Business & Social Science
IJRBS

Research in Business & Social Science

IJRBS VOL 9 NO 5 ISSN: 2147-4478

Available online at www.ssbfn.net
Journal homepage: <https://www.ssbfn.net/ojs/index.php/ijrbs>

Ranking challenges facing digital literacy programme in primary schools in Kisii County, Kenya

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ARTICLE INFO

Article history:

Received 01 August 2020

Received in rev. form 12 August 2020

Accepted 28 August 2020

Keywords:

Information Communication

Technology, Digital Literacy

Programme, Computers, Challenges

JEL Classification:

P36

ABSTRACT

Educational institutions are globally adopting new technologies in their pedagogical practices in order to stay in tandem with changes in the ICT sector. Many developing countries are moving towards adopting current technologies in their education systems. On September 30, 2016, after the successful completion of a pilot project, Kenya launched the nation-wide rollout of its Digital Literacy program (DLP). The program was meant to provide laptops to the standard one and two pupils in public primary schools together with e-content for learning. The program has been adopted in almost all schools in the country. After rolling out of the program, there are various complaints that have been put forward by the users and other stakeholders and this has necessitated studies to establish the challenges experienced and their possible mitigation. This study evaluated the challenges facing the Digital Learning Programme for Primary Schools in Kisii County, Kenya. A descriptive survey design was used in this study and a self-administered questionnaire was the main data collection instrument used. Stratified random sampling was used to select a sample of 250 primary school teachers in Kisii County. The data was analyzed using SPSS version 22 and presented in tables in form of frequencies and percentages. Training, access to computers, facilities and equipment, funds, and technical support were the main challenges the DLP is facing in Kisii County. The study recommends enhanced training for the teachers, equipping of well-furnished computer rooms in the schools among other measures to counter the challenges. Further, enough funds should be provided for in the budget to enable address the challenges facing the program.

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Introduction

Education is one of the most important factors for poverty alleviation and economic growth in developing countries (UNDP 2005; UNESCO 2005) and the use of Information and Communication Technologies (ICTs) for dissemination of education is believed to have huge potential for governments struggling to meet a growing demand for education while facing an escalating shortage of teachers (UNESCO 2006).

Many nations both in the developed and in the developing world have implemented digital learning in their education systems to harness the benefits of digital literacy. There is substantial evidence that, in the right hands and used appropriately for specific purposes in specific contexts, ICT can be an effective tool in supporting teaching and learning (Hennessy, Harrison, & Wamakote, 2010). Whereas most developing nations have only introduced digital learning in tertiary education a number have taken it a notch higher and are implementing digital lessons at basic education. The Kenya government introduced digital learning in primary schools in 2016 so as to gain from its benefits which include enhanced creativity in learning, increased learner engagement and improved academic performance. Digital literacy has been connected to improved personalized learning, expanded learning opportunities, increased collaborative learning and quality educational content. It is therefore very important that educational institutions in developing countries embrace and give it a priority.

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<https://doi.org/10.20525/ijrbs.v9i5.829>

Digital and ICT literacy is considered an important competence for full participation in a knowledge economy and an information society. Information and communications technologies (ICTs) have become pervasive in modern societies as tools for transforming education systems, supporting economic development through the creation of new products and services, providing access to information and expertise to support improvements in agriculture, health and education, and connecting communities, teachers and students. Many learning institutions have embraced and continue to reap the benefits of using various ICT technologies in the teaching learning process. ICT provides teachers and students with the resources to collect and analyze data, create multimedia presentations and acquire greater depth of knowledge. Integration of ICT across all levels of subjects and education is envisaged to enhance 21st Century learning skills among others.

Bhattacharya and Sharma (2007) describe e-learning as the delivery of course content through electronic means which include computer-based learning, online learning and distance education. E-learning is the integration of modern technology into the classrooms which can sometimes include learning that is completely independent of mediation (Voogt & Knezek, 2008). The biggest domains of the users of e-learning are schools, colleges and universities which have paid special attention to e-learning in order to expedite the learning procedures (Olatokun & Opesade, 2008). Educators are increasingly aware of the potential and practicalities of using computer assisted learning in the primary classroom and in many circumstances have adopted it as just pedagogy (Mioduser, Nachmias, Lahav & Oren, 2000).

Kenya set out to establish the Digital Literacy Programme in primary schools and this was carried out in phases across the country. The programme was first to be rolled out in class one and two and later it would be rolled out in the other classes. Different stakeholders were involved in the programme implementation process to offer their expertise and improve the success rate of the programme. However, the implementation of the programme has faced many challenges as depicted by many complaints emanating from schools throughout the country. This study therefore set out to establish the main challenges facing this programme in one of the counties in Kenya. Kisii County has about 700 primary schools and there are about 1,420 standard one and two teachers taking part in this phase of the programme.

Literature Review

Conceptual Background

Digital Literacy Programme in Kenya

Kenya's vision 2030 programme recognizes the value of Information Communication Technology (ICT) in its growth to a rapidly industrializing economy by the year 2030. One of the vision 2030 flagship projects for education and training was to establish a computer supply programme that was to equip students with modern IT skills and align integration of ICT into teaching and learning. It is with this in mind that the Kenya government launched the DLP for all primary schools. The digital literacy programme was borne out of the government of Kenya's vision to make sure every pupil is prepared for today's digital world, and to transform learning in Kenya into a 21st century education system.

DLP that is also referred to as "DigiSchool" was borne out of the Government's vision to equip pupils with relevant skills needed in today's digital world. Its objectives were to:

- i. entrench ICT in teaching and learning process
- ii. equip public primary schools with appropriate ICT infrastructure to support teaching and learning
- iii. develop capacity of teachers, education managers and other stakeholders with necessary ICT skills
- iv. enable development and accreditation of appropriate digital content to enhance acquisition of 21st century skills
- v. promote universal access to ICT tools in primary schools and
- vi. integrate sustainable and affordable digital programme in Kenyan education system.

The programme was designed to introduce public primary school children to the use of digital technology and communication learning. Currently, the programme is almost 100% complete with over 20,000 out of 23,951 public primary schools having been issued with the devices.

The programme had five key components: First, digital devices are provided for both learners and teachers. The devices include the Teacher Digital Device (TDD), Learners' Digital Device (LDD), projector, DLP content servers (DCS), digital wireless router, power supply from grid or solar power, device storage and charging and special needs specific devices. Second, is capacity development for teachers and implementers. The programme enhances the ICT skills among teachers and communities through the teacher capacity building element of the programme. Third, is the provision of broadband connectivity devices including storage and servers, power connection, classrooms and desks that pupils use when learning. Fourth, is the provision of content for digital learning. The programme has a framework for identification of approved educational content materials under the leadership of Kenya Institute of Curriculum Development which are then digitized in form of text, audio, videos, graphics, animations and images.

Research and Methodology

Research Design

The study adopted an exploratory approach using a descriptive survey design to evaluate the Challenges Facing DLP for Primary Schools in Kisii County, Kenya. Descriptive research design is a scientific method which involves observing and describing the behaviour of a subject without influencing it in any way (Shuttleworth, 2008). Gall, Borg, & Gall (2003) note that descriptive research is intended to produce statistical information about aspects of education that interest policy makers and educators. This study will be significant to a cross-section of stake holders and therefore fits within the cross-sectional sub-types of descriptive survey designs.

Sampling procedures

According to Kothari (2004), an optimum sample is the one that fulfills the requirements of efficiency, representativeness, reliability and flexibility. This sample should be in the range of 10%-30% (Mugenda and Mugenda, 2003). Stratified random sampling was used to select 255 teachers from a target population of 1,420 of the schools that had already implemented the Digital Literacy Programme. This is 18% of the teachers in the target population.

Research instruments

Self-administered questionnaires were applied in collecting data from teachers. According to Mugenda and Mugenda (2003), a self-administered questionnaire is one in which respondents complete the questionnaires themselves.

Reliability

To establish the reliability of the research instruments a pilot-test was carried out in three primary schools in Nyamira County and the Cronbach's alpha was used to measure the internal consistency of the instruments. A Cronbach's alpha coefficient of 0.76 was realized and any items falling below 0.7 were eliminated to improve the reliability.

Data Presentation and Analysis

Data collected was analysed by use of descriptive statistics. Descriptive statistics involves tabulating, graphing and describing data. This simplifies data so that the general trend can be seen (Orodho 2003). Mugenda and Mugenda (2003) notes that the purpose of descriptive statistics is to enable the researcher to meaningfully describe a distribution of scores or measurements using a few indices or statistics. The data was edited and coded and then analyzed with the aid of SPSS version 22. It was presented in tables and explained by use of frequencies and percentages.

Results and Discussion

Immense literature identifies training of teachers, access to computers, facilities and equipment, funds and technical support as the main challenges facing digital literacy programmes. These challenges were evaluated by the respondents to help explain to what extent they affect the DLP in Kisii County primary schools. Additionally, the respondents were asked to identify any other challenges to DLP. This was on assumption that there could be challenges that are unique to the Kenyan case and especially Kisii County.

The study evaluated the challenges by use of frequencies and percentages. A number of the challenges are presented in tables.

Training

Table 1: Training

	Frequency	Percentage
I find using computers easy enough	59	24.8
I am self-taught in computers	82	34.4
I have good training in computers	67	28.1
We are trained regularly on computer use by the ICT authority	47	19.7
I have difficulties using a computer	179	75.2
N = 238		

Only 28.1% of the teachers tasked with using the TDDs to teach said they had good training in computers and only 19.7% indicated that they were trained regularly on using of computers. Most of the teachers (75.2%) have difficulties in using computers. It's worth noting that training in computer use is wanting for these teachers. Teachers need training in the use of ICT so as to develop appropriate skills, knowledge and attitudes regarding the effective use of computers to support learning. According to Beggs (2000), one of the top three problems to teachers' use of ICT in teaching was the lack of training. According to Jones (2004), the issue of training is certainly complex because it is important to consider several components to ensure the effectiveness of the training. These were time for training, pedagogical training, skills training, and ICT use in initial teacher training. Providing pedagogical training for teachers, rather than simply training them to use ICT tools, is an important issue. Most of the teachers reported challenges in deriving relevant content from online study platforms.

Access to Computers

Table 2: Access to Computers

	Frequency	Percentage
I use computer at home	38	15.9
I spend reasonable time on computer	35	14.7
I only use computers in school	187	78.6

N = 238

Most of the teachers (78.6%) only have access to computers when in school. Those who use computers at home are only 15.9%. This implies low access to computers and less time of computer use by the teachers. More access could translate to more use of the computers and therefore ease of use and positive attitude to computer use. Various research studies indicate several reasons for the lack of access to technologies. According to Sicilia (2005), teachers complained about how difficult it was to always have access to computers. Similarly, Cox et al. (2003) found that majority of teachers agreed that insufficient ICT resources in the institution and insufficient time to review software prevent teachers from using ICT.

Facilities and Equipment

Table 3: Facilities and Equipment

	Frequency	Percentage
My school has well- furnished computer rooms	47	19.7
DLP devices are adequate in number	95	39.9
DLP devices are in good working condition	138	57.9

N = 238

Only 19.7% of the teachers said that their schools had well furnished computer rooms, 39.9% said that DLP devices are adequate in number and 57.9% felt that the devices are in good working conditions. This finding agrees with Hennessey et. al. (2010) who found out that the major barriers to ICT classroom use are the lack of computer hardware (60%), software (56%) and reliable internet connections (52%), particularly in African countries such as Mauritania, Ghana and Zimbabwe.

Funds and Technical Support

Only 32.3% of the teachers felt that the school gets enough funds towards the DLP and only 22.3% felt that they got adequate technical support towards the DLP.

Attitude and Resistance to Change

A majority of the teachers (81%) said that computers are important in day to day use. Only 11.3% felt that life could go on easily without computers. The teachers therefore value computers and what they can do to real life.

The teachers who enjoy using computer are 63.4% and only 44.9% of the head-teachers are passionate about the use of the computers according to the teachers. More than one half of the head teachers therefore are not yet positively oriented to DLP.

Conclusions

The application of digital devices in teaching and learning in primary schools in Kisii county is still facing challenges especially in regard to capacity of teachers to use the computers. The computer skills of most teachers (75.2%) are very low and this needs to be urgently addressed in order for the DLP programme in Kisii county to bear anticipated fruits. The teachers have very limited access to computers outside school and hence this adversely affects their preparation and practise in the use of the digital devices for classroom teaching. Quality time with computers can help teachers develop confidence and expertise in using computers and hence make it easy for them to apply them in teaching learning process. With the current generation of young learners having access to digital devices at home, its very easy for them to be more proficient and informed in the use of digital devices hence the greater need to upscale teacher skills. There is also need to upscale the look of the school computer rooms and also increase the number of devices in schools. Lastly the head teachers of primary schools seemed to have low opinion on computers and their is need for their sensitization to change their attitudes.

Based on the findings and conclusions of the research, the following recommendations will suffice to address the challenges facing DLP for Primary Schools in Kisii County;

-The ICT authority in Kenya should prepare a well thought out and articulated plan to train all teachers involved in DLP in the use of computers though in-service courses in order to give them the necessary skills in running the DLP programme. School holidays can be used to effect this at zone level where all the teachers can be taken through elaborate training that will not only enable them

learn computer technical skills but also help in acquisition of pedagogy skills. This will not only enhance the DLP and help the teachers understand how to prepare content for DLP but also easily use and help the pupils use the LDDs. The training should also be aimed at enabling the teachers develop a positive attitude to DLP and thus solve problems with resistance to change.

- The government can give teachers low interest loans to assist them own a computer at home because this can support them in lifelong learning and preparation of content for use in conjunction with the digital devices. Access to computers in school should also be enhanced by equipping the schools with more computers and ensuring that there's internet connectivity. This will enable the teachers have more exposure and hence higher motivation and competence in the use of the computers.

- The government should provide more funds to schools to upgrade their computer rooms and also provide new, replace and repair the digital devices annually to match the numbers of students enrolled into the lower primary classes. Well-furnished and equipped computer rooms should be constructed in all the schools to enable easy and meaningful delivery of DLP. This will ensure that the LDDs and TDDs are well kept and in good condition. Spacious rooms for instruction should also be constructed to enable ease of teaching.

- Technical support for the schools in implementing the DLP is crucial. The government should therefore employ at least one technical support staff who will assist in repair and maintenance of the DLP devices and also in setting up of the instruction rooms.

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