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PROPENSITY OF TEACHERS TO THE USE OF TABLET COMPUTERS FOR CLASSROOM INSTRUCTION IN LOWER PRIMARY PUBLIC SCHOOLS IN MERU SOUTH, KENYA

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ABSTRACT

Technology such as use of tablets, laptops, ipads and desktop computers as pedagogical tools in the classroom has increased significantly in recent years all over the world. New technology like the tablet computers offer real value as educational tools due their versatility, portability, and ease-of-use insinuating enormous educational implications that leads to meaningful learning and digital adaptability. The affordances attributed to the tablet computers can only be actualised if teachers have a sound understanding of technology, curriculum and pedagogy. The purpose of this study was to determine the propensity of teachers to the use of tablets computers for classroom instruction in lower primary schools in Meru-south sub-county, Kenya. The study adopted descriptive research design. The teachers who participated in the study were purposefully sampled from public primary schools from Meru-south sub-county in Kenya where a sample of 41 lower primary school teachers was used. The study established that the teachers were not adequately prepared in terms of digital knowledge and skills for tablet computer use for teaching and learning. The findings offer relevant insight to policy-makers and education administrators to prepare teachers to maximize the potential of tablet computer as a teaching and learning tool to facilitate effective instruction that supports meaningful learning. The findings will provide teachers and instructors information relating to key educational and school considerations in the applications of tablet computers for more effective use in the educational context.

Keywords: Tablet Computer, Classroom Instruction, Educational Technology, Lower Primary Schools.

INTRODUCTION

Technology is rapidly changing how educators engage students, deliver content, and manage the traditional classroom (O'Malley, 2013). The use of technology in schools continues to evolve rapidly as new devices and tools become available. The adoption of mobile devices such as iPads and tablets has been a particularly exciting development in recent years. According to Olakanmi and Batchelor (2015), there has been a growing interest on use of tablet computer as a tool for enhancing classroom instructions to improve student knowledge and skills at all levels of education. The benefits offered by these technologies, such as their portability, connectivity, accessibility and range of media, present new challenges and opportunities for teaching and learning. As the take up of tablet computer gathers pace in our schools there is a need for advice on the best approaches and apps to help achieve successful learning outcomes.

Despite the fact that the integration of technology in the classroom is inevitable and there is great attention in the education innovation, the popularity of tablet computers in instruction is still low.

Technology is beneficial for students' performance (Tamim, Bernard, Borokhovski, Abrami, & Schmid, 2011) due to increased engagement, motivation and enhanced collaboration between students. Technology offers many educational benefits such as the ability to easily adapt curriculum to accommodate different learning styles and abilities, improved learning outcomes and attitudes towards learning. Tablet devices have emerged as valuable pedagogical tools in a wide range of applications and educational contexts (Kucirkova, Messer, Sheehy, Fernandez Panadero, 2014). Specifically, teachers can use tablet computers in the classroom to enhance their differentiated instruction practices that creates student-tailored learning opportunities that provide educational content to students in a multitude of formats. By encouraging students to learn in the way that is most comfortable for them, students can absorb and recall classroom information more readily (Roland, 2017).

Educators are challenged today to search for teaching tools that can be used within the classroom as interactive methodologies that make the educational environment increasingly digital (Prensky, 2012). Tablets are rapidly emerging as a prominent feature of pedagogical practice in schools (Otterborn, 2018) since use of tablet computer has the potential to enhance learning for instance contributing to raised motivation, knowledge acquisition and enquiry-based learning (Major, Hassler & Hennessy, 2017). According to Dias and Victor (2017), tablets keeps students engaged, attentive, motivated and allows interaction with the devices. Tablets create an environment that facilitates learners learning process as well as an interactive classroom with real-time feedback (Banister, 2010). Despite the great educational potential of tablet computers for transforming learning, the usage in teaching and learning process is generally not still intensive.

When a new technology is introduced into a new educational system, many innovations may be brought about to other elements in the whole system such as the training, software update and corresponding strategies implementation (Long, Liang & Yu, 2013). Tablets computers have significant potential for enhancing learning but as with all technology the most important element remains the teacher and their classroom practice (Major & *et al*, 2017). Teachers play a critical role in tablet integration because the responsibility for implementation largely happens in the classroom (Bebell & O'Dwyer, 2010) and therefore teachers require sound knowledge of the best pedagogical approaches to use, strong understanding of curriculum and its requirements to facilitate the uptake of new technologies. Teachers are key to the success of implementation of technology in schools. According to Clark and Luckin (2013) integrating innovative technology during classroom practices inevitably demands teachers to acquire new technological and pedagogical skills. Goodwin (2012) also noted that the pedagogical framework in which the teacher situates the technology determines its success and impact on student learning. Thus teachers require a deep and comprehensive understanding about the application of tablet computers in education for effective implementation in classroom.

According to Clark and Luckin (2013) integrating innovative technology during classroom practices inevitably demands teachers to acquire new technological and pedagogical skills. Rikala, Vesisenaho and Mylläri (2013), argued that a continuous focus on pedagogy and professional development is crucial in order to harness the potential of educational technology in Finnish schools. Similarly, the One Child per Laptop (OCPL) project in the developing world has received criticism for only simply giving underprivileged children laptops, but not providing teachers' training and ongoing support (Warschauer & Ames 2010). Karsenti and Fievez (2013) in a survey of 6,057 students and 302 teachers in Quebec, Canada noted that implementing tablet devices into the classroom is not easy, and requires teacher training. Teachers need to find meaningful ways to integrate the devices into their own practice and to evaluate which of the many thousands of educational applications might be appropriate for their pupils. Thus there is need for sufficient pre-service and in-service training for teachers in order to increase their instructional efficiency with tablet computers.

In Kenya, there was government-supported initiatives to distribute educational tablets computing devices to pupils in class one. Research addressing the teachers' disposition towards use of tablet computers for teaching and learning is still an unexplored area requiring further in depth studies hence this study investigated the propensity of teachers to use of tablet computers for classroom instruction in lower primary classes in public schools in Meru south sub-county, Kenya.

Statement of the Problem

Teachers need to incorporate modern technology to strengthen their classroom instruction like use of tablet computer that allows greater collaboration and active learning within the classroom rendering class more dynamic and tailored to learners needs. Teachers are expected to integrate technologies such as tablet computer in an innovative way to enhance teaching and learning process even though tablet computer usage is still very much at the initial practical implementation phase. Few studies have examined the teachers proclivity towards use of tablet computers in classroom instruction in Kenya, hence this study aimed to uncover the propensity of teachers to use of tablet computers for classroom instruction in lower primary classes in public schools in Meru South, Kenya.

Purpose of the Study

The purpose of this study was to investigate the propensity of teachers to the use of tablet computers for instructions in lower primary classes in public schools in Meru south sub-county, Kenya.

Objective of the Study

The objective of the study was to explore the propensity of teachers to the use of tablet computers for classroom instruction in lower primary schools in Meru south sub-county, Kenya.

Research Questions

To achieve the objective, the research was guided by the following research questions;

How were the teachers prepared to use the tablet computers in teaching and learning process?

Are the schools equipped with appropriate computer resources?

Is the tablet computer uploaded with relevant content?

What are teachers' views about use of tablet computer for classroom instruction?

RESEARCH METHODOLOGY

The study used descriptive research design that describes systematically and accurately the facts and characteristics of the population or phenomenon that is being studied (Jackson, 2009). It involves observing, documenting and describing the specific behavior of a subject as it occurs in the environment without influencing it in any way. The phenomenon is observed in a completely natural and unchanged natural environment meaning no variables are manipulated or controlled. Thus the research design was appropriate for the study to create a snapshot of the current state of affairs on the teachers' use of tablet computers for instruction. The study focused on teachers who teach lower primary classes. The actual sample size was 41 lower primary school teachers that were randomly sampled. A questionnaire was used to collect information. The questionnaire was designed to generate information on accessibility of resources, use of tablets, professional training and opinions of teachers on use of tablet computer for instruction. The questionnaire had three sections where the first section sought demographic information about teachers, section two sought information about availability of resources and section three sought information on teachers views on apps and use of tablet computers. The questionnaire was administered by the researchers assisted by research assistants. To answer the research questions the information from the questionnaire was organized, summarized and then analysed. The descriptive statistics was used to summarize and describe the prevalence of study variables.

RESULTS AND DISCUSSION

Demographic Information

The respondents were lower primary school teachers varied in gender, age and academic qualification. Out of the teachers who participated, 65% constituted female teachers while 35% were male teachers. This implies that in the study locale with regard to lower primary school teachers, there was presence of gender imbalance in favour of female. The result insinuates that teaching is more amenable than other careers to the needs of women thus many women would prefer to be teachers. The findings are consistent with US Bureau of labour population survey that suggested a clear female majority in the teaching profession especially in earlier grades. Loewus (2017) in US survey estimates of public school teachers, pointed out that majority of teachers are women.

With reference to age range of the respondents, 21% of teachers were between 21-30 years, 28% of teachers were between 31-40 years, 36% of teachers of teachers were between 41-50 years and 15% of teachers were between 51-60 years. The results show that many teachers are below 50 years implying that they are active and productive, not preparing for retirement and they could therefore be flexible to integrate the new technology in teaching and learning process. The results are in line with a survey of nearly 2500 American teachers that observed that younger teachers were more likely to share ideas and discuss their use of technology with other teachers (Purcell, Heaps *et al.* 2013).

About the highest academic qualification, 40% of teachers are holders of primary teacher education certificate, 33% of teachers are holders of diploma while 27% of teachers are holders of degree. The results indicate that the teachers were academically and professionally qualified which is crucial in any educational system. When teachers were asked whether they own smart phone, 98% of the teachers indicated they own while 2% of the teachers said they do not own a smart phone. This implies that the teachers for lower primary schools are techno savvy and may not require an introduction on how to use tablet computer. The teachers have experience with using of technology and can efficiently incorporate use of tablet computers in instruction.

Regarding training on use of tablet computers, 44% of teachers indicated that they were trained while 56% of teachers stated that they were not trained. This implies that majority of teachers were not trained how tablet computers can be used in teaching and learning process yet the teachers need training to effectively integrate technology in instructions. The teachers that were trained indicated that the training was not sufficient because it was mainly on proper management and maintenance of tablets and not on how to incorporate technology as a pedagogical tool. The results resonate with Phu (2015) who pointed out that one of the most decisive factors for successful technology integration into classrooms was teachers' technology training.

Fernández-Lopez *et al* (2013) noted that training sessions help teachers to become familiar with tablets for effective use. Schools ought not to assume that teaching staff are ready to operate tablets from the outset (Melhuish & Falloon, 2010), but should actively create adequate opportunities for professional development. Also Goodwin (2012) revealed that teachers need to have a thorough understanding of technology, curriculum and pedagogy prior to implementation to ensure the devices are used to their potential. On any other training the teachers have received, 54% indicated they are trained on computer packages, 2% of the teachers on business related courses and 44% of the teachers indicated they have received training in other courses. Goodwin (2012) recommended that professional learning related to the use of technology integration needs to focus on the teacher's role and not solely focus on the technology.

Availability of Resources

All the teachers affirmed that their schools have a source of power and in particular electricity to charge the tablets and to enable use of laptop and projector. Researcher also found out that in all the schools there is a storage facility for the tablets. Teachers also revealed that in their schools, two laptops, one projector and one Content Access Point are available. This insinuates that the schools are equipped sufficiently with basic requirements for computer technology integration.

The teachers pointed out that the tablets were provided by the government of Kenya as per school but not to individual students and specifically meant for only one stream. In 96% of the schools the students in class one are more than tablets computers available. Only in 4% of the schools that the tablet computers are enough for students in one class of the lower primary school. This means that the tablet to student ratio is neither one-to-one ratio nor one-to-two in most of the schools and so the student engagement and interaction with tablets may be limited due to inadequate provision of tablet computers.

The findings are contrary to what Larkin (2011) proposed that two-to-one laptop use is preferable to one-to-one, achieving a better balance between productivity, student engagement, social activity, and individualised learning. Bjerede and Bondi (2012) pointed out that one-to-one access is an essential factor in increasing student motivation and independence for it allows students personalize their own learning experience, supporting the development of learner autonomy and metacognitive skills. A survey with 169 Finnish teachers in schools using tablets computers showed that the low device-to-student ratio was the main hindrance to carrying out the potential benefits the tablets offered (Rikala, *et al.* (2013) which could also be the case in the study area.

When teachers were asked whether technical support for use and maintenance of tablet computers in or around the school was available, 9% of teachers affirmed, while 91% said there is no readily available technical support. This hints that there is minimal or no technical support yet the use, maintenance and monitoring networks and digital space that support learning must be an ongoing effort. It is, therefore crucial that technical support be provided to teachers charged with giving instruction using tablets. The results agree with Montrieux *et al* (2015) who emphasized that policy makers should consider introducing technical and pedagogical support in order to facilitate both teachers' and students' understanding of the full potential of innovative technology in education. Ifenthaler and Schweinbenz (2013), in a study of eighteen teachers concluded that most teachers need technical support for the use of tablet

computers. Also Oliviera (2014) highlighted that a shortage of technical support and the absence of a tablet policy can prevent staff from using tablets on a regular basis.

Applications and Use of Tablet Computer

Regarding the suitability of the applications for the lesson content, 64% of the teachers felt tablet computers are not suitable for lesson content while 36% of the teachers declared that the applications are suitable for the lesson content. All the teachers revealed that tablet computers are not loaded with content developed for the current competency based curriculum that is on use in Kenyan schools currently. This implies that tablet computer is not loaded with appropriate and adequate teaching materials to suit the needs of learners and curriculum requirements for effective instruction. The findings are in line with Ward *et al* (2013) who stated that utility of a tablet in providing novel lessons is clearly limited by the availability of suitable content.

When teachers were asked how often they use tablet computers per week, 14% of teachers indicated they never use, 8% of teachers stated they use daily while 78% indicated they use tablet computers occasionally. The teachers who indicated that they never or occasionally use expressed the reasons for non-usage such as lack of technological skills due to lack of training, insufficient gadgets, tablet not loaded with content for the current curriculum and also due to insufficient time because of other school activities and programmes. There was 100% consensus with teachers that there is no teachers guide in line with course book on the use of tablet computers. This alludes that teachers rely on the training they underwent, knowledge acquired from other sources, experience from smartphone use or even try and error which reduces their using of tablets. The results concur with Oliviera (2014) who stated that a lack of relevant training, a shortage of technical support and the absence of a tablet policy can prevent staff from using tablets on a regular basis.

Regarding on whether the teachers can prepare their own materials for students to use on the tablets, 83% of the teachers said they cannot prepare while 17% of teachers indicated they can prepare content. This alludes that the teachers are not adequately equipped with technological and pedagogical knowledge and skills to create their own content that can be used in the tablet computer. The results are consistent with Dunleavy *et al* (2012) who confirmed that teachers need specific professional development opportunities in order to increase their ability to use ICT for formative learning assessments, individualized instruction, accessing online resources, and for fostering student interaction and collaboration.

Teachers Views on Applications and Use of Tablet Computer

With reference to use of tablet computers, the teachers were asked whether use of tablets in teaching is more involving to the teacher compared to the conventional teaching, 54% of the teachers shared that use of tablets in instruction is more involving while 46% argued that use of tablets in teaching is less involving than conventional teaching. This suggests that lack of training may be making teachers find use of tablet computers to be increasing their work. About 86% of teachers asserted that use of tablet computers in teaching-learning process improve instruction while 14% of teachers pointed out that tablet computers do not improve the teaching-learning process. This alludes that with proper training, teachers may use tablet computers more for instructions once they change their attitude.

On whether the tablet computers make learners eager to learn, 95% of teachers confirmed that tablet computers motivate students to learn while 5% noted that tablet computers do not make learners eager to learn. This insinuates that tablet computers stimulate pupils' interest to learn by engaging the learners and provide a wealth of instructional possibilities to students. This collaborate with Newhouse (2002) who highlighted that Information Communication and Technology can motivate students, increase their self-confidence and self-esteem, stimulate their interest, increase their attainment, allow greater inter-activity and individualization, enhance the pupils' critical thinking and increase their creativity. These findings also agrees with Rikala & *et al*, (2013) who indicated that tablets can diversify and enhance teaching and learning in many ways, particularly in supporting learners' motivation and independent learning, and promoting engaging teaching methods.

When teachers were asked whether the head teachers supported them in the use of tablets, 92% reported that indeed the head teachers support them while 8% of teachers denoted that they do not receive any support from their head teachers. This suggests that majority of teachers are more effective in teaching since the head teacher act as a mediator to integrate technology into education system by playing a key role in guiding, encouraging, providing conditions necessary to enhance use and helping the teachers to use tablet computers in instruction. The results are in line with Osborne and Hennessy (2003) who propounded that it is essential that adequate support be provided to teachers

charged with introducing tablets, as the established pedagogy observed in schools does not change simply with the introduction of new technology. Samuel and Zaitun (2006) maintained that the success of integrating information and technology into teaching and learning interaction depends on the support provided by the head teacher of the school. There is need for administrative leadership and commitment to support effective integration of learning technologies as stated by Van'tHooft (2013).

CONCLUSION

From this research, it can be observed that majority of teachers were not trained on how to use tablet computers in teaching and learning process that would make their use more effective. The teachers that were trained felt that the training was inadequate since training was on management and maintenance of tablet computers and not on how to incorporate the technology as pedagogical tool. It was found that schools are well equipped in terms of power source, laptops, projectors and Content Access Point. However, the tablet computers are not enough for each pupil in every class. However, the tablet computers are not enough for each pupil in every class. It was also found that technical support was not readily available to the teachers.

There was general feeling by the teachers that the content in the tablet computer is not sufficient and not resonating with the current competence based curriculum. Majority of teachers were also not able to develop digital content to use with the tablets so more training may be required. Many teachers also indicated that use of tablets is more involving than conventional teaching methods but most teachers felt that tablet computers make pupils highly motivated to learn.

RECOMMENDATION

For successful integration of tablets in instruction adequate training should be an integral part of professional development for teachers. Teachers need adequate and ongoing introductory and specialized training to acquire digital competence like to master various features and applications on the devices in order to facilitate the adoption of tablet computers and also use tablet technology effectively in the classroom. To manage the process of tablet implementation, teachers need the teachers' guide to offer guidance and understanding about application skills and use of devices to increase teacher instructional efficiency with tablet computers. The tablet computers need to be uploaded with suitable content such as the new content developed and approved by Kenya Institute of Curriculum Development in Kenya to ensure that all learners are exposed to quality content. Adequate tablet computers need to be availed by the government to implement tablet usage and make digital literacy universally accessible to all learners.

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