

# The Integration of Information and Communication Technology (ICT) into Instruction and Learning in Tanzania Educational Institutions: The Management Perspectives

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**ABSTRACT** - *The study addresses issues concerning the integration of ICT into instruction and learning in Tanzania secondary schools was investigated. The general objective was to investigate the deployment of ICT in instruction and learning process with special focus on the provision of secondary education. Specifically, researchers determined the extent instructors and learners were able to be integrated into the use of ICT during instruction/learning, assessed the availability and use of ICT facilities and equipments in educational institutions and examined the influence of the use of ICT during instruction and learning.*

*Findings revealed that both instructors and learners are extensively employing ICT despite of the problem they faced such as scarcity of ICT equipment/facilities, hardware and software disrupt. In light of these, it was revealed from the study that the use of ICT resulted into instructors' effectiveness in preparing lessons from various dimensions as well as building learning confidences among learners. This calls for effective ICT on job training among instructors and extensive as well as intensive investment in ICT in both Tanzania public and private secondary schools.*

**Key words:** *Integration, ICT, instruction, learning and management*

## I. THE PROBLEM IN BROAD AND SPECIFIC PERSPECTIVES

The technological development on this globe has been resulting into advancement in production, social settings and competencies among human beings. In social settings, Information and communication technology is argued to play a vital role in how individual works, live, play and more importantly, learn. In educational institutions the use of ICT has been explained to influence the instruction and learning of instructors as well as learners (Goiges, 2013). The global primary objective with regard to integration of ICT into education system was to align the quality of education in both developing and developed countries as well as to facilitate the complete acquirement of competencies among learners and instructors.

Although Franklin (2010) argues that the global integration of ICT into education system has advanced significantly over the last two decades and that ICT has changed the quality of education, the fact is that differences in financing ICT development in different countries have resulted into the use of ICT not to be linear in educational institutions. The problem has resulted into some education system to fail to acquire different current forms and instructor to not understand how to competently use ICT in instruction and learning.

The statement by UNESCO (2009) that having ICT in the education system does not automatically ensure that high quality effective instruction and learning take place provides the contradiction with regard to the importance and integration of ICT globally. The problem with regard to integration of ICT into global educational system was the reluctance of some education system on researching the perception and deep understanding of instructor/learner perspectives. In the educational system with advanced ICT, instructors' instruction styles and the extent learners learns are both highly influenced. Using ICT facilities, instructors have the ability to make an enormously positive contribution although this has been proved to be quite challenging, with regard to instructors' embracement in new instruction and learning opportunities.

Experiences have indicated that ICT supports In this case using ICT in schools motivate instructors and learners. There is a contention that instructors are happy because ICT captures learner's attention and improve the learning strategies. This is in line with Canger's (2013) argument that ICT being a motivate aspect, improves the relationship between instructors and learners. The integration of ICT into instruction and learning also results into effective interactions between them which eventually promote learning. Instructors are able to change instructional models and learners are able to make improvements in the learning methods: all of these results into essential collaborative instructional-learning. Thus, ICT employment instruction-learning context is conceived as an active catalyst.

In a nutshell, the integration of ICT into education system has resulted into quality education delivery through internet. The invention of and laptops empowered instructors to develop their competencies in subjects' area of specialization. In Tanzania the employment of ICT in secondary schools is not extensive. In this case, the geographical location of the schools and electrical power generation are among major factors which negatively influence the use of ICT. In this case, about 20% of the country accesses electrical power from TANESCO and other sources. Furthermore, physical data lines covers about 25% of the entire country.

It could be noted that many instructors in secondary schools lack instructional knowledge and skills with regard to advanced ICT basics and these affect lesson development and classroom instruction. The situation where there are few schools employing ICT in Tanzania is underpinned by the fact that non existence of documented evidence with regard to the exact numbers of secondary schools employing ICT and hence the gap for this study. In this domain, if fold on the number and ICT categories required for effective utilization in all Tanzania schools.

Based on the afore statements the researchers generally investigated the employment of ICT in instruction and learning in Tanzania educational institutions with special focus on the provision of secondary education. Specifically, researchers determined the extent ICT was integrated into instruction and learning, assessed the availability and use of ICT facilities and equipments in schools and determined the influence of the use of ICT in the instruction and learning. Significantly, the study may provide a process or framework to ICT administrators/implementers to adopt and use ICT in educational institutions. Furthermore, policy makers may use research findings to make innovations to the current ICT policy.

## II. THEORETICAL AND EMPIRICAL LITERATURE

### *Theoretical literature*

#### **ICT enhancing the Instruction and Learning Context**

ICT employment in instruction and learning is explained to be a tool for better educational outcomes. This is in line with Coptec (2001) that ICT is a tool which support and encourage self learning. Inlight of this, learners using ICT effectively indulge in the process of learning. According Reeves and Janassen (1996), instructors and learners are always using ICT as a source of information for classroom and learning. Instructor's use of slides has been resulting into comprehensiveness of the subject and hence, harmonization of the sequences of instruction on course of achieving instructional/learning objectives.

The fact that learning is a change of learner's behavior, the use of ICT exposes new concepts. The pioneer of constructivist ideas contends the issue of participatory: which insists on active engagement in the process of learning. Despite this, the curriculum which is integrated is highly emphasized by

constructivists whereby learners study a lesson in a number of strategies. Thus, ICT provides different techniques to a constructivist instruction-learning environment.

## III. INTEGRATION OF ICT IN LEARNING THEORIES

Instructional techniques are always underpinned by learning theories. The Behaviorism and Constructivism are conceived to be among distinguished theories which are also based on two psychological schools thought which have fueled learning theory. These theories have different contentions learning, various aspects with regard to instructional methods and techniques. The theory of constructivist is vital on learning the impact of ICT on instruction/learning. The theory important because it enables the instructor/learner to understand formulation of the relationship between schools based curriculum and instruction facilities and equipments.

The theory is a base for research basics and implementation of identified issues. Because of the constructivist learning movement, the theory emphasizes instructors' central function teaching profession as well as the curricular curricula improvement (Jofrec, 2012). This theory provides direction for supports the individual learner's development. The constructivist theory advocates that the use of ICT provides strategies for learning in broad perspectives with essential mutual interaction between individual learners. In line this, a number of schools engage on adopting the ICT into instruction and learning. The vivid example is of the use of computers. In this case as learners adopt the use this equipment and its facilities, they are explored in various ways of learning.

However, pre-emption of this is not valid since ICT facilities/equipment is entirely centered on learning while constructionist techniques are centered on how and the extent learners are used to engage learning when ICT is effectively utilized. This is due to the fact that the use of some software and the internet do not converge with the constructionist's philosophy. In this regard, flaws are accompanied with many issues when using ICT, specifically in domains for example e-learning as well as subject-specific software (Grance, 2002). Constructionists motivate learners to demonstrate their competencies in explicit acceptable ways, to demonstrate their knowledge and skills through synthesizing the information derived previously in the contention of a new solution.

In light of this, ICT provides important tool and enhances the implementation of the constructionist ideas. However, it is not the only method to be used as an example for constructionism. The use of ICT to improve instruction which that capitalize on constructionist techniques not always gives the required effect. On this issue, Grance (2007) contends that, it may have a direct influence on weakening constructionist motives.

## IV. TECHNOLOGY ACCEPTANCE MODEL

The study was guided by the technology acceptance model adopted from McLuhan's media theory.. From the model it is

asserted that technology acceptance is crucial since with change, there is need for people to accept it through positive perceptions. In this regard, social media as a technological tool relates to the model in the sense that people have to pass through several stages in order to form a positive attitude and fully adopt to it to enhance promotion activities. This purely correlates to the learning process in educational institutions which is evidenced from learning outcomes achieved in technological development.

It is asserted that many instructors know ICT facilities and ICT integration but they are not integrating ICT during instruction. It is also advocated that the competence in employing ICT in the instruction and learning were not important (Kange, 2014).

With regard to instructors' conceptions on the use of ICT it is reported that the use of ICT for instruction include preparation for instructional learning resources. Such stage of ICT use does not empower instructors to critically change instructional techniques. Some instructors' belief that the use of ICT is a hurdle towards effective instruction and learning and the use computers during instruction results into learners' much concentration on computers without listening critical conceptualization of lesson contents (Vastical, 2012).

#### **ICT Relevance in the Instruction and Learning Situation**

In classrooms situation, the employment of ICT is of important. ICT instruction/learning minimizes stigma of failure in examinations. Poor performance of learners in schools is a common part of learning life. However, it is difficult to deal with it in actual school setting since the pressure of the society depends on instructors. The employment of ICT bridges the gap since the learner gets materials from the internet.

This agrees with Chen's (2008) argument that the ICT employment in instruction and learning results into improvements of learner's high performance in tests and examinations. Chain (ibid) advocates that learners are competent in working with soft copy which is easily utilized through mobile phone and pocketed ICT equipment. Thus, when they are doing with soft copy it is easy for learners to concentrate much on their studies and hence pass exams.

The use of ICT results into the increase of the abilities for self-regulated learning. In this case, ICT increase learner's chance of having privacy work, and self control and hence confidence. This is also congruent with the fact that the use of ICT in Learning allows flexible, self-paced learning. Learners have self-paced learning which improve their learning process and make the learners more involved during learning.

The use of ICT results into the learners to be more participatory and increase competencies in learning. ICT helps to reflect on what and how learner learns. It is seen as increasing learner's confidence and motivation by making school work conducive. Through use of ICT makes learner's attitudes and involvement in the learning. The use of ICT results into easiness to trace and manage student's performances.. Through the use of ICT it's very easy for

instructors to trace the performance of their learners than used to be done manually. Furthermore it is very easy to keep records on the performances of students and even to share with their parents. In general, the use of ICT helps instructors to manage data about learners' performances. ICT usage results into increase of instructors' efficiency in planning and preparation of instructional work.

The increase of plagiarism in learning context is currently a major issue. The use of ICT in learning increases the level of plagiarism among learners when doing their work. According to Punjel (2011), many learners are always copying their work in the internet and that results into difficulties when determining their competencies. It is also a fact that ICT is a challenge to low income groups. In this case, use of ICT makes low income families difficulties to manage some of the requirements.

The effective use of ICT will need learners have their own PC or Laptops and even IPADS. These tools can't be provided free by schools so will make difficult to low income families. This is in line with Felemon (2008), that the availability of the working material among learners will make their studies more easily. So this implies if they will not have some of the supportive equipments will make their studies more difficulties. It is also argued that the use of ICT increases instructor's efficiency in planning the lesson and hence, the entire class management.

#### **Empirical Literature Review**

A research by Oken'go (2012) revealed that instructors were reluctant to employ new technology with regard to the use of ICT. It was revealed from the study that fearful of using ICT was due to them being computer shy. Despite this, making use of ICT to support instruction/learning and employing more constructivist techniques appeared to be conceived as risky technique for instructors. According to the findings, instructors liked to stick to the traditional methods of instruction which enabled them to easily control instruction process.

Mlambo (2007) on ICT in A-level physics teaching and learning at secondary schools in Zimbabwe revealed the failure of best practice with regard to the use of ICT during instruction. The study revealed that physics teachers employed traditional instructional techniques which included lecture and face-to-face methods. The study also revealed that students (69%) revealed difficulties on using ICT to learn and advised frequent use of traditional methods of instruction. A study by Qisokes (2011) on the innovative school teaching using ICT in Bolivia, revealed ICT not to be a critical tool for transforming teaching and learning. The scarcity of ICT materials, facilities and equipment were the main cause which drives respondents (51.6%) to provide such responses.

Almadhour (2010) conducted a study on types of ICT facilities and equipment required in public schools revealed digital cameras, video, video cameras, internet and video players as important pedagogical enhancers during instruction and learning. The study by Afamasaga (2008) on teacher

perceptions of ICT in schools in Samoa revealed equivalent issues faced by teachers when using ICT facilities and equipment. These included insufficient electrical power infrastructure, lack of competent ITC instructors, and geographical location of schools, insufficient ICT facilities and equipment to mention a few.

A research done by Kajugusi (2011) on the importance of dissemination of ICT into school curriculum revealed that the dissemination faced budget constraints in public schools. According to the findings, about 75% of private schools were equipped with essential ICT facilities and equipment. It was revealed from the study that the differences in ICT availability between public and private schools resulted into lack of volatility and reliability in ICT examinations. According to study done by Twende Shule foundation (2013) the economic instability of the country was the main cause of delay to effectively implement ICT policy. Findings indicated that only 10.5% of schools in rural areas are rich in ICT facilities and equipment and that among them only 2.9% are effectively utilizing ICT during instruction. Furthermore, only 23% of total students are not ICT shy.

### Research Methodology

Both qualitative and quantitative research approaches were used during the study. Purposive and random sampling methods were used to get four secondary schools which were effectively using ICT in instruction and learners learning in Ilala district as well as the required number of respondents ( $N=100$ ). Survey research design, qualitative and quantitative research approaches were employed during the study. Interviews, observations and documentary review were methods employed during data collection. Data collection instruments used were interview questions, questionnaires, observation guide and documentary review guide. The pre-testing of instruments was done at one school with similar characteristics to schools studied. This enabled researchers to make improvements to enable instruments to capture valid and reliable data. Data management included data editing, coding, validity and reliability of collected data. Analysis of quantitative data involved manipulations using statistical tools and qualitative data were sorted, edited, coded, entered, cleaned, processed and interpreted.

### Research Findings Conclusion and Recommendations

#### *Situational Usage of ICT and Its Implications in Classroom Situation*

Findings indicated that using ICT makes it difficult to control the class. According to respondents (42%), most of the instructors perceived difficulties with regard to controlling the class since they were not highly competent to use ICT facilities to instruct: and that the use of ICT made preparing the lessons more difficult. Instructors (23%) explained that some of the learners were more knowledgeable in ICT compared to them. While the situation discourages instructors, findings revealed that learners (15%) were motivated to learn by using ICT

which they were familiar with. These findings are in line with Reggs (2011) who asserts that those children from rich family are more ICT knowledgeable and their performance is highly distinguished when they are enrolled in former education.

Furthermore, the data is different from Douglas (2010) findings that some learners who are ICT 'shy' are more motivated when they are face to face with their instructors in classrooms and that the act of using ICT discourage them to learn effectively. Hardware and software problems were explained to often disrupt the instruction. The study revealed that instructors (30%) and learners (67%) elaborated that many ICT facilities and equipment were bought as 'second hand' and apart from being delicate they frequently needed repairing as they used to 'fail' during instructions. The disruptions during instruction have negative impact during instructions and learning. For the case of instruction the instructor has to spend much time waiting for repairing of facilities and equipment and these results into the failure to effectively implements the lesson plan and hence, the syllabus at the end of the respective term (Kyando, 2012).

Similarly lesson disruptions in learning situation result into learners' failure to conceive lesson continuity (George, 2014). With regard to buying used or commonly called 'second hand' ICT facilities and equipment, instructors (50%) narrated that ICT facilities were expensive. According to the respondents, buying the facilities/equipments, making installation and even maintenance of the ICT equipments was much cost compared to traditional way of instruction and learning.

On the case of competency, learners (67%) and instructors (15%) argued that by using ICT in instruction and learning impaired the learners mind. Instructors argued further that ICT is all the time leading to discovery (The 'aha' experience') and those learners are gloomed to be creative. Findings also indicated that using ICT improves presentation of materials which facilitates effective learning among learners. This is parallel to the argument that classroom instruction by using ICT strengthens participants hearth through abolishing the use of manual blackboard and chalks which have side effects on human health (Greky, 2009).

### V. AVAILABILITY OF ICT FACILITIES AND UTILIZATION DURING INSTRUCTION AND LEARNING

Different categories (private and secondary schools) revealed different results with regard to availability of ICT facilities/equipment and utilization during instruction and learning.

#### *Category 1: Government Secondary Schools*

##### **Table 1: School 'A' Available ICT Facility and Equipment**

Facility available	Number	Good	Broken
Desktop Computer	1	0	0
Laptop	1	0	0
3 Television	0	0	0
Video player	0	0	0
Radio (Tape recorder)	0	0	0
Printer	1	0	0
Multimedia Projector	0	0	0
Projector screen	0	0	0
Scanner	0	0	0
Photocopying Machine	1	0	1
Satellite disc	0	0	0
Fax Machine	0	0	0
Computer accessories	3	1	2
Internet	0	0	0
Interactive White Board	0	0	0
Electronic Notice Board	0	0	0

Source: Field Data, 2016

Table 2: School ‘B’ Available ICT Facility and Equipment

Facility available	Number	Good	Broken
Desktop Computer	2	0	0
Laptop	0	0	0
3 Television	1	0	0
Video player	0	0	0
Radio (Tape recorder)	0	0	0
Printer	0	0	0
Multimedia Projector	0	0	0
Projector screen	0	0	0
Scanner	0	0	0
Photocopying Machine	1	0	1
Satellite disc	0	0	0
Fax Machine	0	0	0
Computer accessories	1	1	2
Internet	0	0	0
Interactive White Board	0	0	0
Electronic Notice Board	0	0	0

Source: Field Data, 2016.

Data in table 1 and 2 confirm that the government school surveyed lacked enough ICT equipment and facilities. The researchers contend that such scarcity resulted into difficulties during instruction and learning

Category 2: Private Secondary Schools

Table 3: School ‘C’ Available ICT Facility and Equipment

Facility available	Number	Good	Broken
Desktop Computer	36	32	4
Laptop	6	6	0
3 Television	6	3	3
Video player	0	0	0
Radio (Tape recorder)	0	0	0
Printer	26	22	4
Multimedia Projector	3	3	0
Projector screen	6	6	0
Scanner	2	2	0
Photocopying Machine	4	4	0
Satellite disc	65	65	0
Fax Machine	4	4	0
Computer accessories	67	67	0
Internet	0	0	0
Interactive White Board	13	13	0
Electronic Notice Board	6	6	0

Source: Field data, 2016

Table 4: School ‘D’ : Available ICT Facility and Equipment

Facility available	Number	Good	Broken
Desktop Computer	12	10	2
Laptop	2	2	0
3 Television	3	2	1
Video player	0	0	0
Radio (Tape recorder)	1	1	0
Printer	2	2	0
Multimedia Projector	2	2	0
Projector screen	1	1	0
Scanner	0	0	0
Photocopying Machine	1	1	0
Satellite disc	32	31	1
Fax Machine	1	1	0
Computer accessories	10	8	2
Internet	0	0	0
Interactive White Board	2	2	0
Electronic Notice Board	2	2	0

Source: Field data, 2016

From above two tables of private schools it shows that most of them have many ICT Facilities compared to the Public school. This indicates effective use of ICT facilities and learning during instruction and learning and explains the good performance of learners in national examinations conducted by National Examination council of Tanzania.

VI. CONCLUSION AND RECOMMENDATIONS

The study reveals that the ICT acts as a motivating tool for both instructors and learners. In light of this, human beings are very captivated with technology and thus ICT in educational context have succeeded to promote learning interest, excitement, and enthusiasm among educational stakeholders. Thus, ICT facilities such as internet facilities facilitate cooperative learning, encourage dialogue, and create a more engaging classroom discussion through e-mails in a way not possible within the four walls of the classroom

The following are recommendations for both immediate action and further studied: the provision of day to on job training to pave away ICT shyness among instructors in Tanzania secondary schools. Periodical investment and innovations in ICT to enable frequent and efficient provision of ICT education in secondary schools: This calls for Public-Private – Partnerships (PPPs) intermissions to ensure effective ICT network between public-private secondary schools in Tanzania. Recommendations for further study is that extensive study to be done in other secondary schools in the country with different contextual environment from where this study was done and the extent ICT influence the performance of instructors and learners to be extensively done.

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