

FROM TRADITIONAL TO TECHNOLOGY BASED EDUCATION IN PRIMARY SCHOOLS OF KICUKIRO DISTRICT, RWANDA

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Abstract: Information technologies have affected every aspect of human activity and have a potential role to play in the field of education and training, the need of new technologies in teaching learning process grows stronger and faster in Rwanda. The purpose of this study was to analyze what is happening in Rwanda Primary Schools regarding the integration and use of information and communication technologies (ICT) in teaching and learning. In order to identify and get deeper understanding of those issues, the research has applied qualitative and quantitative approaches. Data collection was done using structured questionnaire to address different variables and observation while secondary data has been collected using different books and online written materials. Findings have been analyzed by using IBM SPSS Statistics 25 and interpreted by comparing them with the other researchers' findings. The findings spotted the key problems that affect the movement from traditional education to technology enabled education in primary schools, among others; the high cost of connectivity as confirmed by 75.5% of respondent, lack of/or insufficient facilities and internet in schools agreed by 85.1% of respondent, lack of/or poor technical support agreed by 75.5%, insufficient or lack of trainings for teachers as shown by 75.5% of teachers. The researchers concluded that the existing benefits in using ICT in education system completely outweigh the existing disadvantages, so the parents, teachers and school leaders, Mineduc and Government of Rwanda were advised and recommended in this research.

Keywords: Traditional, technology, teaching and learning.

1. DEFINITION OF KEY TERMS

Information technology:

Information Technology "is any computer-based tool that people use to work with information and support the information and information processing needs of an organization" It includes computers and its related technologies; www, Internet and Videoconferencing etc. Information technology can be used to promote the opportunities of knowledge dissemination. It can help the teachers and students having up-to-date information and knowledge (Haag, 1998).

Information Communication Technology (ICT):

ICT can be seen as an integration of IT with mediation broadcasting technologies, audio/ video processing and transmission and telephony. Therefore, ICT can be an extended acronym for IT. The term ICT is widely used in the context of education, whereas IT is a term widely used in the industry. In addition, ICT is also used to refer to the integration of telephone and audio/ visual networks with computer networks (Haag, 1998).

Information technologies and Teaching Learning process:

Combined processes where an educator assesses learning needs, establishes specific learning objectives, develops teaching and learning strategies, implements plan of work and evaluates the outcomes of the instruction (IGI global,2017).

Technology-based education:

Technology based education is the integration of instructional technology into the learning environment of schools. This refers to educational settings that apply advanced technologies such as computer and the internet in the process of teaching and learning (igi-global, 2017).

Learner:

A learner is someone who is learning about a particular subject or how to do something, is a person who is learning a subject or skill (collinsdictionary, 2017).

Teacher:

A teacher also called Instructor is a person who teaches, usually as a job at a school or similar institution. A person whose occupation is teaching others, especially children (collinsdictionary, 2017).

Computer:

A computer is an electronic device that manipulates information, or data. It has the ability to store, retrieve, and process data. You may already know that you can use a computer to type documents, send email, play games, and browse the Web. You can also use it to edit or create spreadsheets, presentations, and even videos (www.gcflearnfree.org).

2. STATEMENT OF THE PROBLEM

The Rwandan government views Information and Communication Technology (ICT) as a key tool for transforming the economy, with the education sector playing an important role in developing the necessary human resources.

Since the year 2000 there has been a big push to introduce computers into schools and integrate ICT into the education curriculum (Mineduc, 2014).

“GoR has implemented numerous ICT in education initiatives including ICT training for teachers and One Laptop Per Child to transform the delivery and quality of education; Schoolnet that aims to improve connectivity and deploy ICT tools in 12-year basic education schools; RwEdNet to interconnect Rwanda’s institutions of higher learning and linking them to global education and research networks, and the Rwanda Education Commons a one-stop portal for education information. These initiatives are said transforming and improving the delivery and quality of education in Rwanda” (RDB, NICI III-2015 Plan, 2011).

This research has sought to investigate the use of ICT, the rate and the factors affecting the implementation of ICT usage in primary schools in Rwanda.

3. TRADITIONAL TO TECHNOLOGY-BASED EDUCATION

The use of technology in education has provided students and teachers with an unlimited number of options for classroom learning this section provide the information of how technology integrated in education prior 1800s, classroom Technology in the 1800s until the year 2000, the blackboard was a staple piece of technology in the classroom and allowed teachers to display information and notes to the entire class using a piece of chalk, when the blackboard became filled up, an eraser was used to clear the board so new information could be added; It was during the 1800s that students used slates which were small blackboards that were written on using a piece of chalk. Students used slates in place of pen and paper, even though slates were not very convenient for longer assignments and could only be used to solve short equations. Then they were erased so they could be used to solve a new equation. Blackboards were made of slate that was surrounded by a wood border to prevent the slate from breaking. Slate was the material of choice due to its broad availability throughout the world during the 19th century when mining provided abundant access. In recent years, it was determined that chalk dust posed potential health risks which is one of the reasons they were gradually replaced by the whiteboard as we know it today (Owston,R.D, 2005). The combination of education and technology has been considered the main key to human progress; Education feeds technology which in turn forms the basis of education; it is evident that information technology has affected changes to the methods, purpose and perceived potential of education (eduroute, 2008).

ICT integration in education

There has been a high level of investment in information and communications technology (ICT) in education over a prolonged period throughout the ‘developed world’ (Twining P., 2002). Interest in ICT in education in England stretches back to at least the mid-1960s, when the original National Council for Educational Technology was first formed (CET, 1975). At this time the main focus was often on further and higher education rather than on schools; Later there was expansion to the schools starting with secondary then primary schools through government funding. Twining (2002) outlines some of the policies employed by government in England in order to meet the government targets for ICT in education.

Funding was made available for; The National Grid for Learning (NGfL), connecting every school in the country to the Internet; providing additional computer equipment for every school; training every teacher in state schools in the United Kingdom (UK) to make effective use of ICT as a tool to support teaching: cutting bureaucracy in schools through the use of ICT and setting up of a number of Centers of Excellence for IT and High Technology training and Skills Challenge projects (Twining P., 2002).

United States of America (USA) also has a long history about technological innovation revolutionizing education in the US since the mid-1800, starting with the introduction of text books and moving through technologies such as film, radio, television and computers (Kent, T.W. and McNergney, 1999). The use of computers in school level education in the US started in the sixties The first national educational technology plan, Getting America’s Students Ready for the 21st Century: Meeting the Technology Literacy Challenge, was developed including four key goals for educational technology: giving all teachers in the nation the training and support they needed to help students learn using computers; all teachers and students were to have modern multimedia computers in their classrooms; every classroom to be connected to the information superhighway and making effective software and on-line learning resources an integral part of every school’s curriculum (Hasselbring T.S., 1986). Advanced countries with integrated ICT in the education system also include Australia, South Korea, Denmark, Finland, Belgium Sweden, Singapore among others. Some typical characteristics of these countries are as follows: almost all classrooms are equipped with computers and other ICT tools; the student/computer ratio is high; Internet access is available in all schools; curriculum revision ensures nationwide ICT integration; delivery of education is increasingly online (UNESCO, 2008).

Integration of ICT in schools in developing countries especially in Africa was slow and uneven as indicated by a sample selection of African countries through NEPAD (New Partnership for Africa Development) e-schools project which provides some estimates of numbers of the schools reached with computers (Farrel G. and Shafika I., 2007).

Table 1: Computer Penetration Ratios at Schools African Countries (2007)

Country	Number of Schools	Schools with Computers	% of Schools with Computers
Egypt	26,000	26,000	100%
Ghana	32,000	800	2.5%
Mozambique	7,000	80	1.1%
Namibia	1,519	350	22.1%
South Africa	25,582	6,651	22.6%

Source: NEPAD e- schools project

Many governments have realized the positive impact of ICT in education henceforth developed national ICT policies and ICT education strategies to guide on its integration for maximum benefits (Bryderup & Kowalski 2002, Brunemann et al.2000, Gulbahar & Guven 2008). According to the infoDev report, quoted in Farrell and Shafika I. (2007), ICT policies in the East African Community began taking shape in the early 2000s; there had been an increase in unregulated use of ICTs that prompted the need for governments to offer direction in the use of these technologies.

Rwanda promulgated its national ICT policy in 2000, it is based on a document that was released in 1999 for national debate and consultation, in 2000 just one school in the country had a computer, six years later over half of primary and secondary schools have been equipped with hardware, over 2,000 teachers have received ICT training, and all public schools are expected to join the information superhighway by the end of 2008. Already, out of the 400 secondary schools has been fully equipped, some of them having wireless Internet access. The national School Net project included in the NICI-2010 plan was intended to be the vehicle for school Connectivity (Glen Farrell, 2007).

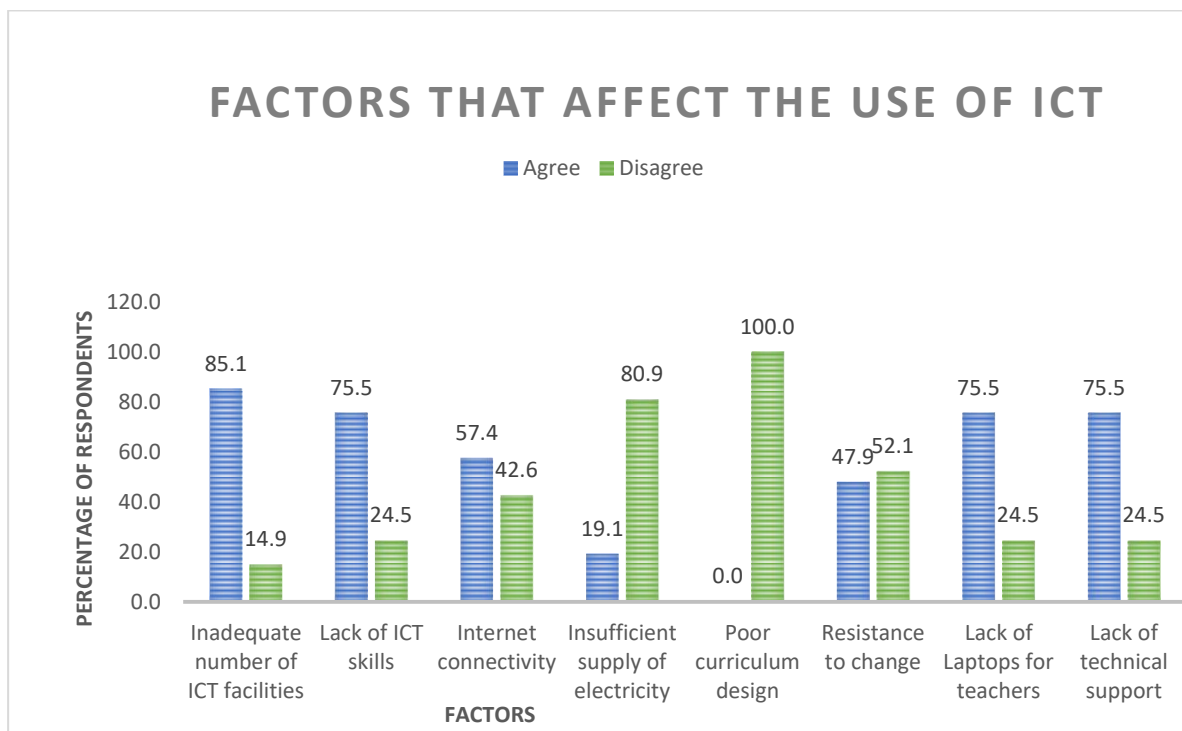
4. RESEARCH METHODOLOGY

The researchers investigated in 47 primary schools of Kicukiro district, among them 27 are private and 20 public schools. Using the purposive sampling technique which consist of a deliberate choice of a participant due to the qualities the participant possesses and doesn't need a set number of participants (Amin, 2005). The researchers selected in every school; Head teacher and one teacher in upper level classes because it is where ICT is generally used, this made the total of 94 participants (2*47schools=94 teachers).

5. PRESENTATION AND ANALYSIS OF RESEARCH FINDINGS

Analysis of the factors that affect the movement from traditional to technology based education in primary schools

The teachers have been asked their perceptions about the factors that may be affecting the use of ICT in teaching and learning in primary schools, the chart below express that 85.1% of respondents agreed that Inadequate number of facilities is the major factor while 14.9% disagreed, 75.5% agreed that the factors are Lack of ICT skills, lack of laptops for teachers and the lack of technical support while 24.9% of respondents contradicted, 57.4% of respondents said that the factor is Internet connectivity while 42.6% disagreed, the common understanding has been on the factor of Poor curriculum design where all of the respondents disagreed that factor. Almost the same factors have been identified in 1999 in another research (Trotter, 1999). The lack of acceptance of ICT or resistance to change have not been identified as a big problem as it was the case in few passed years, (Chege 2003) cites lack of acceptance of ICT as an urgent national need as a reason for slow penetration of ICTs in the Africa.



Source: SPSS data analysis

Figure 1: Analysis of factors that affect the use of ICT in teaching-learning process

While investigating challenges, teachers have been asked their perceptions about what could be the barriers to the movement from traditional to technology enabled education, as defined by Schoepp, 2005, a barrier is considered as any condition that makes it difficult to make progress or to achieve an aim (K.Schoepp, 2005). The search finding yields that 98.9% agreed Fail to understand the role of ICT in classroom is a barrier, 61.7% said that Little means as a barrier, 26.6% confirmed that Resist pedagogical change can be a barrier while 73.4% contradict, 21.3% said that the barrier is fearing new technology but 78.7% disagreed as shown on table 2.

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Table 2: Barriers to the movement from traditional to technology based education

Possible barriers	Yes	No	Total
Fear new technologies	21.3%	78.7%	100%
Fail to understand its role in classroom	98.9%	1.1%	100%
Resist pedagogical change	26.6%	73.4%	100%
Little means	61.7%	38.3%	100%

6. SUMMARY OF FINDINGS

According to teachers from different primary schools, there are some factors that may affect the implementation of ICT usage in existing teaching and learning methods, on the first place comes the fail to understand the role of ICT in classroom as confirmed by 98.9% of respondents and secondary the little means which results on the lack or having insufficient facilities. The table 2 above shows the analysis of results on Q17 which was asking about the barriers to the movement from traditional to technology based education.

7. CONCLUSION

The research investigated the key problems that affect the movement from traditional to technology enabled education in primary schools of Kicukiro district, different issues raised by respondents include high cost of connectivity, lack of or insufficient facilities and internet in schools, lack of or poor technical support, insufficient trainings for teachers, lack of facilitation to get teachers' personal computer, are important concerns for the schools in Kicukiro district that need to be resolved.

8. RECOMMENDATION

The research recommends continuing help to teachers, parents and students to well understand the role of ICT in education, the fail to understand the role of ICT in classroom has stated by this research as one of factors that affect the movement from traditional to technology based education.

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