INVOLVEMENT OF PARENTS' IN DIGITAL LEARNING INTEGRATION PROGRAMME IN MERU COUNTY KENYA

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Abstract

Digital learning integration (DLI) in the education sector has greatly expanded access to education with the support of parents as key stakeholders in the teaching and learning process of their children. DLI program is slow in public primary schools in Meru County amid claims that parents were not involved in preparations for the program before it was rolled out. This study examined the extent of involvement of parents in preparations for DLI before the program was rolled out in public primary schools in Meru County-Kenya. The study targeted all head teachers, teachers, sub-county Directors of Education (SCDE), PTA executive members, and learners from DLI pioneer grade. Ten percent of the schools were sampled using simple random sampling from where 912 respondents (67 head teachers, 496 teachers, 201 PTA executive members, and 536 pupils from DLI pioneer grade) were sampled. The sample also had 8 SCDEs purposively sampled. Descriptive survey design was used. Interview guide for SCDEs, questionnaires for (head teachers, teachers, and PTA executive members), and focus group discussion tools were used to collect data. Quantitative data was analyzed using IBM SPSS version 22 for social studies while qualitative data was reported in narrative. The results revealed that parents were not sensitized or involved in any way on DLI program preparations. However, in schools where parents were involved, the program was doing very well. Pearson moment correlation coefficient, t-test, regression model were used to test hypotheses. The results indicate that there was positive strong correlation between parents' involvement in DLI preparations and the application of DLI in the classroom. The study concluded that parents should be sensitized and be involved in DLI program support financially and in management.

Key words: Digital Learning Integration (DLI), Preparedness, Parental Involvement, Management, Innovation, Policy, Parent, Teachers' Association (PTA)

INTRODUCTION

Digital learning integration means access to the right digital devices for learning, by incorporating digital resources such as laptops, tablets and other digital tools (Roblyer & Doering, 2014). The digital technologies such as tablets and laptops support students learning and increase student success (Kozma, 2012). Digital learning integration (DLI) has been adopted in schools' environments worldwide. Over time, technology applications have been found to be very useful in teaching and learning process (Bitter & Legacy, 2009; Bandung & Langi, 2011). The adoption and eventual integration of digital technology depends on the

policies of individual countries' preparations and the management of DLI (Keiyoro, Gakuu & Kidombo, 2011).

The Concept of Digital Learning

Digital learning integration is a valuable, useful resource and tool for teaching and learning as an instructional media through advancement of digital and communications technology. The digital learning integrations are capable of providing interactive content through visual cues such as videos, animations, audios cartoons, exercises and quizzes, which eventually improve the learning experiences. The activities are integrated into a lesson plan, offering independent learning programs that can be completed during students' own time (Kozma, 2012).

Digital learning has become an integral part of learning process and include: learning online, blended learning, game-based learning, learning through hand-held devices, instructional tools like interactive white-boards and student response systems and many others that engage students (Doering & Roblyer, 2014). DLI programs entrenched in the curriculum were capable of motivating and engaging students and teachers strengthening learning and teaching (Hennessy, 2010; Teczi, 2011). Introduction of digital learning integration program to schools has not been easy (Kindombo, Gakuu & Ndiritu, 2012). However, sound educational digital learning integration policies coupled with sound leadership and management skills from school level to the higher level of national policy formulation ensures proper organization that leads to successful digital learning integration in the classroom (Keiyoro, 2012).

The adoption, organization, planning preparations and management of DLI in the classroom is complex and involves link between policy and politics, coalition of education public officials, parents, teachers and practically all aspects of school management and administration (Bebell & Kay, 2010). Impediments such as management of the development of teachers' skills, provision of digital learning resources, involvement of stakeholders and provision of technical support staff reduced the effectiveness of DLI in the classroom (Bebell & O'Dwyer, 2010). Training of teachers to equip them with digital learning integration knowledge and skills is critical towards achieving the goal of integrating digital learning in the classrooms and preparing students for life in the 21st century and beyond (Ghavifekr, Afshari & Amiasalleh, 2012). Therefore, training of teachers must be done in advance to enable them acquire appropriate knowledge and skills so as to be able to plan and select the optimal application tools that will enable them have meaningful digital learning integration (Ghavifekr, Afshari & Amiasalleh, 2012).

Parents as key stakeholders have vested interest in the success of the education of their children directly or indirectly. Parental involvement within schools educational set up greatly enhanced the morale of students, their general attitude towards education, and their academic achievement across all subject areas in UK (O'Hara, 2011). Similarly, Linden (2011) noted that parents in conjunction with teachers were a vital resource towards enhancing the digital learning integration experiences. Furthermore, parents played a leading role when it came to creating and nurturing an environment in which children learn and improve their academic work. In Singapore for instance, when pupils reach class 4, parents purchase digital learning devices for their children until they complete the primary level. This was made possible through public-private partnership collaboration and support of the national digital learning policies. This was an indicator that parents were incorporated and involved in preparations for DLI of

their children and that there was collaboration between parents and the government (Lee, Cherping & Siew, 2015). As a result their digital learning programs were very successful.

Involvement of parents in DLI programs in the African region varied from family to family and could take many different forms such as participating in schools' policy making, helping children with homework and communicating with teachers. In South Africa for example, involvement of parents in children's education from an early age had a significant effect on educational achievement, and continues to do so into high school and beyond (Nkula & Krauss, 2014; Ramolora, 2013). Socio-economic background factors including income and poor parents educational backgrounds weakened their involvement on DLI in rural public primary schools because they could not afford to purchase laptops for their children to enable them do assignments at home (Nkula & Krauss, 2014).

Some parents in East Africa participate in their children's school matters as if they have equal responsibility with the school or as if it is mainly or wholly their responsibility (Laaria, 2013) as cited by Kwamboka (2015). In Tanzania for example, private primary schools parents invested heavily on digital learning integration (Laaria, 2013) as cited by Kwamboka (2015). The parent-private schools took advantage of the national digital learning integration guidelines which were advisory in nature and sponsored DLI programme in their schools. That was possible through collaboration between teachers and parents which led to better examination results, greater progress at school, more positive attitude and better behavior at school (Markon, 2013). However, there was no collaboration between parents of public primary schools and the head teachers or a school-level policy to advance the support of digital learning integration. Not involving parents in digital learning program is an impediment to digital learning integration (Sang, Valke, VanBraak, Tondeur & ChanZhu, 2011). A lot of support is required financially, morally, and in planning and management as key stakeholders in education. The study identified involvement of parents as a research gap.

Statement of the Problem

The Kenyan government rolled out DLI program in public primary schools in the 47 counties. It allocated Kenya shillings 17.58 billion for deployment of digital learning devices, development of digital learning integration content, aid in teachers' capacity building, hire technical support staff, and set up computer laboratories in public primary schools in 2015/2016 budget (Kenya ICT Authority, 2016). It was expected that with such a huge budgetary allocation, digital learning integration would take shape and enhance learning in public primary schools.

Digital learning integration program which was scheduled to take off in January 2014 in Meru County along the other 46 counties was pushed to January 2015, then to January 2016 and then again to January 2017. Such postponements strongly indicated that there were impediments to digital learning integration preparations. The study identified preparedness for digital learning integration before the program roll out in public primary schools in Meru County as a problem that needed to be looked into. Therefore, the study sought to analyze the preparedness of digital learning integration program with respect to teachers' preparedness, availability of resources, availability of technical support team and parental involvement in public primary schools in Meru County.

The study objective was to examine the extent of involvement of parents in preparations for digital learning integration programme in public primary schools in Meru County.

The study had a hypotheses that guided investigation of the objective which was tested at alpha = 0.05 level of significance.

H01: There was no significant relationship between parents' involvement in digital learning integration program preparations and digital learning integration in public primary schools in Meru County.

Literature Review

Involvement of parents is defined as parents' participation in attending scheduled school meetings, serving as a committee member or assisting the school in many other areas financially or services, innovating ways that can foster their children's school achievement and how they can influence development of attitudes and motives that are essential towards school learning (Linden, 2010). Parental involvement is concerned with the participation and support parents give to schools so that their children can have a learning environment where they can exploit their full potential (Linden, 2010). In addition, parents also influence the basic intellectual development of their children and academic socialization while at home which directly and positively impacts the educational performance of their children, and also results in substantial benefit to parents, educators, school and the country at large (Olibie, 2014).).

Parental involvement in their children's education can be affected by a range of social-economic factors and is most powerful and far-reaching when taking place at home (O'Hara, 2011). Parents provide tutoring to their children when it is needed. This has been found to enhance children's educational experiences and attainment. Parents' teaching is embedded in every-day life experiences and occurs in many subtle and indirect ways. Parents support for academic activities such as provision of learning resources are important factors for school achievement. Thus, parents take the role of teacher at various points at home, create a home environment that encourages learning and provide direct reinforcement for academic improvement (Olibie, 2014).

Involvement of parents in digital learning integration of their children was essential in academic success but several barriers stand in the way of full involvement of the parents (Linden, 2010). Also, parents in economically disadvantaged families face particular difficulties when attempting to participate in their children's digital learning integration. Other obstacles are: language barrier, time pressures, differing ideas from those of teachers, lack of communication from school, lack of adequate parental education and unwelcoming atmosphere in school (Linden, 2010).

While parents cannot always change these barriers, they can have a great influence over many of these barriers. In UK for instance 79% of children have access to digital technology such as laptops and other computers at home, 90% access mobile phones, 97% access DVD player, 54% access digital cameras and 81% accessed games (O'Hara, 2011). Children accessibility to digital technology made them confident when using the same or similar technology in schools. Digital technology was providing opportunities for their children at home much more skills

and attitudes and subsidized the school's integrated digital learning (O'Hara, 2011). Additionally, parental support has proved very fruitful in the integration of digital learning process and its sustainability. Their appreciation and involvement in school activities enabled them to gain more knowledge and a betterunderstanding of the educational programs and what teachers expect of them. However, the study shows that there was a mismatch between the policy and the practice in the classroom. Leadership and management of the program were essential to ensure pupils do not access unauthorized materials to guarantee the support of the program from the parents.

On the contrary, involvement of parents' in the education process of their children in Sri Lanka was appreciated hence they embraced the digital learning integrated into the curriculum of their children. Parents expressed pride and privilege of having free One Laptop per Child (OLPC) program while those who identified negative impacts like addiction to the OLPC use and neglecting physical game during off school time constituted only 10%. In Israel, there was the positive impact of including families into the integration of digital technology in primary schools. It was noted that majority of the parents had the skills to foster both cognitive growth and achievement motivation, created conducive environment for learning, and provided laptops to be used at home. Those families provide all that was required by the schools to make digital learning a success (Blau & Hameiri, 2016). However, the study did not look into ways of sensitizing the parents so as to maximize their participation and support. Leadership and management that involve other stakeholders like parents directly or indirectly are essential.

Parents in economically disadvantaged families face particular difficulties when attempting to participate in their children's education. For instance, in South Africa depressed economy made poor parents not to afford to buy computers for their children hence making digital learning integration challenging. Further, it was not possible for children to do assignments at home (Ramorola, 2013). Parents, therefore play a critical role in developing their children's interest in the use of computers by influencing them throughout both their own actions and the amount of encouragement they give them (Ramorola, 2013). However, the policy was silent on how the two groups of economically advantaged and disadvantaged parents could be harmonized in order to have them participate in digital learning integration programs. There were no documented studies to show the outcome of initiatives of involving parents in digital learning integration. In Nigeria, parents complained of lack of policy guidelines and poor leadership since they were not involved on OLPC and that their children were freely browsing adult sites with explicit sexual content (Hennessy, et al., 2010). Involvement of parents in digital learning integration so as to build a strong foundation of harmonized and supportive stakeholders was lacking in most countries. The study identified parental involvement as a research gap.

Similarly, the education of children may be influenced indirectly as parents become involved in preparations, volunteering to assist, curriculum monitoring and much more as the school's dictates in East Africa (Laaria, 2013) as cited by Kwamboka (2015). For instance, this scenario was observed in majority of private primary schools in Uganda secondary schools' where parents agreed to fund the construction of computer laboratories when approached by the

school management. Such evidence supports the importance of parent involvement in children's education (Mingaine, 2013).

In Kenya, the digital learning integration program is sponsored by the government in all the public primary schools. A survey on Computerizing Primary Schools in Rural Kenya carried out in the former Rift Valley, Nyanza and Western Kenya provinces revealed that 86.5% lacked desks and classrooms. The lack of facilities forced parents to supplement government funding through fundraising and pledges to acquire necessary learning equipment (Ogembo, et al., 2012). In addition, parents were involved severally in raising funds for a certain project through "Harambee"- a Kenyan tradition of community self-help events that encourages communities to work together to raise funds for all sorts of local projects. Available research explored a wide variety of factors influencing digital learning integration in the classroom. However, existing research seldom centre on policies, leadership and management of digital learning integration with respect to involvement of parents.

One of the well-established institutions in all public primary schools is the BOM according to Kenya Constitution (2012), who among other responsibilities encourages parental involvement in public primary schools in Kenya. Parents in secondary schools in Tigania West sub-county were not involved in the preparations nor were they sensitized on digital learning integration in their respective secondary schools (Gikundi, 2013). Similarly, parents of secondary schools in Imenti North Sub-County were not involved in facilitation of digital learning integration since the digital technology tools and other logistics were catered by the Ministry of Education (Murithi, 2013). The study by Murithi (2013) revealed that parental involvement in school projects and programs was a requirement and necessary collaboration between parents and schools, therefore, should be studied. From the available literature it was noted that where there was collaboration between teachers and parents and between parents and government, digital learning integration in schools was successful. The process of digital learning integration should be well organized, prepared and coordinated by parents and schools to avoid loss of time and disruption of learners' concentration. Few studies have explored how involvements of parents on digital learning integration influence in a direct and/or indirect way the success of integration in the classroom. Therefore, the study sought to analyze the parental involvement as one of the crucial ingredients of preparedness of digital learning integration in public primary schools in Meru County.

Theoretical Framework

This study will be anchored on Everett Rogers Diffusion of Innovation Theory (RDI) formulated in 1995. Everett Rogers is considered to be the founding father of diffusion theory and how innovations are adopted and diffused. The diffusion of innovation theory describes a process in which an innovation is communicated through certain channels over time among members of a social system (Rogers, 2003). Any diffusion process is influenced by four elements: innovation; communication channels; time and a social system (Rogers, 2003).

An innovation is an idea, practice or object that is perceived to be new by an individual or unit of adoption and the rate of innovation adoption depend on how individuals communicate themselves (Rogers, 2003). The process of individual's acquisition of knowledge to the final stage of adoption requires time whereas the social system, individuals work together to achieve common goals through ranks and division of labour (Rogers, 2003).

For Rogers, a technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving the desired outcome. It is composed of two parts: hardware and software (Rogers, 2003). Uncertainty is an important obstacle to the adoption of innovations. To reduce the uncertainty of adopting the innovation, individuals should be informed about its advantages and disadvantages to making them aware of all its consequences, desirable and undesirable (Rogers, 2003). Rogers (2003) described the innovation-decision process as an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation which involves five steps: knowledge; persuasion; decision; implementation; confirmation. The process is shown in Figure 2.1.
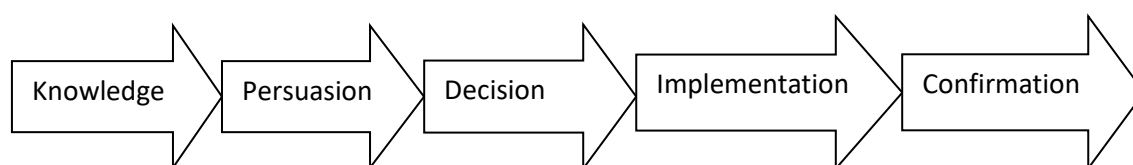

Figure 1 - Innovation-Decision Process

Note: A Model of Five Stages in the Innovation-Decision process (Source: Diffusion of Innovations, Fifth Edition by Everett M. Rogers, 2003)

Knowledge is a stage where an individual learns about the existence of innovation and seeks information about the innovation. At this cognitive stage, three types of useful knowledge are formed. Firstly is the awareness-knowledge representing the existence of knowledge of innovation which eventually motivates the individuals to learn more about the innovation and eventually adopt. Secondly, is how-to-know about how to use an innovation correctly in order to use the technology effectively in teaching. Thirdly, the principles-knowledge includes the functioning principles describing how and why innovation works. There must, therefore, be a vision as to why and how to integrate technology into the classroom. Individual's attitude also determines the degree of adoption despite an individual having all the necessary knowledge (DeMerez, Evens & Stragier, 2011). Training of teachers to equip them with digital learning knowledge and how to integrate digital learning into the curriculum is under scrutiny in this study. Rogers' Theory of Diffusion and Innovation will, therefore, be relevant to the study.

Persuasion stage occurs when the individual has a negative or positive attitude towards the innovation. The attitude is shaped after the individual knows about the innovation. The decision stage follows the persuasion stage whereby the individual chooses to adopt or reject the innovation. At the implementation stage, the innovation is put into practice. However, an innovation brings some degree of uncertainty about the outcomes whereby the implementer may need the technical assistance from change agents and others to reduce the degree of uncertainty about the consequences. At the confirmation stage, attitude becomes more crucial depending on the support of the innovation. The attitude of the individual leads to adoption or discontinuance. Attitude shapes the adoption or rejection of the innovation because the degree of uncertainty about innovation's social reinforcement from peers, colleagues and others affect the individual's opinion and beliefs about the innovation, (Rogers, 2003). Teachers' attitude forms a variable in this study.

The attributes of innovations that help decrease uncertainty about innovation and make the innovation be adopted faster than other innovations are: relative advantage, complexity, trialability, observability. Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes, whereas compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences and needs of the potential adopters. Hardware and software and other related digital learning integration tools should be user-friendly to avoid complexity which is an obstacle to innovation adoption. The more the innovation is tried the greater the rate of adoption and

that the results should be visible to others hence acting as a motivational factor in adoption (Rogers, 2003). Availability of digital learning resources is of necessity for faster digital learning integration. This study identifies the availability of resources as a gap. The study, therefore, finds RDI theory relevant to the variables under study.

Rogers' theory is a widely used theoretical framework in the area of technology diffusion and adoption. Rogers's diffusion theory of innovation is the most appropriate for investigating the adoption of technology in educational environments. The computer is a technology innovation which underwent an adoption and diffusion process as well as changing as a technological product. In the confirmation stage, the individual looks for support of his or her decision and the right attitude Rogers (2003). Support of technical experts is a variable under study as well as parental involvement. Innovations offering more relative advantage, compatibility, simplicity, and practicability will be adopted faster than other innovations. Rogers (2003) stated that an innovation is more likely to be adopted if it is compatible with individual or institutional job responsibility that should determine the needs of their customers and then recommend innovations that fulfil those needs.

Several technology-related studies based on Rogers' innovation theory have been carried out. Using quantitative research methods and Rogers' theory of diffusion and innovation as the theoretical framework Rogers (2003) examined the level of computer use for instructional purposes by technology education teachers in Ohio public schools. He used the theory to study the relationship between the level of computer use and selected factors: expertise, access, attitude support, and teacher characteristics. Rogers' theory selected factors that affected motivation and decision to adopt new electronic technologies in classroom instruction. Other studies that have used the theory are: Applying Rogers' Diffusion of Innovations Theory to Investigate Technology Training for Secondary Mathematics Teachers in Kenya (Kamau, 2014); challenges of adopting the use of Technology in less Developed Countries: The Case of Cambodia (Richardson, 2010).

The Rogers Diffusion of Innovations Theory shows clearly that teachers' experiences, beliefs, emotions, knowledge, skills, motivation are critical in improving the standards of education in a school. Therefore prioritizing teacher education and teacher professional development are critical in innovation such as digital learning integration targeting improved classroom instruction and education quality. The variables teacher preparedness via training, resource availability, technical support and parental involvement is critical in this study. Teachers require knowledge and skill to use technology, subject content knowledge and pedagogic knowledge and support for digital learning integration in the classroom.

Considering the role of education in nation building and the demand for quality education, digital learning integration becomes imperative. Digital learning when integrated into schools is perceived as innovative perse, regardless of the content addressed in its use. Parental participation involves links between family and school interaction in the provision of digital learning resources. Resources and parental involvement are therefore variables under scrutiny in this study.

Research Design

The study used descriptive survey design. The study found the design appropriate since it could provide answers to questions and an expanded understanding of the research problem. This was the method that could get information concerning the current status of the problem so that the description, explanations and testing of the findings can be done. The design allowed inclusion of multiple variables for analysis (Cresswell, 2013).

The study used mixed method approach that involved collection of quantitative data that used positivism paradigm, and qualitative data that used interpretive paradigm. The mixed method approach allowed the two data sets to be embedded during analysis with positivism paradigm

taking a leading role while the interpretive supported allowing the utilization of both (Cresswell, 2013). Quantitative research generates numerical data which is transformed into usable statistics and generalize results from a sample while qualitative data enables the study to gain the understanding of the underlying reasons, gain a deeper understanding and meaning of the research phenomenon. Descriptive studies have important role in educational research because they increase the knowledge of what happens in schools (Creswell, 2014). The design was the best since it enabled the study explain a set of phenomena that led to the researcher's ability to describe, predict, and recommend with a high degree of certainty and accuracy. The researcher sought views and opinion of the head teachers, teachers, PTA, Sub-County directors of education and digital learning integration pioneer pupils. The qualitative data was collected from the sub-county Directors of Education through an interview guides and pioneer pupils through focus group discussion guide. The interview allowed an in-depth investigation by probing further producing a qualitative data that supported the quantitative data. The two methods were carried out concurrently and given equal weighting. This helped to achieve data triangulation. The two data sets were embedded with quantitative data taking a superior role and qualitative data supporting.

Instrumentation

Questionnaires, interview guide, focus group discussion and observational schedule were used to collect data. The research tools were constructed by the researcher after consulting experts on digital technology and quality assurance and standards departments at KeMU. In addition, literature reviewed in chapter two was referenced. Head teachers, teachers and BOM were subjected to questionnaires; digital learning integration pioneer classes were subjected to FGDs while the County and sub-county Directors of Education were interviewed.

Sensitization of Parents

Parents as key stakeholders in education have a major role to play in any education endeavor (Linden, 2010). Parents are involved in school activities, programs and school committees among others. Their involvement enhances the partnerships between the parents and schools hence increasing their participation. The study sought to find out whether parents were sensitized on DLI program so as to enable them participate in schools' preparations before the program was rolled out. The respondents were 43 PTA members, 496 teachers and 45 head teachers. The data is as shown in Table 1.

Table 1: *Sensitization of Parents*

Statement (N = 45 H/T, 43 PTA)	SA/Agree		SD/Disagree		Neutral		Total
	f	%	f	%	f	%	f (%)
Parents were sensitized on digital Learning program before roll out Before the program roll out	5	12	38	88	0	0	43 (100)
PTA organized change management Meetings with parents	14	31	21	48	10	22	45(100)
Average percentage		32		60		8	100

Data in Table 1 indicate that about 38 (88%) parents were not sensitized on DLI programme before the programme roll out while 5 (12%) confirmed that sensitization was done. PTA organized change management meetings according to 14 (31%) head teachers while 21 (48%) were of the contrary opinion.

Most of the public primary school parents were not sensitized. The participation of enlightened parents in education matters can be very productive because they will not be prejudiced. It is important that parents' voice is heard and understood through being sensitized. Involving parents in education programs of their children creates better awareness of the value for education. Sensitized parents can participate in shaping pupils learning environment and opportunities. On the contrary parents in UK were sensitized and had a lot of influence on many of the barriers and the digital technology provided a lot of opportunities for their children according to the study by O'Hara (2011).

> SCDE interview revealed that parents were not adequately sensitized on digital program. SCDE G revealed: parents were called to receive the digital tools or attend the launching ceremony. However, parents appreciated receiving free laptops from the government though the launching of the program was transformed into arena for politicians. SCDE A shared: we had no role to sensitize the parents. As SCDEs representing MoE we were less visible yet we were best placed to sensitize the parents. SCDE H remarked: failing to sensitize parents adequately on DLI limited their participation and understanding of the program. SCDE F shared: parents were worried that their children once exposed to computer will be able to access unsuitable content or behaviors by third-parties. Therefore, parents required to be sensitized in order to understand the program and adopt the innovation fully.

The study concurs with that of Blau and Hameiri (2016) who found out that sensitization of parents was very important so as to maximize their participation and support. A study by Blau and Hameiri supported this study by revealing that sensitized parents in Israel supported the DLI program by purchasing tablets for their children to be using at home. In addition, they enrolled for computer lessons so as to be able to help their children. Failing to sensitize parents increased their fear and worry of the negative impacts such as engaging in computer games and neglecting physical games, addiction and many others.

Parents' Financial Involvement in DLI Program

Parents as key stakeholders in education appreciate when their children perform well in academics. Increasing their involvement in education matters contributes greatly towards the promotion of the performance of the children in education. The study sought responses from the head teachers on the involvement of parents' financial support with respect to DLI program. The responses are as shown in Table 2.

Table 2: *Head teachers' Responses on PTA Financial Support of DLI Programme*

Statement Total N = 45 (%)	SA/Agree		SD/Disagree		Neutral		
	f	%	f	%	f	%	f
PTA supported DLI program financially 45(100)	2	4	42	93	1	2	
PTA constructed the computer laboratory 45(100)	15	33	30	67	0	0	
Mean f(%) 45(100)	8	1 9	36	80	1	1	

The findings shown in Table 2 indicate that BOM did not support DLI programme financially according to about 42 (93%) head teachers and about 2 (4%) head teachers confirmed that there was support. Similarly, 30 (67%) head teachers refuted that PTA constructed computer laboratory while about 15 (33%) were in agreement. The findings revealed that parents were not involved in supporting DLI program financially. The study findings differs with that of Linden (2010) and Ramorola (2013) who found out that parents participate and support schools financially or other services so that their children can have a learning environment where they can exploit their full potential.

During the interview with SCDEs, it emerged that parents were not involved in any way in financing the DLI program. The digital learning integration program was fully sponsored by the government. They reported that planning, development of the education programs staffing and allocation of the required funding was the responsibility of the government. SCDE A remarked:

> DLI program is wholly a government project that was introduced through top-down influence. SCDE F shared: DLI project falls under free education programme hence parents were not supposed to be levied. However, parents were willing to participate in fund raising whenever they were called upon to do so.

The study noted that though the parents were not involved in financing the DLI program, they participated whenever they were called upon through "harambees". On the contrary parents actively participated in planning and providing finances in public secondary schools towards digital programs according to Mugo (2016). The study by Mugo (2016) is supported by that of Mingaine (2013) which found out that Uganda secondary school parents agreed to fund the construction of computer laboratories, an evidence of parents' involvement in child's education.

The findings from learners during FGD revealed that parents were not involved on DLI program preparations in public primary schools since the digital technology tools and other logistics were catered for by MoE. The findigs are supported by studies of Murithi (2013) and Gikundi (2013) who found out those parents were not involved in DLI programs in public

secondary scholls in Imenti North and Tigania West sub-counties respectively. A pupil 07 from school 10 remarked:

> Our parents were invited to attend the launching of the DLI program by the area MP. They were told not to pay a coin since the program is fully sponsored by the government. Pupil 05 from school 03 narrated: parents were not involved in digital learning integration program preparations but they were invited to participate in the school "harambee" to buy desks with the help of politicians.

On the contrary parents in Israel and UK provided all that was required by the schools to make the program a success in the process and sustainability according to the studies by (O'Hara (2011) and Blau and Hameiri (2016)) respectively.

Management of DLI Program by Parents

Parents' involvement in management of public primary schools motivates and makes them feel appreciated in participating in education maters. The study sought views from parents on their involvement in DLI management. Table 3 shows the responses from 43 parents.

Table 3: *Management of DLI Program by Parents*

Statement N = 43	SA/Agree		SD/Disagree		Neutral		Total
	f	%	f	%	f	%	f (%)
Parents were involved in the management of digital learning program	2	5	41	95	0	0	43(100)
Parents constructed a strong room for safe keeping of digital tools	28	65	15	35	0	0	43(100)
The school management collaborates With parents on DLI program	12	28	31	72	0	0	43(100)
Mean (%)	14	33	29	67	0	0	43(100)

From Table 3, the study findings indicate that parents were not involved in the management of DLI program according to about 41 (95%) PTA members but about 2 (5%) acknowledged their involvement. Similarly, the school management did not collaborate with parents on DLI program according to 31 (72%) PTA members while about 12 (28%) confirmed participating. However, parents were involved in the construction of a strong room for safe keeping of digital tools according to 28 (65%) PTA while about 15 (35%) were of the contrary opinion.

The findings revealed that parents were not involved in the management of DLI program. However, 28 schools engaged parents in the construction of a strong room for safe keeping of digital tools. Involving parents in the management of DLI program could have aided in optimizing pupils learning. Thus, the program lacked concerted support efforts. The study contradicts a study by O'Hara (2011) who found out that where parents were involved in the management of DLI program the support proved very fruitful and the sustainability of the program guaranteed. O'Haran (2011) study is backed by that of Linden (2010) which indicated that parents' involvement in management of DLI through their input and support ensured that schools had learning environments where pupils can exploit their full potential.

SCDEs were also interrogated on the involvement of parents in managing DLI program. SCDE B said: management of public primary schools was not in their area of jurisdiction. It was the responsibility of PTA and head teachers to organize on how the program will be managed by involving parents. SCDE C remarked: parents were not involved in any way on DLI program management except in public primary schools that had organized for a "harambee. SCDE D reported: although parents were represented in the PTA the policy on the program was silent on how parents could be involved in DLI program. SCDE H shared: the involvement of parents in management of DLI programme depended on head teacher's leadership style hence the level of preparation varied from one school to another.

Therefore, it was left to the head teachers to decide where and how to involve them on the management of the program provided they did not pay any levy to school. On the contrary a study by Gikundi (2013) and Murithi (2013) found out that parents of local public secondary schools in Meru County were involved in the management of digital learning integration program through PTA. Ogembo, et al. (2012) reinforced the two studies by revealing that inadequate facilities in schools through government funding made parents to supplement through fundraising and pledges.

Parents' Support for DLI Programme

The support offered by parents to schools creates a good understanding and encouragement to the school management and the learners. The support also builds a long lasting relationship, trust between and among stakeholders. The study sought know the whether there was support offered by parents in the preparations for DLI programme. The study findings are shown in Table 4.

Table 4: *Parents' Support for DLI Program*

Statement Total N = 43 (%)	SA/Agree		SD/Disagree		Neutral		
	f	%	f	%	f	%	f
Parents have trust in digital learning program that it will 43(100) not spoil their children	15	35	28	65	0	0	
Parents wholly supports DLI Program 43(100)	27	63	16	37	0	0	
Parents appreciated DLI and offered to 43(100) provide security of the gadgets	39	91	4	9	0	0	
Mean (%) 43(100)	27	63	16	37	0	0	

The findings revealed that about 15 (35%) parents have trust in DLI programme and that it will not spoil their children while about 28 (65%) were of the contrary opinion. Parents 27 (63%) wholly support DLI program while 16 (37%) did not support the program. PTA 39 (91%) appreciated DLI and offered to provide security of the gadgets. However, 4 (9%) parents did not appreciate.

The findings indicate DLI programme was supported by parents in most of the public primary schools. The support parents had for DLI program showed that they were ready to be engaged and participate in the development of the programme. Supporting the programme indicates that parents were ready to work and collaborate with other stakeholders to improve the education standards in their respective schools. Olibie (2014) study noted appreciation of parents in supporting DLI programs by taking the role of a teacher at various points at home by creating an environment that encourages learning and provided direct reinforcement for academic improvement. SCDEs were interrogated during the interview the support parents had for DLI program. All SCDEs agreed that parents appreciated and were willing to give the required support of the innovation in their respective public primary schools. SCDE A reported:

> Most parents rated the tablets highly for their children's' development. They perceived that tablets were good devices for training of concentration. SCDE D revealed: most parents had obstacles such as language barrier, finances, lack of communication from school and lack of parents' education which reduced their participation on DLI at home and in school. SCDE E remarked: although DLI program had not developed to an extent that learners would be allowed to carry the tablets at home to go and complete the assignments, parents appreciated the government effort.

The study was supported by that of Anyikwa and Obidike (2012); Olibie (2014) who found out that parents who support the program take the role of a teacher at various points at home, create a home environment that encourages learning. A study by Ramorola (2013) which indicated that parents played a critical role in developing their children's interest in the use of computers by influencing them throughout both their own actions and the amount of encouragement they give them reinforced the two studies.

Hypothesis Testing for DLI against Involvement of Parents'

Through hypothesis testing the study established the relationship between DLI and parents' involvement. Pearson product moment correlation coefficient was used to identify the relationship direction between variables as shown in Table 5.

Table 5: *Digital learning integration in classroom against Parents' Involvement*

Variables correlated	r-value	sig. (2-tailed)	N
Composite variable for parent involvement against parent support in DLI	0.854**	0.001	45

Note: ** Correlation significant at the 0.01 level (2-tailed)

The findings presented in table 5 were obtained through computation of Pearson's product moment correlation coefficient which confirmed that there is significant correlation between the composite variables of the study. The data confirmed that there was significant correlation at 0.01 levels (2-tailed) between variables of the study. Ho was therefore rejected. The computed correlation coefficient (r = 0.854**, p = 0.001) at alpha = 0.05 level of statistical confidence indicates a positive significant correlation between parents' involvement and their support for DLI program.

Though to a large extent parents were not involved in DLI program preparations, there was a positive effect in the schools which had involved parents. Parents needed to be sensitized so that they could be engaged to support the program financially, management and kinds of support to make the program successful. The involvement of parents in DLI program preparations were hypothesized to not positively affect the parents' support for DLI but when tested it was found to have a positive effect on DLI application in the classroom. This is in harmony with the findings of Blau and Hameiri (2016) who found out that parents in Israel were involved in DLI program preparations and as a result they provided all that was required to make the program a success. The study is further supported by studies of Laaria (2013) as cited by Kwamboka (2015) and Mingaine (2013) who revealed that parent's private primary school in Tanzania and Uganda secondary schools respectively fully supported in DLI programs when they were involved.

Regression Analysis for DLI against Parents' Involvement

Parental involvement in school programs is a powerful lever for raising education achievements in a school. Parents need to work together with teachers to improve learning outcomes. Table 6 shows the regression analysis of composite DLI parent support against composite involvement of parents.

Table 6: *Model Summary***

Model	R	R^2	Adjusted R^2	Standard Error of the Estimate
1	0.854*	0.730	0.723	0.136

Note: * predictors: constant, composite variables for parent involvement; ** Dependent variable DLI parent support.

The R value of 0.854 indicates a high level of correlation. The predictor variables for parent involvement are explained by 72.3% of the outcome which is a high percentage. The ANOVA test confirmed the rejection of the null hypothesis (p < 0.05). This is an indication that changes in the involvement of parents in DLI program are related to the changes in parents' support for DLI application in the classroom. The F-test confirmed overall that the relationship is statistically significant and the residual plots and output proved that there was no biasness in sampling.

Further, the regression coefficients are shown in Table 6. It contains: the un-standardized and standardized coefficients. The standardized coefficient compares the strength of independent variable to the dependent variable. Table 7 shows how well the regression equation fits the data. The variables under study consisted of composite variables for parent involvement (Predictor) verses composite variables for DLI parent support (dependent).

Table 7: *ANOVA**

Model	Sum of squares	df	Mean square	F	Sig.
Regression	2.155	1	2.155	116.095	0.001**
Residual	0.798	43	0.019		
Total	2.953	44			

Note: * DLI composite variables and ** parent involvement composite variables

It is evident that the involvement of parents in digital learning integration program preparations had a positive impact on their support for digital learning integration program application. The study concludes that without involving parents in DLI program preparations the support from parents in DLI application in the classroom is minimal. Therefore, success of digital learning integration program greatly depends on involvement of parents as key stakeholders in education and it is a waste of time to embark on DLI application without the support of parents. The findings are confirmed by several theme- related studies (Ramorola, 2013; Blau & Hameiri, 2016) that revealed support of digital programs in schools by parents had significant impact on the adoption and application of the innovation.

Further, the regression coefficients are shown in Table 8. It contains: the un-standardized and standardized coefficients. The standardized coefficient compares the strength of independent variable to the dependent variable.

Table 8: *Coefficients**

Variable Model	Unstandardized Coefficients		Standardized coefficients			Collinearity statistics	
VIF	Beta	Std Error	Beta	t	sig.	Tolerance	
Constant	0.032	0.085		0.381	0.705		
Composite variable for parent involvement	0.968	0.048	0.950	20.033	0.001	1.000	1.000

Note: Dependent Variable (Composite variables Parent support for DLI)

The data in Table 8 was generated by regression analysis between the predictor composite variable and the response composite variable. Results indicate that for every one unit increase in parent involvement, parent support for DLI program increased by 0.968 units. The null hypothesis was rejected for the predictor composite variable since the p-values was 0.001 ($p < 0.05$). Therefore, the low p-value suggested that the slope changes in the predictor composite variable are associated with changes in the response composite variable. The predictor composite variable had significant relationship with composite parent support for DLI. This shows that the schools that are involving parents in DLI program as stakeholders received their maximum support.

The test revealed that the perceived involvement of parents' in DLI program preparations is strongly related to parents' support for DLI application. The model reveals that where parents' involvement in DLI program preparations took place in public primary schools in Meru County the outcome on DLI program support by parents is significant. The opinion arising from the

test is in accordance with Olibie (2014), Linden (2010) and O'Hara (2011) study which highlights the fact that parents involvement in the participation in preparations for activities and programs such as DLI that can foster their children's school achievement greatly influence the enhancement of DLI experiences, attainment and success.

Intervening Variables

The study had one intervening variable on MoE policy guidelines on digital learning integration programme in public primary schools in Meru County to explain causal links between other variables. The data was obtained from SCDE, head teachers, teachers and parents. The SCDEs reported that there is a policy on digital learning integration in schools but it was not adhered to. They reported that the government initiative to introduce digital learning integration in public primary schools was to reform the country's educational system to advance and uplift the teaching and learning in schools. However, training of teachers which was fundamental requirement was inadequate, lack of strategic structure reforms on planning, leadership management and collaboration efforts were over-looked leading to ill-prepared teachers. Sub-county directors A reported:

> SCDEs were over-looked hence they were not involved in the training preparations to ensure quality. Therefore, the training of teachers was not about policy but to ensure that the politicians carried the day. SCDE B remarked: tax payers' money was wasted in procuring digital devices which were lying in store. The introduction of digital learning integration was not aligned to the policy objectives that required resources to be availed before the program roll out. That was not done and hence it led to program stalling. SCDE C revealed: policy was lacking or was ignored on the provision of technical support staff to schools to help learners, teachers and in maintenance of digital tools. SCDE D remarked: digital learning integration was a campaign tool since stakeholders were not sensitized or involved in preparations which were also shoddy and could not make any meaningful change to learners.

Head teachers implement the government policy at school level. Head teachers have administrative responsibilities of ensuring that the curriculum was delivered to the letter. Views from head teachers were sought on DLI policy with respect to preparations before the program was rolled out. The responses were as shown in Table 9.

Table 9: *Head teachers' Response on DLI Policy*

Response	f	%
Not aware of the policy on DLI	16	36
Good policy but it was interfered with politically	4	9
DLI was about politics not policy	9	20
Poor policy since the program lacked coordination	2	4
Poor policy since parents as stakeholders were not involved	3	7
Poor policy since there weren't adequate finances to support it	15	33
Weak policy since the preparations were inadequate	15	33
Weak policy because the resources were inadequate	6	13

The study findings indicated that 16 (36%) head teachers were not familiar with policy on digitization of public schools in Kenya. In 4 (9%) schools, the head teachers reported that the policy was good but it was interfered with politically. Head teachers from 9 (20%) schools indicated that DLI was politically initiated but it was not about policy. The policy lacked coordination and also did not involve parents who are key stakeholders in education hence poor according to 4% and 7% of the head teachers respectively. The policy was also categorized as poor since there were no finances to support it. Similarly, the policy was termed as poor because the preparations were inadequate and the resources were inadequate according to 15 and 6 head teachers respectively.

The study findings found out that it was important that the policy was achievable in practice and that the resources and logistics were provided easily and conveniently. The adoption and diffusion of DLI in large scale required a coalition of parents, politicians, MoE officials from all levels to undertake adequate preparations through planning and management to avoid wastage of public resources. The study findings were supported by that of Bebell and Kay (2010) who found out that the adoption, organization, planning and management of DLI in schools was complex and required link between policy and politics, coalition between MoE officials, parents, politicians and practically all aspects of school management and administration.

Regression Results on Head teachers' Policy Data

The regression analysis was done to generate data that enabled the description of statistical relationship between the response variable and the mediating variable. Table 10 shows the model summary.

Table 10: *Model Summary***

Model	R	R^2	R^2 adjusted	Standard Error of Estimate
Total	0.887*	0.787	0.782	0.197

Note: * composite variable for DLI policy; ** composite variable for DLI application

Table 10 provides the R and R^2 values. The R value represents correlation of 0.887 which indicates a high level degree of correlation. R^2 indicates how much of the total variation in the dependent variable can be explained by independent variables. In this case 78.7% could be explained which was perfectly large. Table 11 shows analysis of variance (ANOVA). The ANOVA test confirmed that DLI is related to policy. This is an indication that changes in DLI program application in the classroom are related to the changes are related to policy guidelines regarding DLI program preparations.

Table 11: *ANOVA**

Model	Sum of squares	df	Mean squares	F	Sig.
Regression	6.162	1	6.162	158.745	0.001**
Residual	1.669	44	0.039		
Total	7.831	45			

Note: * composite variable on DLI policy; ** composite variable for DLI application

A p-value (sig.) of 0.001 shows a significant linear relationship between the correlated composite variables. The F-test confirmed overall that the relationship is statistically significant and the residual plots and output proved that there was no biasness in sampling. The test reveals that DLI application is statistically related to the policy guidelines regarding DLI program preparations. . Further, the regression coefficients are shown in Table 12. It contains: the un-standardized and standardized coefficients. The standardized coefficient compares the strength of independent variable to the dependent variable.

Table 12: *Coefficient**

Model	Un-standardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	Beta	**Std Error**		**t**	**sig.**	**Torelance**	**VIF**
Constant	0.139	0.123		1.128	0.266		
Composite variables for on DLI program policy	0.817	0.065	0.887	12.600	0.001	1.000	1.000

Note: * composite variable on DLI policy

The results in Table 12 indicate that for every unit positive change of the above weaknesses could increase DLI program application by 0.817 units. The variance inflation factor (VIF) value of $1.00 < 10$ is an evidence of the absence of multicollineality. Thus, the study concludes that preparations were not in tandem with Rogers (2003) project management cycle. Evidence that the DLI policy had massive weakness ranging from poor preparedness: resource planning, forecasting, resource leveling and allocation, poor coordination, political interference, and inadequate PTA awareness and involvement.

The result suggests that policy process on DLI program was required from preparations to the classroom application. The study noted that clear policy guidelines, workable policies and structures to ensure that policies were implemented to the letter were lacking which to a large extent affected the preparedness. Nkula and Krauss (2014) arrived at similar conclusion that South Africa needed workable policies to enable her equip rural public primary schools with appropriate digital learning tools. In Kenya, most policies on DLI remained in draft form (Laron de, 2012; Kwamboka, 2015). Further, the result is in accordance with study conducted by Nut (2010) according to which he found out that failure to have effective policies affected DLI programs in provision of adequate resources and training teachers among other required preparations. Lack of policy on DLI program made children to freely browse adult sites with explicit sexual content after the introduction of OLPC in Nigeria (Hennessy, et al. 2010).

Summary

Majority of the parents were neither sensitized nor asked to finance DLI program. The study noted that parents were involved in receiving digital tools, launching of the program and buying new desks. Two schools had constructed laboratories through fund raising. The study revealed that parents appreciated the free tablets from the government and were ready to support the

innovation. However, they were worried of the reducing momentum at which the innovation was getting entrenched into the education system in their respective schools.

Parents reported that learners were not allowed to carry the tablets home to allow continuity of the learning process because digital learning integration was still premature in their schools. Parents appreciated the use of tablets by their children in school and trusted that the digital technology would not spoil them. Further, parents were not involved in the management of the program. However, some schools parents in the construction of strong room for storing digital learning resources. The findings indicate there is a strong positive correlation of r = 0.854 (Pearson product moment correlation) on composite variables of DLI indicators and beta = 0.968. Thus, where parents were involved there were remarkable preparations that impacted positively on innovation adoption.

The application of tablets in the classroom for the schools that had started the program was not satisfactory. Pupils were not allowed to take the tablets home hence parents were not challenged by their children on the use of the digital technology. Therefore, none of the parents had registered for computer lessons so that they could help their children. DLI was not successful in majority of the public primary schools. Parents associated the failure poor preparedness of the government and failure to involve them. The study noted that there was a lot of resource wastage since the digital gadgets were lying in store instead of being used by pupils daily.

Conclusion

Parents appreciated the free tablets from the government. However, they were not sensitized and were not involved in the management of digital learning integration program. Parents were perturbed because the program appeared to be slowly dying. Ministry of education did not have systematic structures for planning and preparations that were significant in determining how the innovation was being interpreted and perceived by parents before the roll out. The adoption of the innovation was not good because it lacked parents' involvement as key stakeholders.

The project lacked policy guidelines on planning action plan and coordination. The study also revealed lack of collaboration between government agencies, head teachers and teachers which made the program to fail. Further, although the schools received tablets for one class, their use remained minimal, optional and adoption of the innovation depended largely on interest of the teacher, his/her availability, availability of technical support staff and other resources such as electricity, internet connectivity, and computer classroom. For now, digital learning integration does not appear as part of the education system and it is not worth the funds allocated. KICD in conjunction with the Ministry of Education failed to prepare complete software for grade 3, an indicator that ministry of education was unprepared for digital learning integration program roll out. Political objectives overshadowed the planning, management structures and procedures that were the foundation for successful digital learning integration program.

Recommendations

Parents are key stakeholders who should be involved in planning and preparations of the programme so as to take a notch higher. Parents should be sensitized, allowed to critique and to participate in preparations for the education reforms so as to own the project. There should be collaboration, team work, and coordination between MoE, TSC, BOM, KICD, SCDE, head teachers and teachers regarding the magnitude and quality of preparations required in addition to strengthening the management and monitoring structures.

Policy guidelines gives direction to best practices, clarify principles and set standards to be met among other policy measures that needs to be put in place to guarantee a quality national and global product.. The policy on DLI lacked direction on standards that were to be met before embarking on DLI program. The digital program required adequate preparations by providing digital tools in accordance with set standards that meets the curricula demands. Teachers required DLI specialized training to enable them teaches in challenging environments bearing in mind that public primary schools have unique challenges depending on the locale. MoE needs coordinated and concerted approach from the headquarters to the classroom level. Digital infrastructural tools and servicing are necessary in any school. Therefore, policy guidelines should take note of the fact that digital technology infrastructure requires preparations that are based on foresight, planning, and investment. Parents as key stakeholders in education should be sensitized and knowledgeable on programs before subjecting it to the learners. Their involvement, input and critique is significant.

Recommendation for Further Research

Role of PTA on digital learning integration program in government sponsored secondary schools in Meru County, Kenya.

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