

## Assessing the challenges of Information and Communication Technology in educational development in High Schools in Ghana.

**Christopher A. Abilimi** (MPhil), Lecturer, Computer Science Department, Christian Service University College, Kumasi, Ghana.

**Dr. Thomas Yeboah** HOD, Computer Science Department, Christian Service University College, Kumasi, Ghana.

---

### ABSTRACT

*The necessity to apply Information and Communication Technology (ICT) in education has gain worldwide credit, for the fact that it has the prospective for improving the standard and quality of education radically, in the sense that, the use of ICT in education has a compelling impact on teachers and students motivation to teach and learn respectively, as well as other stake holders in the industry. However, the implementation of ICT in our education is faced by a lot of obstacles. This study investigates the challenges of Information and Communication Technology in educational development in High Schools in Ghana at the Akuapem North Municipality. The methods used were questionnaire, and interview of students, teachers and other necessary stakeholders in education. The study concludes that most (41.7%) of schools have few computers which make students competed for computers at the ICT laboratory. It was also showed that power fluctuation, lack of qualified ICT teachers and no ICT laboratory in the Akuapem North Municipality were some of the challenges confronting the ICT in the educational development in the Municipality.*

**Keywords** Challenges, educational development, Education, Information and Communication Technology

---

### 1. Introduction

According to Nyangechi, Eze and Adu (2013), a national telecommunication and information infrastructure depends on its educational technology infrastructure. Chandratre (2008), stated in his blog that before any ICT-based programme is launched, policymakers and planners must carefully consider the following: In the first place, are appropriate rooms or buildings available to house the technology? In countries where there are many old school buildings, extensive retrofitting to ensure proper electrical wiring, heating/cooling and

ventilation, and safety and security would be needed. Another basic requirement is the availability of electricity and telephony. In developing countries large areas are still without a reliable supply of electricity and the nearest telephones are miles away. Experience in some countries in Africa point to wireless technologies as possible levers for leapfrogging. Although this is currently an extremely costly approach, other developing countries with very poor telecommunications infrastructure should study this option. Policymakers should also look at the ubiquity of different types of ICT in the country in general, and in the educational system (at all levels) in particular. For instance, a basic requirement for computer-based or online learning is access to computers in schools, communities, and households, as well as affordable Internet service (Chandratre, 2008).

In general, ICT use in education should follow use in society, not lead it (Divaharan, 2011). Education programs that use cutting-edge technologies rarely achieve long term success: According to Sime and Priestley (2005), it is cheaper, and easier, to introduce a form of technology into education, and keep it working, where education is riding on the back of large-scale developments by governments or the private sector (Condie, Munro, Seagraves & Kenesson, 2007). Again, Perraton (2010), indicated that, television works for education when it follows rather than precedes television for entertainment; computers in schools can be maintained once commercial and private use has expanded to the point where there is an established service industry.

## **1.1 Problems militating against the use of ICT**

Ohiwerei, Azih and Okoli (2013) explained that, empirical studies have indicated that even teachers who have competence in the use of ICT do not integrate them in their teaching. They also stated that, problems of quality and lack of resources are compounded by the new realities faced by higher education institutions battle to cope with every increasing student's numbers. Not only have higher education systems expanded worldwide, the nature of the institution within these systems has also been shifting, through a process of differentiation (World Bank, 2000 as cited by Ololube, Ubogu & Ossai, 2007).

According to Pelgrum (2001), obstacles for ICT implementation include the following: Insufficient number of computers, teachers' lack of ICT knowledge/skills, difficult to integrate ICT to instruction, scheduling computer time, insufficient peripherals, not enough copies of

software, insufficient teacher time, not enough simultaneous access, not enough supervision staff and lack of technical assistance. Similarly, Lewis and Smith (2002) summarized these barriers as limited equipment, inadequate skills, minimal support, time constraints and the teacher's own lack of interest or knowledge about computer. Kwacha (2007) also noted that the most common problems associated with the effective implementation of ICT are lack of qualified ICT personnel, cost of equipment, management attitudes, inconsistent electric power supply, inadequate telephone lines, particularly in rural areas and non inclusion of ICT programmes in teacher's training curricula and at the basic levels of education.

Also according to Opara (2013), these problems stated can affect or hinder the effective use of ICT by undergraduates if they are not properly implemented. He stated in ICTL2013 conference proceedings that, for undergraduates in Nigerian universities to be abreast with the present information age, these facilities need to be put in place to enhance the teaching-learning process. This paper assesses the various challenges that confront the use of information and communication technologies in teaching and learning in educational development in high schools in Ghana. The paper assesses the challenges by administration of questionnaires and interviews as well as focus groups discussions on a randomly sampled population made of students and teachers relating to the various obstacles encountered by high schools where ICTs are implemented as part of their educational development.

## **2. Methodology**

According to Leedy and Ormond (2005), if the population size is around 1,500 samples size should be 20%, and if it is above a certain population size (approx  $N > 5000$ ) a sample size of about 400 is adequate. The population is more than 5000 and thus 400 of the population were considered as the suitable samples size and were used for the study. The researchers administered 400 total questionnaires, interviews and focus groups discussions, and a sample of three hundred and three (303) respondents made up of eighty eight (88) teachers and two hundred and fifteen (215) students respondent to them.

The researcher employed Stratified sampling method to group the school population into two (2) main categories: teaching staff, and student. Random sampling was then employed to select 400 respondents for data collection. Stratified sampling technique was adopted as it

embraced the distinct categories and organized them into separate strata. This technique was more efficient because it improves accuracy of estimates.

Purposive sampling was also used as a technique in data gathering. A study started with a survey, and then finally, purposive sampling was done based on the survey of the population of students and teachers.

The data (primary/secondary sources) collections were done with data collection instruments such as questionnaire, interview and focus group discussions, and the collected data was analyzed using Statistical software called general statistical package (GENSTAT), and the results interpreted and discussed.

### 3. Results

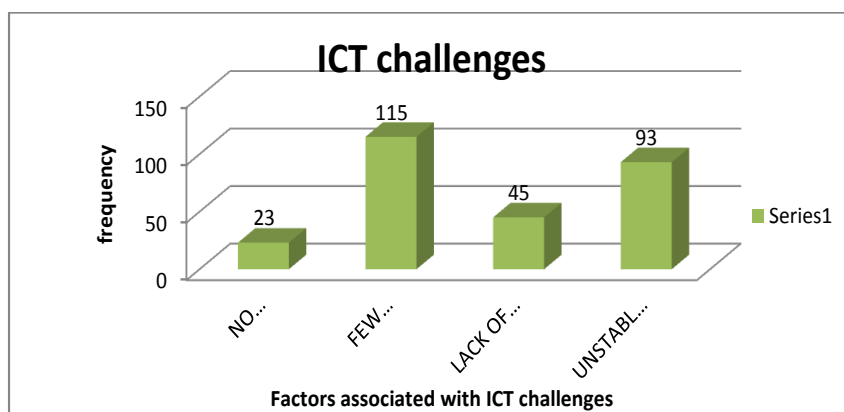
#### 3.1 Problems with the use of ICT

The analyses of the data collected from survey in order to find out from respondents what problem(s) they faced with the use of ICT in schools are shown below in Table 1.

**Table 1**

Problems with the use of ICT

	FREQUENCY	PERCENT
NO LABORATORY	23	8.3
FEW COMPUTERS	115	41.7
LACK OF ICT TEACHER	45	16.3
UNSTABLE POWER SUPPLY	93	33.7
<b>TOTAL</b>	<b>303</b>	<b>100.0</b>



**Figure 1:** Problems with the use of ICT

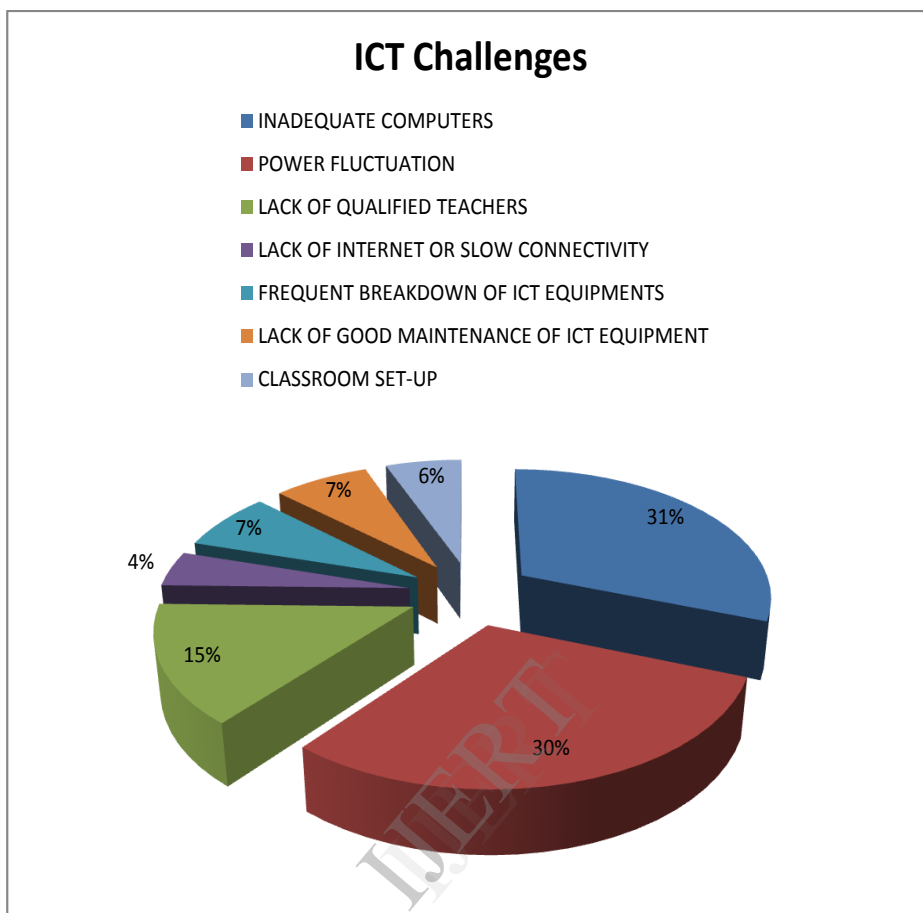
From Table 1, it is clear that all 303 respondents showed that they face problems with the use of ICT in their various schools. Some of the respondents showed that 23 (8%) of schools have no ICT laboratory, 115(38%) of the respondents indicated that they have computers but they are few and all the students in the class cannot use the computers when they have ICT lessons, so they use it in batches, 45(15%) of them indicated that they lack ICT teachers in their various schools, while 93(31%) of the respondents indicated that there is always unstable power supply in their District/Area and due to that learning of ICT is not interesting.

### 3.2 Challenges using ICT in Education

**Table 2**

Challenges using ICT in Education

	<b>FREQUENCY</b>	<b>PERCENT</b>
INADEQUATE COMPUTERS	85	30.8
POWER FLUCTUATION	83	30.1
LACK OF QUALIFIED TEACHERS	40	14.5
LACK OF INTERNET OR SLOW CONNECTIVITY	12	4.3
FREQUENT BREAKDOWN OF ICT EQUIPMENTS	20	7.2
LACK OF GOOD MAINTENANCE OF ICT EQUIPMENT	20	7.2
CLASSROOM SET-UP	16	5.8
<b>TOTAL</b>	<b>303</b>	<b>100.0</b>



**Figure 2:** Challenges Using ICT in Education

The analysis of the factors reveals some of the challenges that respondents are faced with, using ICT in educational development in schools. This result is shown in Table 2 and Figure 2. The Majority of the respondents 85(31%) said they have inadequate Computers, 83(30%) of the respondents showed that the main challenge is power fluctuation, also 40(14%) of them indicated that they lack qualified teachers, 12(4%) of the respondents also answered; lack of internet or slow connectivity, while 20(7%) of the respondents indicated that there is always frequent breakdown of ICT Equipments and lack of good maintenance of ICT Equipment, and finally 6% of the respondents said classroom Set-Up is the challenge.

#### 4. Discussion

The research sort to find out the problems with the use of ICT in the various schools in the Municipality. The research find out that, some of the problems are; few computers with a percentage representation of 41.7% per the data generated from the response of the study, from the respondent another problem observed from the data shows that unstable power supply, have also gain notice with a percentage of 33.7%, another problem meet by the study is the lack of ICT teachers in the Akuapem North Municipality, the data generated shows that 16.3% of the Municipality have this challenges per the research responses, the least challenge confronting the Municipality per the responses indicated that no laboratory was also noticed, the figure supporting this is 8.3% all from the Table 1. He reveals that one fundamental problems facing ICT integration in schools is the lack of computer infrastructure, also evidenced in Chandratre (2008), literature. Other research study suggests that ICT as a tool to promote learning is not generally well embedded in teachers' practice (Sime and Priestley, 2005) and that "information technology in the classroom is used in an ineffective way" (Divaharan, 2011).

#### 5. Conclusions

In conclusion, the challenges faced by the schools in the municipality draw from the analysis are that most schools have few computers which make students compete for computers at the ICT laboratory. Also power fluctuation, lack of qualified ICT teachers and no ICT laboratory in the Akuapem North Municipality are some of the few challenges confronting the Municipality.

#### Reference

- Chandratre, S. (2008). Problems and challenges of computer education in schools, *communicating through ICT Blog*, <http://drsunita.blogspot.com/> (Accessed September 7, 2013).
- Condie, R., Munro, B., Seagraves, L. and Kenesson, S. (2007). The impact of ICT in schools – a landscape review. *Quality in Education Centre*, Becta Research, University of Strathclyde, Glasgow, Scotland, United Kingdom.
- Divaharan, S. (2011). Learning new technology tools in pre-service teacher education: A

- model for instructional approach. Nanyang Technological University, Singapore.
- Kwacha, P.Z. (2007). The Imperative of Information and Communication Technologies for Teachers in Nigeria Higher Education. *Merlot Journal of Online Learning and Teaching*, 3 (4).
- Leedy, P.D. and Ormrod, J.E.(2005). *Practical Research – Planning and design*. (8th Ed.). USA: Pearson Prentice.
- Lewis, B. and Smith, R. (2002). The development of an electronic education portfolio: An outline for medical education professional. *Teaching and Learning in Medicine*, 19(2),139-147.
- Nyangechi, J. M., Eze, I. R. and Adu, E. O. (2013). The utilization of ICT in education for sustainable development. *Journal of Discovery Review Education*: ISSN 2278 – 5469, EISSN 2278 – 5450 . Volume 3, Number 8, Discovery Publication, Tamilnadu, India.
- Ohiwerei, F.O., Azih, N. and Okoli, B. E.(2013). Problems militating against utilization of ICT in teaching of business education in Nigerian Universities. *European International Journal of Science and Technology*, ISSN: 2304-9693, Vol. 2 No. 7, Queen's University Belfast, UK.
- Ololube, N. P. M.; Ubogu, A. E. & Ossai, A. G. (2007). ICT and distance education in Nigeria: A Review of Literature and Accounts. International Open and Distance Learning (IODL) Symposium.
- Opara, J. A. (2013). ICTL2013 International Conference on Teaching and Learning. *Book of Proceedings*. Michael Okpara University of Agriculture, Umudike-Abia State, Nigeria.
- Perraton, H.(2010). Teacher Education: The Role of Open and distance Learning.Commonwealth of learning. Institute of Education, University Of London, British Columbia, Canada.
- Pelgrum, W.J. (2001). Obstacles to the integration of ICT in education: Results from a worldwide educational assessment. *Computer & Education*, 37, 163-178.
- Sime,D. and Priestley,M.(2005). Student teachers' first reflections on ICT and Classroom Learning: implications for Initial Teacher Education , Stirling, UK.