

## CLOSING THE DIGITAL DIVIDE: KENYA'S ONE LAPTOP PER CHILD INITIATIVE

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**Abstract:** *Lack of teacher training in educational technology is a major cause of flawed implementation and integration of technology policies in Kenya. Failure to address issues of content development, best practices of integration, and retooling of teachers appears to be a hurdle to the achievement of the essential 21st Century skills. Learning to collaborate with others and connect through technology are essential skills in a knowledge-based economy. The national laptop project in schools is expected to be implemented through 2014 with 50 000 teachers in need of training in the integration of technology in the classroom. The purpose of this study was to explore ways of addressing the current digital divide in integration of technology in a Kenyan classroom. This is a mixed methods study (both qualitative and quantitative methods). Interviews were conducted with Kenyan participants currently based in Kenya and the U.S.A. Technology acceptance theoretical framework will be used to analyze data and make appropriate recommendations.*

**Key Words:** Technology, Laptop, Teacher education, Kenya

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### Introduction

The recent Jubilee government proposal to introduce one laptop per child project in Kenya seems to be facing relatively obstinate resistance from a majority of stakeholders. Both teachers and administrators have flaunted allegations of uninformed policy change procedures with regard to the implementation of the project. Policy makers, schools, and teachers have not yet recognized the fundamental shift occurring in the students they serve and in the learning communities they are charged with fostering (Levin, & Arafeh, 2002). Is the lack to address pertinent issues such as teacher training, content development, and retooling of teachers the cause? This study operates under the assumptions that new technology seems to influence a fair majority of people to adapt quickly to new ways of communicating, learning, working, and living (Trilling, & Fadel, 2009), and users of technological artifacts act as agents of technology change who help to shape the artifact or fit the artifact in their system (Kline, & Pinch, 1996). Previous studies reveal changes in trends, ownership, and use of various media in education (Rideout, Foehr, & Roberts, 2010).

One laptop per child is a legitimate initiative that aims at transforming Kenyan education standards, and efficiency. This project is in line with the changing times that have dictated change in the mode of learning in the 21st century (Levin, & Arafeh, 2002). Learning in the 21st century requires learners to be equipped with tools to facilitate them to acquire critical thinking skills that would help them navigate through their complex learning environment. This initiative might create equal educational opportunities to children of diverse backgrounds in Kenya if managed prudently. In a similar way, teachers might benefit from professional training, content creation, and other information technology skills resulting from the initiative. All these benefits would lead to a facelift of other infrastructure associated with project implementation. For instance, building of computer labs, IT support center, hiring of personnel, and electricity connections.

Similar projects in the United States of America, for example, Miami-based one laptop per child association (OLPCA) and Cambridge-based OLPC foundation have exhibited commendable success. In lieu of this, one may cautiously predict

that the probability of the Kenya's one laptop per child project being successful would be high if executed judiciously. The project might be a gateway to a new world of learning that is sustainable and customized to address learners' curiosity.

While acknowledging this ambitious project, its success might be hindered or thwarted by other factors. A significant number of children in Kenyan schools lack basic needs like food, and clothing. According to Maslow's hierarchy of needs, these are the most basic needs a human being needs to have or acquire before progressing to the next level in the hierarchy (Simons, Irwin, & Drinnien, 1987). Logically, if basic needs are not met, then there is a possibility that the next hierarchy of needs might not be attained. In this case, technology might be ranked higher in the hierarchy thereby raising questions of feasibility of the Kenyan laptop project.

Poor infrastructure might be another obstacle to the achievement of the project. Lack of sustainable electricity and energy to power the laptops is a puzzle that is yet to be solved in many parts of the country. Although plans are underway for providing solar powered laptops to regions with no electricity, problems like troubleshooting and security of the equipment remains a major challenge to teachers and learners in areas with poor structures. Teachers' computer literacy is wanting and this might disarray to the process. Kenyan education experts have indicated lack of clear structures of teacher training on educational technology as the cause of the problem. Previous studies have revealed Kenyan teachers are ill equipped with technology skills and equipment. Therefore, it would be reasonable to claim that any effort to apply skills they are not acquainted with is bound to fail.

### Statement of the problem

Kenya seems to be on the right track with regard to adoption of new technology in teaching and learning. One laptop per child project appears to be noble, unique, and one of its kind in East Africa. However, chances of success with this project might be in jeopardy because of several reasons. Claims of lack of collaboration and consultation seem to resonate among technology experts, teachers, and other stakeholders of education. Apparently, various educational stakeholders have

expressed discontent that is closely related to administration of the project and failure to outline fairly elaborate infrastructure for the execution of the project. Main concerns appear to emanate from lack of policies touching on teacher training on technology. It is discernable that teachers are investing their time and efforts in learning new skills but other factors might be affecting their effort. Little is known about teachers' perceptions on one laptop per child project initiative, therefore, the purpose of this study is to investigate the following questions:

### Research Questions

1. What is the current state of technology use to deliver instruction?
2. What are the teachers' perceptions of the impact of the laptops on learning?
3. What best practices should be adopted for one laptop per child project?
4. What pedagogical interventions should be used in content delivery using laptops?

### Methodology

#### *Theoretical Framework and Application: Technology Acceptance Model (TAM)*

This theory is based on perceived usefulness (PU) and Perceived ease of use (PEOU). The purpose of TAM is to assess the user acceptance of emerging technology; specifically applying to the use of computers (user behavior) (Davis, Bagozzi, & Warshaw, 1989). The model explains that when users are presented with a new technology, their decisions are influenced by how and when they are going to use it. Bagozzi, Davis, and Warshaw 1992 posit that attitudes towards usage and intentions to use may be ill-formed or lacking in conviction leading to low adoption rates of technology. Rogers (2004) argues that adoption of any technology depends on the ease of use of that technology and how the system is arranged function. The main emphasis of both theories is on the hierarchy of implementing desired adoption plans with regard to technology.

#### *Validity and credibility*

Tracy (2010) describes credibility as trustworthiness, verisimilitude, and plausibility of research findings. Merriam (1998) posits that internal and external validity are important in judging the value of a qualitative project; thus defines internal validity as to how close are findings matching reality while external validity as to how a study can be generalized to a different population or other situations. This study will employ the following credibility techniques: - Member checking and peer debriefing.

**First level member checking.** After data transcription, interviewees will be given transcripts to confirm or disconfirm whether the content is correct. Second level member checking; interviewees briefed on the interpretation of the researcher to determine whether the interpretation of the researcher was accurate and in line with the interviewee's thoughts.

**Peer debriefing.** Peer debriefing will also be employed to enhance credibility in this research. Hail, Hurst and Camp (2011) posit that debriefing helps to focus on correctness and accuracy of research interpretations and conclusions, to prevent bias, and serves as evidence of collaboration and sharing of findings. After each step of data collection, the researcher will meet with

his advisor to discuss the progress, findings, and interesting issues from the study to ensure that the study remained on track.

### *Design framework*

This section will be a discussion of study methodology. A mixed methods approach (both quantitative and qualitative methods) was used to collect and analyze data used to investigate the Kenya's digital divide. A mixed method approach was used in order to use a pluralistic approach to derive knowledge about the problem (Creswell, 2013).

### **Participants**

This study employed purposive sampling for issues of convenience and exhibition of theoretical interests. Participants were primary school teachers directly involved with One Laptop Per Child (OLPC) project implementation in one of the county's in Kenya, college students training to become teachers in a Kenyan university, and students and teachers of Kenyan origin currently studying and or teaching in one Midwestern university in the U.S.A. Sample of ten participants (five teachers in Kenya and five other teachers of Kenyan currently in the USA) were invited via email for face-to-face interviews. A total of 100 college students training to become teachers in Kenya filled online questionnaires sent to them via an email invite.

### **Data collection and analysis**

**Procedure.** This study is projected to take approximately one year to complete. I will schedule interview appointment with participants, explain the purpose of this research, and finally read or guide the through the consent signing process before interviewing participants. Mixed method approach will be applied to collect and analyze data. Quantitative data will be collected through online questionnaires administered via an email invite. Items measuring technology acceptance model constructs will use a five point Likert scale consisting of Strongly Disagree, Disagree, Agree, Strongly Agree, and Not Applicable. Quantitative data will be analyzed by statistical Package for Social Sciences (SPSS). Qualitative data will be collected through interviews and observations. The resultant data will be coded and interpreted according to emerging themes.

### **Preliminary findings and Discussion**

“One child, one laptop” is a failed project (Jackson, 2013). The project is already running into confusion and expense many predicted at its initiation. Training of the trainers system is muddled by confusion. Evidence from some of my interviewed correspondents indicates the following; “The training of the trainers system, then, involves paying educators to educate paid educators to educate paid educators....” appears to lack clarity with regard to the implementation of the training phase. A very crucial step of planning was never given a fairly proper consideration. The training program was launched yet capacity building of ICT ahead of the program seems to have been not laid out strategically.

As much as the project was a blueprint for success, the government appears to have “bit more than it could chew”, training is expensive but not as expensive as providing the laptops. A major problem seems to be corruption in completing the evaluation of tenders of those laptops. Most activities revolving around tendering exhibits a haven of corrupt malpractices by major participants of the project. Education

pundits indicate that this was just a political tool used by politicians to ascend to power and later on continue using this bait to remain in power.

Another problem associated with this project is infrastructure. The government has acknowledged the problem stating that “the physical infrastructure in most schools in undeveloped and dilapidated.” Statistics reveal that only 2,037 of the targeted 20,368 schools that are to receive laptops are connected to the electric grid. Goodwin (2014) posits that 90 percent of the children receiving laptops will have no reliable means to power them and might realistically never turn them on. Although this was a bold move and project, leapfrog into e-learning and access is a pipe dream that is yet to be achieved. Goodwin (2014) equates this as a potential that exists without the energy to unlock it.

My interview respondent described the consequence of implementing a fundamentally flawed roll out plan as a wholesale rejection of the laptop project. Any fairly logical argument might arrive at a similar conclusion. Many recent reports of One Laptop Per Child (OLPC) project indicate various degrees of failure of OLPC. Most of the failures stem from energy related problems. Statistics show that 90% of children in sub-Saharan Africa go to schools that lack electricity. Examples; 2% of Burundi and Guinea schools are electrified, while 30 million children of Democratic Republic of Congo

attend school without power. Kenya might not be an exception; there is therefore little hope of a successful outcome for an e-learning platform reliant so completely on access to power.

## Conclusion

The relatively rapid pace of technological change appears to influence a fair majority of people to adapt quickly to new ways of communicating, learning, working, and living (Trilling, & Fadel, 2009, p. 75). The Kenyan one laptop per child project is noble and is expected to influence education delivery methods supposedly across the country.

The purpose of this research is to make a significant contribution to the body of literature on the use of technology in learning and teaching. The study will propose some pedagogical interventions that might be address changes caused by technology. This study will suggest best practices for implementing one laptop per child initiative in Kenya and propose recommendations future research.

The results of this study will be published in a journal and made available for use by policy makers in the Kenyan government and other scholars who may wish to explore further this research phenomenon or to replicate the study. At the moment, I am thinking of submitting this research paper to the education review journal or journal of educational technology.

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