

## Laptops-for- Pupils Project: Challenges and Opportunities in Public Primary Schools in Eldoret Municipality

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### Abstract

The Kenya Vision 2030 is the country's long-term development blueprint which aims to create a globally competitive and prosperous country providing a high quality of life for all its citizens by transforming it into a newly industrializing, middle income country. Millennium Development Goals (MDGs) on Information and Communication Technology (ICT) skills play a key role in promoting economic development of a country. However, there are still deficiencies in our understanding of the principles behind the design and implementation of computer learning environments and the development of associated pedagogies in schools and as such, the study sought to investigate the challenges and opportunities in the "Laptops-for- Pupils" project in teaching and learning in public primary schools and to find out the potential gap between the intended, implemented and attained curriculum studies. The study was guided by the implementation evaluation model (Jansen, 2000) which examined the differences or gaps between what is intended, what has actually happened and or other aspects of the program that should be accepted. Descriptive survey design was adopted in the study. The study adopted mixed methods approach research that emerged alongside quantitative and qualitative approaches. The study employed simple random, stratified and proportionate probability sampling techniques. There are 40 public primary schools and the researcher sampled 2 teachers in every school hence the target population comprised 80 teachers and the sample size for this study was 66 teachers, a recommended sample size from a given population (adapted from Krejcie & Morgan, 1970). Using simple random sampling, the head teachers and teachers were stratified into strata as head teachers and assistant teachers. The questionnaires were administered to teachers while interview schedule was administered to head teachers. Data collected was processed, coded and analyzed to facilitate answering the research questions. This was done using descriptive statistics. The findings of this study would be useful to teachers and other stakeholders on the need to embrace technology in their pedagogy. The study would also be significant to both scholars as well as policy-makers in the government with a view to raising a tech-savvy generation that would fit better in the modern world.

**Keywords:** Challenges, ICT, Opportunities, Laptops, Project,

### INTRODUCTION

World Education Report (UNESCO, 1998a) states that, education worldwide is facing a significant challenge in preparing students and teachers for knowledge-based society during a time when most teachers are not prepared to use ICT and the majority of existing school buildings, even in the most developed countries, are not equipped to integrate the new information and communication technologies. The 14th Africa Union summit on ICT policies in Sub-Saharan Africa aimed to develop and promote ICT market policies and guidelines for individual, supporting the regional organizations and the sub-regional economic groupings to promote the use of harmonized ICT through a range of targeted training, education and knowledge sharing measures. The Kenya Vision 2030 is the country's long-term development blueprint which aims to create a globally competitive and prosperous country providing a high quality of life for all its citizens. It aspires to transform Kenya into a newly industrializing, middle income country by 2030 and this has been achieved through the three undersea Fibre Optic Cable which connect Kenya to the global fibre optic network and linked to 5,500 km of terrestrial fibre optic cables covering most parts of the country. Millennium Development Goals (MDGs) on Information and Communication Technology (ICT) skills play a key role in promoting economic development of a country and education should be made the natural platform for equipping the nation with ICT skills in order to support a dynamic and sustainable economic growth. To facilitate faster dissemination of ICT skills, there is need to work with other stakeholders in establishing ICT capacities across the country. In turn, this will facilitate the use of education institutions as hubs of ICT dissemination in rural areas. According to ICT Draft Policy of 2006 the government will provide educational institutions with ICT resources in form of computer hardware, software and ICT teachers. Without financial support of the government and assistance from development partners introduction of computers in educational institutions will continue to remain an expensive venture in spite of the fact that the cost of hardware and software has been coming down over the years (MOESTb, 2005). This study adopted the implementation evaluation model by (Jansen 2000) whose goal is to examine the differences or gaps between what is intended, what has actually happened and or other aspects of the program that should be accepted

## **IMPORTANCE OF LAPTOP PROJECT**

One-to-one laptop programs arguably offers the greatest potential of educational technologies to date in that, they place the most power and versatility in students hands, while wireless network connections open vast new vistas for communication and collaboration. The introduction of laptops has an important impact on student's access to and use of information and data in instruction and research (Grimes & Warschauer, 2008). Computer applications with embedded scaffolding and coaching features can greatly improve teachers' ability to target remediation swiftly and efficiently. Teachers have greater opportunities to individualise instruction in a learner-centred environment. (Dunleavy, Dextert&Heinecket, 2007). Project based learning is a model for teaching that focuses on the major concepts of a curriculum, involving students in meaningful investigations of those concepts (O'Hara& McMahon, 2003). Engaging students in pragmatic application of content through cooperative action, multimedia authoring and an expanded conception of curriculum, will gradually transform teaching and learning. Students will benefit from effective literacy technology integration that engages them and teaches them new literacies in an authentic 21st century learning environment (Wolsey& Grisham, 2007). As Bransford, Brown, and Cocking (2000) point out, to use technology effectively, the pedagogical paradigm needs to shift towards more student centered learning. This shift is not trivial or easily accomplished, particularly in countries with teacher-centered educational traditions. Many studies on ICT integration find that projects fall short of expectations because the educators continue working within a traditional vision of rote learning (Gersten, Chard, & Baker, 2000; Honey & Moeller, 1990; Teacher Foundation, 2005). Teachers' understanding and commitment are particularly important to sustain changes in areas such as project-based learning or student-centered techniques, which require core changes to a teacher's instructional practice (Gersten et al., 2000). Studies have identified a variety of constructivist learning strategies (e.g., students work in collaborative groups or students create products that represent what they are learning) that can change the way students interact with the content (Windschitl, 2002). ICT in schools and classrooms tends to attract school learner's interest and motivation (Lafferiere, Breleux&Bracewell, 1999).

## **CHALLENGES OF LAPTOP PROJECT**

ICT, which is the acronym for information and communication technology can be defined as: "combination of computer, video and telecommunication technologies, as observed in the use of multimedia computers and networks and also services which are based on them" (Van Damme, 2003). However, there are still deficiencies of our understanding of the principles behind the design and implementation of computer learning environments and the development of associated pedagogies. In order to implement ICT in education, it is stated that, the three-way interaction between learners, teachers, and computers is needed to be considered, while regarding the wider context in which teachers and learners work (Squires & McDougall, 1994). The implementation of ICT faces several infrastructural and personnel challenges, limited schools with ICT facilities, costly Internet access, limited information sharing, limited skills for ICT integration (Swarts&Wachira, 2010), shortage of labour force due the failure of training institutions to produce ICT technicians and professionals needed for the labour market (Mendes et al. 2003), limited electricity supply, fixed telephone networks and number of computers, few people have heard of or used computers (Hesselmark, Deaney& Ruthven, 2003), lack of policy framework, inadequate infrastructure, cost of bandwidth, and inadequate in-service training on ICT integration in education (Hare, 2007), hence there is a Potential gap between the intended, implemented and attained curriculum.

## **STATEMENT OF THE PROBLEM**

The vision of the MoEST is to facilitate ICT as a universal tool for education and training. In order to achieve this vision, every educational institution, teacher, learner and the respective community should be equipped with appropriate ICT infrastructure, competencies and policies for usage and progress. It calls for recognition of the fact that ICT provides capabilities and skills needed for a knowledge-based economy. It also calls for transforming teaching and learning to incorporate new pedagogies that are appropriate for the 21st century. MoEST's mission therefore is to facilitate effective use of ICT to improve access, learning and administration in delivery education programmes and services. The solar-powered laptop Per Child project, one of the key campaign promises made by Jubilee leaders is to allow seven old child to have access to quality educational opportunities by use the laptops, to access knowledge and provide them the opportunity to engage their own capacity for learning with a view to raising a tech-savvy generation that would fit better in the modern world regardless of their physical location or financial limitations in their institutions. However successful integration of ICT in the teaching-learning process, is dependent on the preparation of teachers, pupils and other stakeholders hence there is a big gap in ICT skills between average Kenyan student and teaching staff and as such the study sought to investigate challenges and opportunities of using Laptops-for- Pupils in teaching and learning.

## **METHODS**

A mixed methods research design is a procedure for collecting, analyzing, and "mixing" both quantitative and

qualitative research and methods in a single study to understand a research problem (Creswell, 2012). Mixed methods is an approach to inquiry in which the researcher links, in some way (e.g. merges, integrates, connects), both quantitative and qualitative data to provide a unified understanding of a research problem (Creswell & Plano, 2007). This study employed mixed methods research design that used both qualitative and quantitative approaches in a single project to gather or analyze data (Cameroon, 2009). The design was chosen because of its appropriateness in educational research findings that yield accurate information. Descriptive survey research design was adopted for the study, it encompasses both quantitative and qualitative methods to collect data and analysis. The main instrument that was used in primary data collection was questionnaire and interview and was used to collect both qualitative and quantitative data for the study. This was mainly because it the best method available to the social scientist interested in collecting original data for describing the population. The data collection involved gathering both numerical information as well as text so that the database represents both quantitative and qualitative information (Creswell, 2003). Secondary data was collected mainly by a selective review of previous relevant literature on government policy for the use of computers in schools from developed and developing countries. Data was analyzed by use of descriptive statistics. This included the use of frequency counts, percentages and tables in making deductions and generalizations about the whole population using sample data in order to answer the research questions. Responses from open-ended questions were recorded word for word and analyzed. Qualitative analysis involved organizing and transcribing the data, categorizing and reporting it in emerging themes.

### PROCEDURES

According to McMillan & Schumacher (1993) questionnaire encompass a variety of instruments in which subjects respond to written questions to obtain reaction, belief and attitude. It is relatively economical, has standardized questions, can ensure anonymity and can be written for specific purpose. A self-administered questionnaire was distributed to a total of 66 teachers in 40 public primary schools and all responded to the distributed questionnaire. Interviews was administered to head teachers. For this study, all the teachers who were selected for the study were expected to provide relevant information on the study. The respondents were assured of confidentiality in their responses.

### RESULTS

**TABLE 1: CHALLENGES THAT HINDER LAPTOP FOR CHILD PROJECT IN SCHOOLS**

Statements	Strongly Agree	%	Agree	%	Undecided	%	Disagree	%	Strongly Disagree	%
Inadequate sustainable, and manageable infrastructure	33	50	27	40.9	1	1.5	2	3	3	4.5
Teacher confidence	4	6	3	4.5	1	1.5	25	37.8	33	50
General lack of ICT knowledge among teachers	40	60.6	20	30.3	2	3			4	6
Lack of focus on Educational Objectives	20	30.3	15	22.7			18	27.2	13	19.6
Lack of policy direction at all levels	35	53	20	30.3	2	3	4	6	5	7.5
Lack of trained ICT personnel	45	68	20	30.3			1	1.5		

**Table 2: Importance of lap top for pupils' projects**

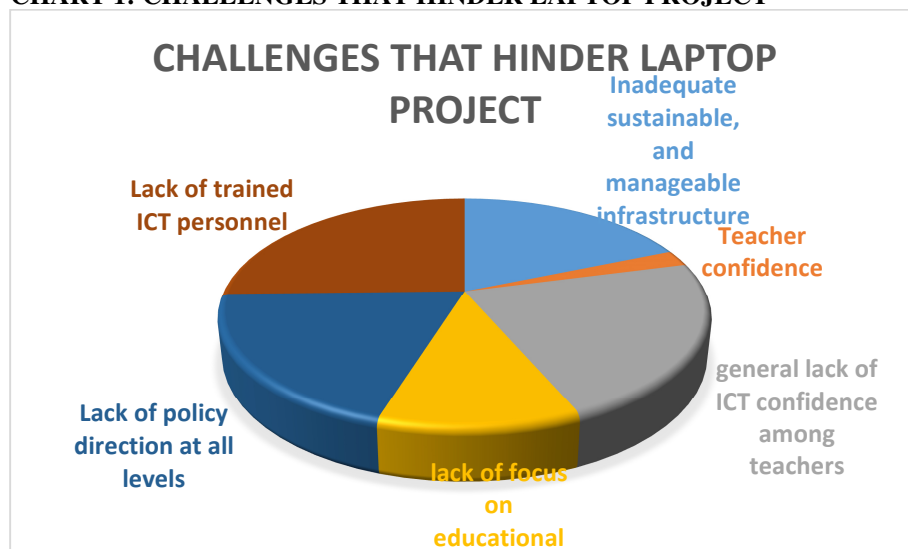
Statements	Strongly Agree	%	Agree	%	Undecided	%	Disagree	%	Strongly Disagree	%
Provide multiple avenues for professional growth	50	75.7	15	22.7	1	1.5				
Facilitate improved teaching and learning processes	22	33.3	21	31.8			15	22.7	8	12
Provide for flexibility of delivery	30	45.4	20	30.3			10	15	6	9
Foster collaboration, creativity	20	30.3	20	30.3	3	4.5	13	19.6	10	15
Promote inclusive education	50	75.7	15	22.7			1	1.5		
Improve the consistency and quality of instruction	23	34.8	25	37.8			8	12	10	15

## DISCUSSION

### CHALLENGES THAT HINDER LAPTOP FOR CHILD PROJECT IN SCHOOLS

Table 1 presents frequencies and percentage of the responses as pertains to the challenges that hinder laptop for child project in primary schools in Kenya. The respondents were asked to indicate whether there was adequate sustainable, and manageable infrastructure 33 (50%) strongly agreed while 27(40.9%) agreed. When interviewed, most head teachers cited that they weren't ready for lap top project due to infrastructure and electricity and are finding it difficult in integrating computer-based activities into their lessons. While computerization continues to advance in developed countries, Kenya still experience a lag in its implementation, and that continues to widen the digital and knowledge divides (Ford, 2007). The respondents were further asked whether teachers had confidence in teaching using laptops in schools 25(37.8%) disagreed with the statement while 33(50%) strongly disagreed with the statement. Head teachers interviewed on the same claimed that they were not confident in the using laptop in teaching. Brosnan (2001) argued that attitude, motivation, computer anxiety, and computer self-efficacy are factors affecting teachers' use of computers in their lessons. Further the respondents were asked whether there was general lack of ICT knowledge among teachers 40(60.6%) strongly agreed while 20 (30.3%) agreed. When asked whether lack of focus on educational objectives hinder laptop for pupil projects 20 (30.3%) strongly agreed while 15(22.7%), 18(27.2%) disagreed and 13(19.6%) strongly disagreed with the statement. head teachers interviewed further argued that ICT objectives is not familiar to them hence find use of lap top difficult to them. To enhance the reach and quality of teaching and learning the respondents were further asked whether there was lack of policy direction at all levels 35(53%) strongly agreed while 20(30.3%) agreed with the statement. ICTs, policy makers need to be aware of how to best utilize ICTs to create value-add for their country's education system. A supportive policy environment and framework, developed at the national level is a key to the successful integration of ICTs into any education system (Bassi, 2011). The respondents were further asked to indicate whether lack of trained ICT personnel hindered laptop project and there was the greatest response from the teachers 45(68%) strongly agreed while 20(30.3%) agreed with the statement. The head teachers supported that they lacked ICT knowledge and have no training on the same and this hindered the project in schools. The results were further illustrated in a bar chart below

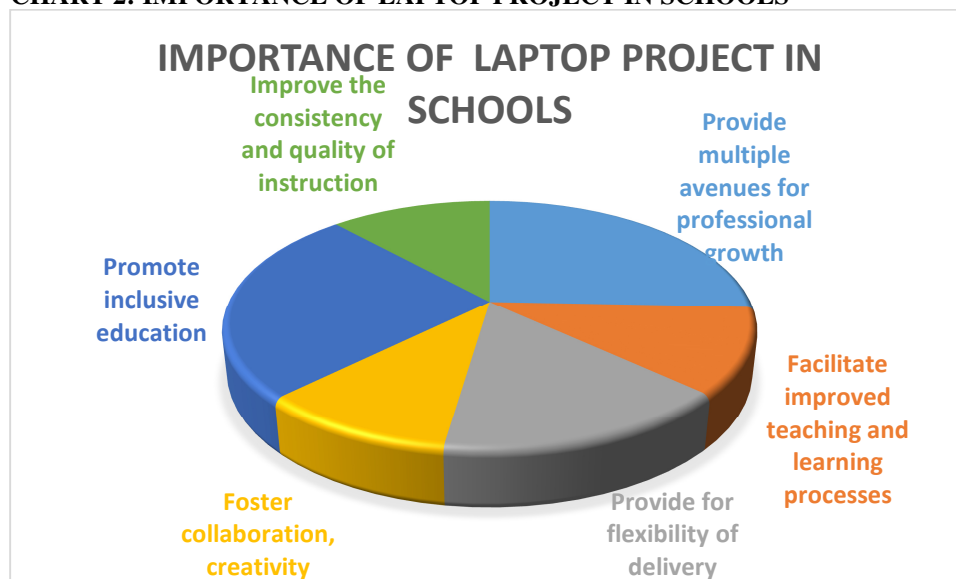
**CHART 1: CHALLENGES THAT HINDER LAPTOP PROJECT**



**IMPORTANCE OF LAP TOP FOR PUPILS PROJECTS**

Table 2 Presents frequencies and percentage of the responses as pertains to the importance of lap top for pupils’ projects and it was noted 50(75.7%) strongly agreed while15(22.7%) agreed that lap top project provides multiple avenues for professional growth. Head teachers interviewed also supported this fact and suggested refresher courses in ICT. When asked whether the project will facilitate improved teaching and learning processes22(33.3%) strongly agreed while 21(31.8%) agreed, 15(22.7%) disagreed whereas 8(12%) strongly disagreed with the statement. Head teachers interviewed on the same supported this fact but suggested that training would assist them impact knowledge to the learners effectively.Kulik’s (1994), argues that several studies reveal that students using ICT facilities mostly show higher learning gains than those who do not use. Further the respondents were asked whether the project provide for flexibility of delivery 30 (45.4%) strongly agreed while 20(30.3%) agreed, 10(15%) disagreed while 6(9%) strongly disagreed with the statement. When asked to respond to this fact, the head teachers negated that this project will lead them to being redundant but suggested the introduction of ICT be done in moderation and be gradual at all levels. The respondents were further asked whether lap top project would foster collaboration and creativity 20 (30.3%) strongly agreed while 20(30.3%) agreed whereas 3(4.5%) were undecided while 13(19.6%) disagreed, 10(15%) strongly disagreed with the statement. The head teachers when asked to respond on the above statement agreed that the learners would actively participate in learning. The respondents were further asked whether lap top project would promote all inclusive education 50 (75.7%) strongly agreed while 15(22.7%) agreed with the statement. When the head teachers were asked to respond to the statement they strongly agreed that ICT would lead to all inclusive education. On the According to Wims& Lawler (2007),computerization is seen as a means of reducing student teacher ratio, providing access to reading and learning materials, creating “virtual” class space without the necessity of building more classrooms, and connecting schools with resources of the world outside. The respondents were further asked whether laptop project would improve the consistency and quality of instruction23 (34.8%) strongly agreed while 25(37.8%) agreed whereas 8(12%) disagree while 10(15%) strongly disagreed with the statement this is further supported by( Ford, 2007; Kinuthia, 2009) that use of ICT will create techno-savvy students who will help to propel the country to industrialized nation status in turn injecting needed resources back into Kenya’s rural environment, alleviating economic and basic educational disparities. The head teachers also echoed this fact that laptop project would improve the consistency and quality of instruction.The results were further illustrated in the bar chart below;

**CHART 2: IMPORTANCE OF LAPTOP PROJECT IN SCHOOLS**



### CONCLUSION AND RECOMMENDATIONS

The study findings revealed that lack of trained ICT personnel and knowledge among teachers were the factors that would hinder the introduction of laptop projects in schools. The findings further revealed that laptop projects would provide multiple avenues for professional growth in ICT education and further promote all inclusive education among the teachers and learners. The study recommended that policy makers in the government to ensure that ICT policy statements are achievable within the prescribed time frame taking into consideration the existing infrastructure. Further the study recommends retraining of teachers by incorporating the use of ICTs in education in colleges, universities and provide refresher courses to teachers in service. Teachers to further skillfully redesign learning environments so that students can transfer their newly gained ICT skills to other applications to use in an ICT rich environment. The study also recommended the administrators to develop and sustain a successful laptop program in their institutions.

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