their communication, teachers are encouraged to embrace ICT in their presentation of subjects' content in class and in other forums (Singh & Muniandi, 2014).

Afshari, Bakar, Luan, Fool and Samar (2016) conducted a study in Turkey to establish the degree to which schools' heads utilized computers and to examine the association amongst certain variables linked to using of ICT. The study found that, great extent of computer access, capability, high level of transformational leadership behaviors as well as strong perceptions of the attributes of ICT, each contributed meaningfully to the extent of heads' computer use. However, that study did not establish how the principal's level of computer use influenced their electronic communication to various school stakeholders. The proposed study endeavours to establish the principals' computer literacy influence on electronic communication as a component of effective school management.

An investigate in Nigeria by Omotayo (2015) aimed at assessing the state of computer literateness and fear amongst private school heads in Kaduna North Local Government in Kaduna. The outcomes exposed that the state of computer literateness in private school heads in managing computer, emailing communication and cyber-café using was meaningfully better than deputies. The study recommended private institutions must have a complete computerized place with net amenities for electronic library information and e-communication system.

In Kenya, Tanui (2017) sought to establish the heads' responsibility in enhancing using and incorporation of ICT in institutions in Wareng. It was found that despite the fact that some schools had adequate number of internets connected computers, constant electricity power supply and other ICT resources, principals hardly used electronic communication. For instance, principals were summoned to school over the holidays to upload NEMIS which could have been easily conveyed through an email. Further, principals were stuck in producing so many hard copies to convey vital information during meetings involving teachers, BoMs or other stakeholders. However, Tanui's investigation failed to establish the extent of the principals' computer literacy and which might have their level of electronic communication. The proposed study will embark on assessing the principals' level of computer literacy and also seek to establish the envisaged influence on electronic communication.

Regarding digital communication literacy, Afzaal (2017) conducted a study in Turkey. The talk was about principals' communication with stakeholders using emailing system. While this is an effective way of communication, not all stakeholders use emails frequently. In this current study, use of Short Message Service (SMS) was encouraged since it was fast and could be responded to almost immediately without having to go into the internet.

METHODOLOGY

The study used Connectivism and Diffusion of Innovation theories. The investigation employed mixed methodology. The study embraced the concurrent triangulation design. The study was guided by Connectivism and Diffusion of Innovations theories. The target population was 301 participants which comprised of 50 principals, 200 Heads of departments, 50 BoM chairpersons and 1 ICT Sub County Director. The sample was 172 participants comprising of 28 principals, 115 HoDs, 28 BoM chairpersons and 1 ICT director. The principals were sampled using purposive sampling as well as the BoM chair persons. The HoDs were randomly sampled. The ICT director was sampled using purposive expert sampling. There was questionnaire for HoDs and interview schedule for principals and ICT director. There was questionnaire for HoDs and interview schedule for principals. Quantitative data was analyzed in descriptive statistics and presented in tables, frequencies and percentages. Qualitative data was analyzed thematically and presented in verbatim citations as well narratives.

Table 1: Sampling grid

Category	Population	Sample	Sampling Technique
Principals	50	28	Purposive sampling
HoDs	200	115	Simple random sampling
BoM chairs	50	28	Purposive sampling
ICT Sub County director	1	1	Purposive Expert sampling
Total	**301**	**172**	

 Source: the researcher, 2022

RESEARCH FINDINGS AND DISCUSSIONS

The data was set according to the study objective. This research examined how digital communication literacy influenced ICT integration management outcomes in public secondary schools in Kitui Central Sub County. Two levels of analysis were employed namely: descriptive and thematic.

Descriptive Statistics

In this analysis, the researcher used tables, frequencies and percentages and analyzed the data according to the study objectives as it is shown below.

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Table 2: Principals' ICT integration management outcomes and digital communication literacy influence

Statements	A (1)	SA (2)	U (3)	D (4)	SD (5)
It is believed that many principals (your principal) are familiar with computer operations such as digital networking in the effort to enhance ICT integration management outcomes in their institutions	f55 78.57 %	f00 0.00 %	f00 0.00 %	f15 21.43 %	f00 0.00 %
Principals (your principal is able to use) are able to use emailing/sms/WhatsApp and they use them in their institutions to communicate to enhance ICT integration management outcomes	f70 100.00 %	f00 0.00 %	f00 0.00 %	f00 0.00 %	f00 0.00 %
Principals (your principal is able to use) are able to do individual type setting of school documents to enhance ICT integration management outcomes	f19 27.14 %	f01 1.43 %	f00 0.00 %	f50 71.43 %	f00 0.00 %
Often times principals (your principal is able to use) have communicated through Skype in your institution to enhance ICT integration management outcomes	f05 7.14 %	f00 0.00 %	f00 0.00 %	f65 92.86 %	f00 0.00 %
Principals (your principal is able to use) are able to navigate through files and directories (for example using Windows Explorer) to propel ICT integration management outcomes	f18 25.71 %	f00 0.00 %	f00 0.00 %	f52 74.29 %	f00 0.00 %
Principals (your principal is able to use) are able to organize, copy and paste files in directories so as to enable ICT integration management outcomes	15 21.43 %	f00 0.00 %	f00 0.00 %	f55 78.57 %	f00 0.00 %
Principals (your principal is able to use) are able to remove unwanted files into my recycle bin and delete them permanently from my hard drive to enhance ICT integration management outcomes	f11 15.71 %	f00 0.00 %	f00 0.00 %	f59 84.29 %	f00 0.00 %
Principals (your principal is able to use) are able to edit, copy, cut and paste a block of text or selected objects to enhance ICT integration management outcomes	f16 22.85 %	f00 0.00 %	f02 2.86 %	f52 74.29 %	f00 0.00 %
Principals (your principal is able to use) are able to use undo/redo functions to demonstrate ICT integration management outcomes	f32 45.71 %	f00 0.00 %	f01 1.43 %	f37 52.86 %	f00 0.00 %
Principals (your principal is able to use) are able to save, print and preview documents in the effort of ICT integration management outcomes	f27 38.57 %	f00 0.00 %	f03 4.29 %	f40 57.14 %	f00 0.00 %
Principals (your principal is able to use) are able to select and change fonts sizes and types, styles (for example boldface, italics, underlining, etc.) and print them to enhance ICT integration management outcomes	f22 31.43 %	f00 0.00 %	f00 0.00 %	f48 68.57 %	f00 0.00 %
Principals (your principal is able to use) are able to create itemized lists (for example bullets, numbered lists) to propel ICT integration management outcomes	f25 35.71 %	f00 0.00 %	f00 0.00 %	f45 64.29 %	f00 0.00 %
Principals (your principal is able to use) are able to change printer parameters like page numbers, paper orientation, margins and proportions, *et cetera* for ICT integration management outcomes	f20 28.57 %	f00 0.00 %	f00 0.00 %	f50 71.43 %	f00 0.00 %
Principals (your principal is able to use) are able to change printing options from gray scale, normal, first draft or best to enhance ICT integration management outcomes	f18 25.71 %	f00 0.00 %	f02 2.86 %	f50 71.43 %	f00 0.00 %
Principals (your principal is able to use) often times send documents to your printer to enhance ICT integration management outcomes	f16 22.86 %	f00 0.00 %	f08 11.43 %	f46 65.71 %	f00 0.00 %
Principals (your principal is able to use) manage office printer without assistance to enhance ICT integration management outcomes	f04 5.71 %	f01 1.43 %	f04 5.71 %	f50 71.43 %	f11 15.72 %

Source: the researcher, 2022

From the table, most principals were familiar with computer operations like digital networking which propelled ITC integration management outcomes. This was agreed by 55 (78.57 %) of the heads of departments with 15 (21.43 %) in disagreement. The principals were able to use emails,

short message services and WhatsApp in institutional communication. This was agreed upon by all the participants 70 (100 %). However, the issue of individual typesetting of school documents was not popular as 50 (71.43 %) were disagreeing and 20 (28.57 %) in agreement. Similarly, the use of Skype was also not popular as 65 (92.86 %) confirmed with only 5 (7.14 %) in agreement. Additionally, the principals were not able to navigate through files and directories using windows explorer as confirmed by 52 (74.29 %) with 18 (25.71 %) who could agree on this issue.

Likewise, the heads could not organize, copy and paste files in directories as it was the opinion of 55 (78.57 %) with 15 (21.43 %) in agreement. Another problem could be seen when it came to removing unwanted files into the recycle bin and deleting permanently from the hard drive as this was the opinion of 59 (84.29 %) of the participants with only 11 (15.71 %) in agreement. Another problem was seen when it came to editing, copying, cutting and pasting a block of texts or objects selected as 52 (74.29 %) of the participants indicated. Another 16 (22.85 %) agreed while 2 (2.86 %) could not make a decision.

When it came to undoing and redoing functions, this was agreed by 32 (45.71 %) but rejected by 37 (52.86 %) and 1 (1.43 %) remained undecided. Printing, saving and previewing documents was accepted by 27 (38.57 %) but unfortunately, denied by 40 (57.14 %) and 3 (4.29 %) were not decided. The ability of heads to select, change fonts, styles and printing was questionable as 48 (68.57 %) were in denial with 22 (31.43 %) in agreement. Creating and itemizing things like the bullets was likewise questionable as 45 (64.29 %) thought as another 25 (35.71 %) were in agreement. Asked if the heads could change printer parameters such as page numbers, orientation of pages and margins, majority of 50 (71.43 %) denied with 20 (28.57 %) in agreement. A similar scenario was seen in changing printing options such as gray, normal and drafts to enhance ICT integration management as 50 (71.43 %) denied, 18 (25.71 %) accepted and 2 (2.86 %) did not decide. Heads could not always send documents to printers as majority of 46 (65.71 %) saw it and 16 (22.86 %) agreed with 8 (11.43 %) being undecided. Worse, heads could not manage the office printers without being assisted as seen by 61 (87.14 %) and only accepted by 5 (7.14 %) with 4 (5.71 %) undecideds. These findings were in line with a study by Afshari *et al* (2016) in Turkey on principals' use of computers which established that computer skills were attributed to ICT management outcomes in institutions.
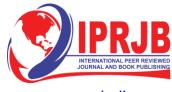
Thematic Analysis

From interviews, it was agreeable that most heads were acquainted with computer operations such as digital networking which boosted ITC incorporation managing. Similarly, the principals were able to use emails, short message services and WhatsApp in communication as one of them said,

"*Most of us heads are conversant with computers but we are not experts any way. We are able to use quite a number of applications though at times we need the help of the secretaries. I have witnessed this among fellow heads in the schools I have interacted with*" (**P1**)

 Nevertheless, specific typesetting of institutional documents was unpopular. Likewise, the usage of Skype was also unpopular. Moreover, they were unable to steer through files and directories using windows explorer as confirmed by one of them,

"Many of my colleagues I have met including myself have challenges with typesetting and most of us are not familiar with Skype. In fact, I don't know where it is in my phone. I am not able to use go through the windows explorer you are talking about" (**P2**)

Likewise, the heads could not perform simple operations like organizing, copying and pasting files in directories. They could not remove undesirable files into the recycle bin and delete permanently or even edit, copy, cut and paste a block of texts or objects selected as one said,

"I find myself not able do some functions on the computer like cutting and pasting or deleting work permanently and whenever I learn this I tend to forget immediately since I don't have time to practise the functions" (**P3**)

The capability of the principals to select, change fonts, styles and printing was dubious just as creating and itemizing bullets was similarly disputed and changing printers' parameters such as page numbers, orientation of pages and margins had issues as one head remarked,

"Operating computers in terms of changing fronts as well as printing may bring a challenge to many of us heads who seem to be too busy to find time to do these things" (**P4**)

Principals had challenges in changing printing options such as gray, normal and drafts to enhance ICT integration management outcomes. They could not continuously send documents to printers. They similarly, could not manage the office printers independently without being assisted by the secretaries or clerks as one confessed,

"I have the computer here in my office but often times I find myself asking for help especially from the secretary of the school clerk. Our problem as heads lies on the time factor. Our busy schedules do not allow us to master computers the way we should" (**P5**)

The education officer thought that there was laxity among the heads as far as learning computers was concerned. Digital communication was imperative and all principals were supposed to be computer literate to be twenty first century compliant as the officer lamented,

"We are living in modern times whereby communicating digitally has to be embraced by all key leaders in the education sector" (**EO**)

Nevertheless, there were numerous other factors which hampered the progress of heads as they tried to be literate in matters of digital communication as the officer observed,

"We may not blame the principals wholesale as when you visit some schools, the computers are not adequate. Secondly, a number of institutions do not have electricity which is a must before we even start talking about computers" (**EO**)

These findings were in line with Omotayo (2015) who put emphasis on the use of Skype which could engage members of the staff without necessarily having to convene face to face meetings. This could save time for schools and maintain better rapport among the staff.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Though most principals had ideas on ICT, there was need to beef up the skills for better management of the schools. The principals' computer literacy level seemed wanting and there was need to improve on this. ICT management lacked the necessary support from the government which should not have been the case.

Recommendation for Practice

Principals' digital communication literacy influence on ICT integration management outcomes in schools should be improved by having training and sensitization among the principals.

Recommendation for Policy

The central government should put in place modalities of improving digital communication literacy among schools.

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