**ASSESSMENT ON AVAILABILITY AND USAGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN SELECTED PRIMARY SCHOOLS IN KINONDONI MUNICIPAL COUNCIL, TANZANIA**

**WILLIAM S. URONU**

**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF** **EDUCATION IN ADMINISTRATION, PLANNING AND POLICY STUDIES**

**DEPARTMENT OF PLANNING, POLICY AND**

**ADMINISTRATION**

**THE OPEN UNIVERSITY OF TANZANIA**

**20****2****1**

# CERTIFICATION

The undersigned certifies that she has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation entitled: **“*Assessment on Availability and Usage of Information and Communication Technologies in Selected Primary Schools in Kinondoni Municipal Council, Tanzania*”**. In partial fulfillment of the requirements for the award of the Degree of Master of Education in Administration, Planning and Policy Studies of The Open University of Tanzania.

……………………………………………..

**Professor Elinami Swai**

**(Supervisor)**

Date……………………

# COPYRIGHT

No part of this Dissertation may be reproduced, stored in any retrieval system, or transmitted in any form by any means, electronic, mechanical, photocopying, recording or otherwise without prior written permission of the author or The Open University of Tanzania in that behalf.

# DECLARATION

I, **Uronu William,** declare that, the work presented in this dissertation is original. It has never been presented to any other University or Institution. Where other people’s works have been used, references have been provided. It is in this regard that I declare this work as originally mine. It is hereby presented in partial fulfillment of the requirements for the degree of Master ofEducation in Administration, Planning and Policy Studies of The Open University of Tanzania.

…………………………………..

Signature

…………………………………..

Date

# DEDICATION

This study is dedicated to my parents, Mr. and Mrs. Silla Stephen Uronu.

# ACKNOWLEDGEMENT

This work could not have been accomplished without professional and friendly cooperation from different offices and individuals. Although it is not possible to mention all who contributed to this important work, I feel highly obliged to express my most profound gratitude to some of them.

First of all, I wish to express my profound gratitude to almighty God and those who have contributed in one way or another towards the fulfillment of this dissertation. My gratefully appreciation to Professor Elinami Swai for her valuable, constructive and intellectual guidance during the preparation of this work, by shaping several parts of this research from the beginning to the last minute, her instructions, encouragement and contributions remain unforgettable.

Also, my deep appreciation goes to the Director Grace schools Pastor Anna Nkya, the Academic Mistress Grace Primary school Mrs Tiel Bartho and the entire staff, who were tolerant during my absence for the whole time I spent in this work.

Last but not least, I would like to convey my special thanks to my wife Maria Raphael Massawe for her encouragement and support and my children, who waited patiently for their dad to complete his school. You are the best.

# ABSTRACT

The study assessed on the availability and usage of ICTs and the challenges related to ICT accessibility and usage in Kinondoni Municipal Council and identify factors relating to availability and usage of ICTs and to suggest ways forward to reinforce the usage. Descriptive research design and mixed methods approach were employed to solicit information from a total of 110 respondents comprised of students, teachers and parents from ten primary schools in Kinondoni Municipal Council. The findings revealed that the schools surveyed had acute shortage of ICTs equipment and the teaching and curriculum administration functions of most teachers have been negatively impaired by a lack of the equipment. The researcher used purposeful and random sampling technique for the purpose of gathering accurate data. Findings of the study revealed that the availability and usage of ICTs was very minimal. Few ICTs available in schools were used for office work and not for teaching and learning. ICTs available, were not integrated in classroom teaching and learning. On the other hand, the schools faced challenges in the usage of available ICTs because of lack of policy to use ICTs in teaching and learning. The study appreciates the Ministry of Education Science and Technology for a good policy on the use of ICTs in primary schools in Tanzania. On the other hand, that is the application of the policy needs more effort. The government has to supply ICT equipment to primary schools and train teachers on how to use them in teaching and learning. The study recommends a national policy that requires all teachers to use ICTs in primary schools in order to cater for the students’ education needs for the students’ learning in the 21st century. The study also recommends close management and supervision of ICTs in teaching and learning.

***Keywords:*** *Availability, usage of ICTs, primary schools, Kinondoni Municipal Council*

**TABLE OF CONTENTS**

[**CERTIFICATION ii**](#_Toc81421947)

[**COPYRIGHT iii**](#_Toc81421948)

[**DECLARATION iv**](#_Toc81421949)

[**DEDICATION v**](#_Toc81421950)

[**ACKNOWLEDGEMENT vi**](#_Toc81421951)

[**ABSTRACT vii**](#_Toc81421952)

[**LIST OF TABLES xii**](#_Toc81421954)

[**FIGURE xiii**](#_Toc81421955)

[**LIST OF ABBREVIATIONS xiv**](#_Toc81421956)

[**CHAPTER ONE 1**](#_Toc81421957)

[**INTRODUCTION 1**](#_Toc81421958)

[1.1 Introduction 1](#_Toc81421959)

[1.2 Statement of the Problem 10](#_Toc81421960)

[1.3 Purpose of the Study 11](#_Toc81421961)

[1.4 Research Questions 11](#_Toc81421962)

[1.5 Significance of the Study 12](#_Toc81421963)

[1.6 Scope of the Study 12](#_Toc81421964)

[1.7 Limitations of the Study 12](#_Toc81421965)

[1.8 Organization of the Study 13](#_Toc81421966)

[**CHAPTER TWO 14**](#_Toc81421967)

[**LITERATURE REVIEW 14**](#_Toc81421968)

[2.1 Introduction 14](#_Toc81421969)

[2.2 Theoretical Stances 14](#_Toc81421970)

[2.2.1 Cognitive Constructivism Theory 14](#_Toc81421971)

[2.2.2 Social Constructivism Theory 15](#_Toc81421972)

[2.3 Empirical Literature 16](#_Toc81421973)

[2.3.1 Availability of ICTs in Schools 16](#_Toc81421974)

[2.3.2 Usage of ICTs in Schools 18](#_Toc81421975)

[2.4 Challenges Related to ICT Accessibility and user-ability in Primary School 18](#_Toc81421976)

[2.5 Synthesis and Research Gap 23](#_Toc81421977)

[2.6 Conceptual Framework of Availability and Usability of ICTs in Primary Schools 26](#_Toc81421978)

[2.7 Summary of This Section 27](#_Toc81421979)

[**CHAPTER THREE 28**](#_Toc81421980)

[**RESEARCH METHODOLOGY 28**](#_Toc81421981)

[3.1 Introduction 28](#_Toc81421982)

[3.2 Research Approach 28](#_Toc81421983)

[3.3 Research Design 29](#_Toc81421984)

[3.4 Study Area 29](#_Toc81421985)

[3.5 Study Population 30](#_Toc81421986)

[3.6 Sample Size 30](#_Toc81421987)

[3.7 Sampling Procedures 31](#_Toc81421988)

[3.7.1 Purposive Sampling 32](#_Toc81421989)

[3.7.2 Random Sampling Techniques 33](#_Toc81421990)

[3.8 Instruments for Data Collection 33](#_Toc81421991)

[3.8.1 Observation 34](#_Toc81421992)

[3.8.2 Questionnaire 34](#_Toc81421993)

[3.8.3 Interview 35](#_Toc81421994)

[3.9 Data Analysis 35](#_Toc81421995)

[3.10 Ethical Considerations 36](#_Toc81421996)

[3.10.1 Validity & Reliability 36](#_Toc81421997)

[3.11 Summary of the Chapter 37](#_Toc81421998)

[**CHAPTER FOUR 38**](#_Toc81421999)

[**DATA PRESENTATION, ANALYSIS & DISCUSSION 38**](#_Toc81422000)

[3.1 Introduction 38](#_Toc81422001)

[3.2 Education Levels 38](#_Toc81422002)

[3.3 Availability of ICTs in Selected Schools in Kinondoni Municipality 39](#_Toc81422003)

[3.4 Usage of ICTs in Selected Schools in Kinondoni Municipality 43](#_Toc81422004)

[3.5 Challenges Encountered in the Use of ICTs in selected Primary Schools in Kinondoni Municipal Council 46](#_Toc81422005)

[3.6 Summary of the Chapter 48](#_Toc81422006)

[**CHAPTER FIVE 50**](#_Toc81422007)

[**SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS 50**](#_Toc81422008)

[5.1 Introduction 50](#_Toc81422009)

[5.2 Summary of the Study 50](#_Toc81422010)

[5.3 Summary of the Findings 50](#_Toc81422011)

[5.3.1 Lack of ICT Facilities 50](#_Toc81422012)

[5.3.2 Challenges in usage of ICTs 52](#_Toc81422013)

[5.3.3 Challenges in Accessing Using ICTs 52](#_Toc81422014)

[5.4 Conclusions 56](#_Toc81422015)

[5.5 Recommendations for Actions 57](#_Toc81422016)

[5.6 Recommendation for Further Research 58](#_Toc81422017)

[**REFERENCES 59**](#_Toc81422018)

[**APPENDICES 62**](#_Toc81422019)

# LIST OF TABLES

[Table 3.1: Presents sample composition of participants 31](#_Toc81422161)

# [Table 4.1: Demographic information of the respondents 38](#_Toc81422166)

[Table 4.2: Availability and status of ICTs in schools 42](#_Toc81422167)

[Table 4.3: Availability of ICTs in selected schools 43](#_Toc81422168)

[Table 4.4: Observational checklist for ICT usability in classroom teaching and learning 45](#_Toc81422169)

# FIGURE

[Figure 2.1: Conceptual model 26](#_Toc81422237)

# 

# LIST OF ABBREVIATIONS

ICT Information and Communication Technology.

ICTs Information and Communication Technologies.

UNESCO United Nations Educational Scientific and Cultural Organization

MoEVT Ministry of Education and Vocational Training

PSLE Primary School Leaving Examination

# CHAPTER ONE

# INTRODUCTION

# Introduction

Information and Communication Technology (ICT) has become the backbone of global economy and are becoming a life blood in the field of education. This is because ICTs have become invaluable tools for teaching and learning. ICT is currently being in education system around the world to improve teaching and learning. According to Peeraer and Petegem (2011), ICT is conceptualized as a tool that can effectively support the innovation of teaching/learning and education management and that contributes to improve efficiency and quality of education. Thus, as Shabnam (2011) explained, ICTs are those technologies for collection, recording, reserving, processing, researching, transfer and receipt of information related to teaching and learning scope. However, as Mikre (2011) revealed, ICT is a tool that can be used as a medium for teaching and learning through which teachers can teach and learners can learn. In the context of this study, the focus is on availability and usage of ICTs to improve the teaching and learning process.

According to Daniels (2002) ICTs is one of the basic building blocks of modern society, is to use ICTs, to help students to master the basic skills and concepts as part of the core of education, alongside reading, writing and numeracy. However, there appears to be a misconception that ICTs generally refers to computers and computing related activities. This is fortunately not the case, although computers and their application play a significant role in modern information management, other technologies and/or systems also comprises of the phenomenon that is commonly regarded as ICTs. Pelgrum and Law (2003) state that near the end of the 1980s, the term ‘computers’ was replaced by Information Technology (IT) signifying a shift of focus from computing technology to the capacity to store and retrieve information. This was followed by the introduction of the term Information and Communication Technology (ICT) around 1992, when e-mail started to become available to the general public (Pelgrum, 2003). According to a United Nations report (1999). ICTs cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services and other related information and communication activities. According to UNESCO (2002) information communication technology (ICT) may be regarded as the combination of ‘informatics technology’ with other related technology, specifically communication technology. The various kinds of ICT products available and having relevance to education, such as teleconferencing, e-mail, audio conferencing, television lessons, radio broadcasts, interactive radio counselling, interactive voice response system, audiocassettes and CD ROMs have been used in education for different purposes (Sharma, 2003; Sanyal, 2001; Bhattacharya and Sharma, 2007).

As Shabnam (2011) observe, ICTs can increase efficiency and effectiveness in education system. According to Peeraer and Petegem (2011), ICTs are currently being used in education to collect reserve and process information, record findings and transfer knowledge), making them invaluable tools to facilitate, not only teaching and learning but also in keeping records and transfer knowledge within a short time to more students (Mikre. 2011); For example, through ICT, learners at a distance can access education just like those on campus.

Tanzania, like many other developing countries in Africa, has not made it a priority to exploit all the potentials of ICT to contribute to the quality of teaching and learning, although the value of ICT in education has been determined (Smeets, 2005). Because of this, there is no firm policy to make ICTs accessibility and usability a mandatory in classroom teaching. Lack of ICTs policy in teaching and learning lead to teachers to opt integrating ICTs in classroom teaching. This is because many teachers do not believe on the impact of ICT on teaching and learning. As Newton & Rogers (2001) have observed, there is still some uncertainty over ICTs’ educational merits. Some teachers think that students may be confused by the multiplicity of available information from which to choose (Mikre 2011). This observation is supported by many scholars such as Kozma (2003). In his study, Kozma found a negative relationship between the frequency use of computers and school achievement. While i believe there are undesirable websites possessing real threats to the learners, as some tend to spend most of their time on websites containing unrelated to the learning content. The researcher believe that there is a lot of content in the websites that the students can learn and teachers can prepare their teaching materials well. This idea is supported by some scholars such as Isaacs (2007), who suggests that the use of ICTs may actually be the only feasible and economically sound means of expanding access to, and improving the quality of, secondary school education in the short run. Others such as Peter (2010) found several rationales, namely economic, social, vocational and pedagogic for the uptake of ICT in education.

According to Peter (2010), ICTs in education has economic rationale, where it can be used to provide education to workers without taking them to leave their jobs, and thus, increase efficiency and effectiveness in economic sector. Accordingly, Peter, (2010) also shows pedagogic rationale of ICTs where its effective utilization in classroom teaching can result into providing rich, exciting and motivating and new environments for learning. Ark (2011) shows the social rationale of ICT, suggesting that students who used computer tutorials in mathematics, natural science, and social science score significantly higher on tests in these subjects. Benefits from ICT in teaching and learning have also been reported by many scholars such as Newman (2002) and Wheeler (2000). According to these scholars, ICTs can be used to share learning resources, learning spaces, and promote collaboration between and among the students.

Sharing of learning resources has normally the potential of enabling students and teachers to use various ICT systems such as video, Power points and word documents to transmit content and information throughout an entire school and even between schools in the same locality. In turn, sharing learning resources has the potential of minimize costs and improving the quality of teaching and learning, especially in under-resourced schools (Newman, 2002) such as Tanzania.

In terms of shared learning spaces, networked computing facilities create a distributed environment where learners can share work spaces, communicate with each other and their teachers in text form, and access a wide variety of resources from internal and external databases via web-based systems and reduce the problems of overcrowded classrooms and inadequate and incompetent teachers which are said to be at an alarming stage, especially in primary schools in Tanzania.

In terms of promoting collaborative learning, this is in line with the idea that knowledge is shared. According to Riel (2000) the use of ICT makes it possible for much of what we now see as individual learning to change and become collaborative learning and making it more possible for autonomous learning and development. In turn, such autonomous students will exert more choice over how they approach learning and make choices on what, how and when to learn.

Thus, ICTs can act as an agent for change by significantly enhancing educational reform which enables teachers and learners to move away from traditional to more innovative and effective approaches to teaching and learning (DoE, 2003). This apart, using ICTs also motivate students by providing a variety of compensation for language deficiency, encourage active participation, reinforce learning, increase application possibilities, enhance the applicability of the learning content provided for the learning needs of individuals, and supplement the spoken word (Kruger, 2010).

Moreover, integration of ICTs in teaching and learning prepares students for real life in the current technological and diverse world (Braun & Kraft, 1995). However, research studies in Tanzania (see for example MoEVT (2008) show that most educational institutions have not made it a priority to exploit the potential of ICT to contribute to the quality of teaching and learning, although the value of ICT in education has been determined (Smeets, 2005).

While Tanzania has a pressing duty of eradicating poverty, enhancing equity and expanding access to education without compromising quality and placing the country on a path of sustainable growth and development, a consideration of ICT as a tool towards realization of the country’s dream is not considered as a must. Recognizing that education sector is a key player in addressing social, economic, political and cultural challenges, efforts have been put in place at policy and implementation levels to develop a robust education system characterized by provi8sion of holistic e3ducational benefits to its citizens (MoEVT, 2008).

The government of Tanzania has elaborated different policies and plans to promote ICT usage in all sectors, education sector inclusive. The Tanzania *National Information and Communications Technologies policy 2003* explained that, few educational institutions have computer laboratories and other multimedia facilities. Facilities are more in private schools than in public schools. Fewer of these facilities are linked to the Internet. The *ICT police 2003* recognized ICT provision in Secondary schools and higher learning institutions. This showed a gap of ICT policy implementation in primary education.

The development and growth of technology integration in education in Tanzania started as early as 1980’s where the science and technology policy of Tanzania was formulated. This was allowed by the formation of Tanzania commission for science and technology (Cos Tech) in 1986 and the formation of the Ministry of science and technology and higher Education (MSTHE) IN 1990 (Binde, 2010). Since 1990’s Tanzania established good number of training institutions which intended to promote research and development in science, technology and education. However, the government of Tanzania was unable to sustain those institutions financially. These made them academically non-viable. The failure of ICT to produce the desired results in most of the fields including education in early 1990’s was caused by the lack of a policy on information technology, its acquisition and use (Binde, 2010). The first national ICT policy in Tanzania was developed in 2003 (Tillya, 2008). This policy has two main objectives. One to provide national framework to enable ICT to contribute towards achieving national development goals and to transform Tanzania into knowledge-based society through the applicant of ICT.

Although the 2003 policy mentioned education as one for the areas of its focus, still the policy was too vague and thus did not address specific components for ICT integration in education. In 2007, the ICT policy for basic education which aimed to promote the acquisition and appropriate use of literary, social, scientific, vocational, technological professional and other forms of knowledge skills and understanding for the development and improvement of society was formulated. The ICT policy for basic education considers issues of ICT infrastructure, curriculum and content training and capacity development, planning procurement and administration. It also pays attention to the management support and sustainability, monitoring and support (URT, 2010). The ICT policy for basic education is implemented in collaboration with other education policy documents which govern the education sector in Tanzania.

The introduction of ICT in education started as far back as 1997, when the first official syllabus for computer studies was introduced (Binde, 2001; Tillya, 2008; URT, 2012). But the introduction of ICT in primary education was in 2005 when the ICT syllabus for primary schools was produced by the Ministry of Education and vocational training. Since 1997 little was done for ICT integration in education until 2002 when ICT integration initiatives started in education in Tanzania. It was in 2002 when the ministry of education with a support called stakeholders workshop from the International Institute for Communications (IICD) a Dutch NGO (Hare, 2012).

Although there has been initiatives for integrating ICT in education sector since 1997 a study by Vesisenaho (2007) ten years later shows that it is mainly private schools (both primary and secondary) in Tanzania that have taken it a mandatory to integrate ICT in teaching.Vesisenaho’s findings are supported by Hare (2007) who observed that; mostly private schools in the urban centres especially in Dar es Salaam are the ones using ICTs. Moreover, ICT facilities are mostly confined to administration purposes.There is a limited teaching of basic ICT skills and in most cases .ICT’s have not been integrated as a medium of instruction. Kafanabo (1999) and Tillya (2008) report that in schools where ICTs are used by students are mostly taught on how to switch on and off the computer as well as some basic computer program such Microsoft Word, Excel and Power point.

Teachers are not yet using ICT as a tool to enhance teaching and learning in their subjects. The delay in development of ICT integration in education is caused by the apparent lack of commitment and in adequate resources from the government for information technology lack of competent teachers and delay of an effective information technology policy in education (Hare, 2012; Tillya, (2008).

*Zanzibar Education Policy 2007* encourages the use of ICT as an important source of teaching and learning materials. The policy quotes that ‘*ICT has opened new ways of promoting learning and teaching knowledge dissemination and efficient education management services’* though Zanzibar *education Policy 2006* declares that the implementation of ICT is minimal so it has to train and upgrade teachers skills in ICT, raising community awareness on the importance of ICT.

*ICTs and Educational Indicators UNESCO institute of statistics 2006* has noted achievements of universal primary education which is one of the basic Millennium Development Goals, can be facilitated by emerging technologies, as well as the old ICTs such as radio and television. There is a growing need for cross-nationally comparable indicators in the area of information and communication technologies (ICTs) in education.

However, Tanzania is still behind the process of integrating ICTs in education system like many other nations in Africa. Algeria for instance launched ICT integration in 2003 through a pro-gramme of Computer for Every Home Initiative. But the adoption of ICT in education faces challenges of poor infrastructure, connectivity issues, and lack of digital materials and low level of access and training skills to use ICT (Hamdy, 2007). Benin also launched the integration of ICT in education in 2005 thoughts National Information and Communication Infrastructure Plan. However, as Agyeman (2000) reported the integration of ICT in education in Benin faced a number of challenges including the government failure to renew or maintain installed facilities, and the government inability to extend ICT infrastructure due to financial and budgetary con-straints.

Uganda also took initiative to integrate ICT in education. In 2012 the government of Uganda reviewed the curricula at Primary, Secondary and tertiary levels in order to improve the quality of education and improvise new learning methods. Teachers were trained to use ICTs in teaching and learning process. However, the integration in education faced challenges of poorly developed ICT infrastructure, high bandwidth cost, and unreliable supply of electricity and lack of resources.

Shafika (2007) reported the integration of ICT in Botswana education system. As he explained, in 2002 for government to ensure the effective ICT integration established a government ministry, the Ministry of Communication, Science and Technology. Despite this initiative, the adoption of ICT in education faced the problem of cost of connectivity that was prohibitive. Schools had problems related to lack of digital content aligned with the national curriculum. Countries of East Africa Community were not left behind in the integration of ICT in education.

# Statement of the Problem

Tanzania aspires to develop a knowledge-based and technology-led economy. However, despite the enormous advocacy of ICT in education sector, the policy to make ICT a mandatory in classroom teaching has not been developed. Thus, the question of how ICTs are used in primary schools is relatively under researched.

A study by Hare (2007) though suggests there is a policy to integrate ICT in pre-primary, primary, secondary and teacher education in Tanzania, there is not information on how primary school sub sector is making ICT available; how teachers and students access ICT; what challenges the teachers and pupils face as they use of ICT in primary schools; or the effect of inadequacy of ICT availability, accessibility and the user-ability in integrating ICT in pre-service teachers training in Tanzania. This study aims to fill this gap in the literature.

# Purpose of the Study

The purpose of this study is to;

1. Assess on the availability of ICTs in selected Primary schools in Kinondoni District.
2. Assess the usage of ICTs in selected Primary schools in Kinondoni District.
3. Determine the challenges related to ICT accessibility and user-ability in selected Primary school in Kinondoni District.

# Research Questions

1. To what extent are ICTs available in selected Primary schools in Kinondoni Municipal Council?
2. How are ICTs used in selected Primary schools in Kinondoni Municipal Council?
3. What are challenges related to availability and usage of ICTs in the selected Primary schools in Kinondoni Municipal Council?

# Significance of the Study

This study enables policy makers and researchers to understand challenges and prospects in the implementation of ICT policy in provision of primary education particularly in Kinondoni Municipal council despite all the efforts to implement the policy. Secondly, the study is beneficial to school administrators who oversee the implementation of ICT curriculum. Thirdly, to ICT subject teachers who are the actual implementers of the ICT policy in primary education. The researcher believes that this study is substantial to a number of people need ICTs for their children.

# Scope of the Study

The study was conducted in selected Primary schools in Kinondoni Municipality both private and government schools with the coverage on implementation of ICT in provision of Primary education and propose strategies to improve the implementation of ICT in Primary Education in Kinondoni Municipality.

# Limitations of the Study

This research work could not be a success without limitations, as it faced a number of challenges like shortage of funds for stationery, transport and other important materials needed for the study. Time was another limitation since the researcher had to fulfil other duties and accomplish research work.

# Organization of the Study

Chapter has provided background information related to this study in general. Specifically, the chapter dealt with background to the study problem, statement of the problem, study objectives, research questions, and significance of the study. The next chapter reviews related literature relevant to this study. Chapter three is the research methodology, chapter four contains data presentation, analysis and discussion and chapter five, summary, discussion, conclusions and recommendations.

# CHAPTER TWO

# LITERATURE REVIEW

# Introduction

This chapter reviews some of the available literature on challenges and prospects in availability and usage of ICTs in primary schools. It covers theoretical, empirical and conceptual literature.

This chapter provides a review of literature on assessment availability and usage of ICTs, discussions, acknowledged the work that has so far been done on the availability and usage of ICTs. This section presents in detail, the assessment on the availability and usage of ICTs in primary schools.

# Theoretical Stances

# Cognitive Constructivism Theory

Cognitive theory explains learning as an active process that requires the intervention of high mental processes for the information to reach in long-term memory. The cognitive constructivism approaches are grounded primarily on Piaget’s work emphasizes learners’ knowledge and understanding. Piaget explains how learners develop cognitive abilities, and proposed that humans cannot be given information, in which they immediately understand and use. Experiences enable them to create schemas, which are mental models about their world in which they live. These mental models are modified and enlarged as the individual acquires more experience. Learners construct knowledge by transforming, organizing, and reorganizing previous knowledge and information (Juanchon, 2011).

Piaget, emphasized ICTs have the potentials to develop in students an understanding through the use of exploration and construction of knowledge. Mikre (2011) pointed out gives them opportunity to access information needed to build their schemas. Therefore, examining the Piaget’s cognitive constructivism theory gives hint on how to use ICT to facilitate learners to have direct education to facilitate active learning.

# Social Constructivism Theory

Originated by Russian psychologist Lev Vygotsky (1896 – 1934), social constructivism theory explains that human cognition precedes social interactions, in that, what we think we know, emanated from the social surrounding that we interact and socialize with. Social constructivism emphasizes that knowledge emanates from social environment, which is appropriated by individuals. This implies that knowledge or meaning does not emanate from the minds of individuals, but rather it emanates from social interaction and is distributed collectively in the community. In other words, knowledge is contained within the social interaction and human culture in terms of norms and values, the stories discussed between people, the language used, the tools and cultural artefacts that people use to transform their environment, and the history of general life of the community (Lave & Wenger, 1991).

As Verenikina (2010) noted, it is essential to explore how ICT facilitates human interaction practices. According to constructivism, knowledge considered to be individually, as well as socially constructed. Learning is advanced through interactive and authentic experiences that match with the interests of the students. Therefore, the learning environment should be adjusted to allow a learner to construct knowledge rather than just receive it. In such environment, the use of ICT can help promote constructivism innovation in the teaching and learning processes (Kharade et al., 2012). As Nawaz (2012) said, the new learning environment emanating from the explosion of ICT gives learners opportunity to construct their knowledge by negotiating with othe5rs and harvesting the learning process. ICT is the best tool for interaction; by the help of internet communication is currently easy. Therefore, ICT facilitates the application of social learning theory in classroom.

Therefore, the analysis of implementation of ICT policy in the provision of primary education should not focus exclusively on an examination of the policy, but should explore how it is implemented and the challenges emanating from it in the course of teaching and learning. Within Social Constructivism theory, ICTs are regarded as cultural artefacts that embody certain norms and values, with their own technical language which shape how they can be accommodated in the implementation in primary schools. It is through the understanding of ICTs as socially constructed tools, embedde4d with cultural norms and values that we can understand the reasons for their availability or scarcity; their usage; and the root cause of the challenges in accessibility and user-ability of ICTs in selected Primary schools in Kinondoni District.

# Empirical Literature

# Availability of ICTs in Schools

Adomi (2010) did research on application of ICTs in Nigerian schools. He interviewed secondary school teachers on the application of ICTs in Nigerian schools. Interview results showed that there were developments in the Nigerian education sector which indicated some usage of ICTs in Secondary schools. He said that the Nigerian Education policy recognizes the prominent role of ICT s in the modern world and it has integrated ICTs in education in Nigeria.

According to Adomi (2010) usability of ICTs in Nigerian schools has affected teaching and learning of students in Secondary Schools. He commented that ICTs have potential to accelerate, enrich deepen skills, motivate and engage students in learning as well as strengthening teaching and helping schools change.

Adomi (2010) found that there was a great scarcity of ICTs in Nigerian secondary schools, which very few of them were available and a group could share. He found that most of these few ICTs were used for administration purposes and rarely for teaching and learning. The computer was not part of the classroom technology in more than 90 percent of Nigerian schools. This implies that the chalkboard and textbook continue to dominate classroom activities in most Nigerian schools.

In his findings Adomi (2010) mentioned some factors that have led to poor level of ICTs implementation in Nigerian schools as; Lack of ICT skills among teachers, high cost of ICT facilities, inadequate ICT facilities in schools, limited school budgets, in adequate educational software, lack of interest in ICT application on the part of students and frequent electricity interruptions, have led to poor ICTs implementation in schools.

For the case of power problems, Adomi findings revealed that, less than 68.4% of Nigeria population was connected to the National power grid. Less than 55% of the country is covered by physical data lines. These factors indicate that Nigeria faces unreliable power and physical data networks which made ICT policy to be poorly implemented. With these limitations, teachers found it difficult to integrate ICT in teaching and sometimes developed negative attitudes towards ICT.

# Usage of ICTs in Schools

Monyemangene’s (2012) study on high access to and low use of information communication technology in higher education institutions in South Africa, highlights the reasons why students privileged with high access to ICTs make such limited use of them. She focused on attitude, knowledge and skills; and motivation to determine the reason behind low access and usage of ICTs in learning. Monyemangene found that students did not possess highly positive attitudes towards ICTs; they had partially developed skills and incomplete knowledge in ICTs; and they were also only partially motivated to use ICTs. This suggests that attitude goes with motivation to learn and to use the ICTs.

# Challenges Related to ICT Accessibility and user-ability in Primary School

Begs (2000) research on ICT integration in schools showed that some of the barriers to the successful integration of ICT in teaching and learning environment. The findings indicate that teachers had a strong desire to integrate ICT into education but due to low level of education, they lacked confidence, competence due to the low level of education. Since confidence, competence and accessibility have been found to be critical components of technology integration in schools, ICT training and programs should be injected in teacher training colleges to make teachers competent and confidence.

Becta (2004) reports that barrier to access and use ICT is directly related to teacher’s competence in teacher’s competence in integrating ICT into pedagogical practice.

This is confirmed by Maiye’s (2010) research in Australia where he found many teachers lacking knowledge and skills to use computers although they were enthusiastic about changes and integration of supplementary language associated with bringing computers into their teaching practice.

Pelgrum (2001) suggested that the success of educational innovations depends largely on the skills and knowledge of teachers, teacher’s lack of knowledge and skills is one of the main hindrances to the use of ICT in education both for the developed and underdeveloped countries. Likewise, Imeided (2009) opined that intergrading technology to the curriculum requires knowledge of the subject area (ICT) and understanding on how student learn and a level of technical expertise.

However, Maiye’s (2010) study shows policy as the culprit, creating challenge in the access and use of ICT. He pointed that most developing governments have no clear policies to address shortage of ICT skills and human capital within their countries.

Mann (2004) and Yusuph (2005) said that the effective use of ICTs results from certain level of IT proficiency is required to enhance the capacity of developing countries to successfully derive development outcomes from their investments in ICT in teaching and learning process. Warts and Wachira (2010) also indicated policy as very promising in integrating ICTs in teaching. They however suggested that per service and in service training of teachers in ICTs is important to avoid the adoption and implementation becoming very problematic and remaining a mere policy., they suggested that for a policy to become practical, it needs to be underpinned by knowledge, finance, training and familiarity.

Mum taz (2000) research on ICT in education in Mozambique reports seven barriers there were related to teachers’ ability; lack of teaching experience with ICT. Lack of availability of ICT specialists’ teachers onsite support and the like.

Khan (2013) research showed that, lack of knowledge and skills is one of the main hindrances in the use of ICT in education in Swaziland. Teachers were hired to teach subjects in their areas of expertise and were expected to teach ICT as well.

Teachers attitudes and beliefs were other impediments found in the study by (Harrison and Raiver (1997) in Sub-Saharan Africa .In their study which focused on factors influencing classroom use of ICTs in Sub-Saharan Africa in primary and secondary schools these scholars found teachers with negative attitudes, less skilled in computer use and less likely to accept and adopt technology. They suggested that if teachers want to successfully use technology in their classes they need to possess, positive altitudes to the use of technology. Harrison and Raiver’s (1997), observation concedes with Knever’s(1994) suggestion that less technologically capable teachers, who possess positive attitudes towards ICT, require less effort and encouragement to learn the skills necessary for the implementation of ICT, into the classroom. Becta (2004) argued that the resistance to change is barrier use of new technology in education.

Resistance to change among many teachers who had pedagogical knowledge before the introduction of ICT, is an indication that something is wrong, in other words, there is a reason why resistance to change occurs. According to Earlie (2002) who did research in Mauritania on ICT in education, revealed that; the change from the present level to desired level of performance is facilitated by forces that is, encouragement powers of new development like; availability of ICT facilities in schools.

Tapan (2009) did a research on ICTs availability and usability in Bangladesh. He interviewed students and teachers in primary and secondary schools. In his findings he saw that Bangladesh as one of the developing countries lacked the resources and appropriate infrastructure for implementing ICT in primary education. The effective use of ICT would require the availability of equipment, supplies of computers and their proper maintenance including other accessories. Most of the rural areas of Bangladesh do not get electricity.

Tapans research revealed that, implementation of ICTs demands other resources such as computers printers, multimedia projectors, scanners which are not available in education institution.

In his research Mumtaz (2000) found that, lack of computers availability hinders successful integration of ICT into the curriculum.

Sharma (2003) did a study on one of the notable barriers in the use of ICT in primary education provision in developing countries is the political will of the people in power.

Sharma (2003) noted that the allocation of funds on ICT implementation is not seen very attractive to leaders. It can be seen from budgetary allocations in third world countries greater in other sectors but not in education. If the political leaders favour education technology it will bloom.

Kessy (2006) research revealed that the budget for never technology were misused and reduced due to corruption in administration. Huge budgets in Bangladesh are passed to buy modern teaching and learning materials for the improvement of teaching and learning process but in the end minor improvements are found in the overall technical and vocational education sector.

Fall (2007) proved that there is a lack of strategic plan to implement ICT in schools. Most schools lack ICT equipment and ICT equipment are very expensive in DRC Congo. The impact of bringing ICT into practice to facilitate and improve learning are discussed by Mselle (2012) in his study reporting that eastern African countries have policies and strategies that promote ICT integration into curriculum, dissemination of knowledge, development of E-learning, distance education, development of teacher professionalism, skilled personnel and create an awareness of ICT for establishment of ICT centres.

He concludes that the policy is too ambitious and impractical for it fails to integrate the existing instructional resources in education.

# Synthesis and Research Gap

A number of issues regarding the availability and usage of ICTs in classroom teaching, integration of ICTs in teaching have been identified and discussed in the literature. Those looking into accessibility concentrate on factors impeding availability of ICTs, and rarely do their consider that ICTs may be available but are not used, or may be used but do not relate them with students’ motivation and performance. This study aims to fill this gap in the literature. Assessment on availability and usage of ICts in primary schools. A number of issues regarding the implementation of ICT policy in provision of primary education have been explored in the detailed literature reviewed.

The reviewed literature has indicated that the challenges and prospects in the implementation of ICT policy in Kinondoni municipality and Tanzania as a whole is not a new experience but a global issue prevailing across many countries of the world, and mostly in developing countries.

Related literature on availability and usage, showed that, integration of ICT in teaching and learning is faced with various challenges like lack of competent teachers with ICT skills, lack of infrastructure for implementation of ICT policy in education provision, political instability in developing countries, lack of funds, teachers attitudes and beliefs are identified as among appealing factors, to poor implementation of ICT policy in provision of education in primary schools in Kinondoni Municipality.

In Tanzania, ICT education policy has been in place since 2006. The ICT Policy aims “to empower learners, teachers, educational managers and leaders to use ICT judiciously and effectively for expanding learning opportunities and ensuring educational quality and relevance” (MoEVT, 2008) The policy also emphasizes partnerships and stakeholder participation as mechanisms to broaden the basis of education financing and to optimize the use of education resources (MoEVT, 2008).

However, the reviewed literature deficit in explaining the deeper factors that further hinders the proper implementation of ICT policy in education provision in Kinondoni Municipality.

The primary school timetable offers only 80 minutes for ICT lessons in primary school. This time is less compared to other lessons. This shows that ICT is less practiced compared to Kiswahili, English, and Mathematics to version but few which have a total of 280 minutes equivalent to 7 periods per week.

Poor planning vision is another challenge in ICT, implementation in provision in primary education, most of the schools in Kinondoni municipality have no areas to expand schools to accommodate ICT laboratory areas allocated to schools are small to be expanded.

Some schools have few ICT equipment like computers which were not functioning. The IT department at schools reported that – extreme heat, humidity and dust corrodes the equipment, fine dust enters inner working machines and stop working.

School buildings had no glass windows, lack of desks, pest problems (rodents chewing wires – some schools had electricity but there were frequent black outs which destroyed computers and hinder lessons flow.

Computer viruses are rampart in the few computers available. Viruses had pearled the software and make equipment slow. Continued change in software production (versions) affects the curriculum since it has to be changed often currents the ministry of education syllabus if its office 2003 while the world is in MS 2016 version.

Unreliability of equipment where most of the materials sold is second hand which are not really good for curriculum implementation. Another challenge is that teachers in primary schools IIIA are trained to teach all subjects in all classes without specialization. This affects the implementation since not all teachers are able to teach ICT.

High school populations under (OPE) affects the implementation of ICT – (The municipal councils are not able to supply the equipment for all).

There is a great difference between men and women in science and computer technology application. Few women are attracted by technology; most of the teachers who are to apply implementation are women who are now less attracted by the technology.

Most of these teachers were trained many years ago where ICT technology was not implemented.

The ministry introduces a curriculum and books for teachers to teach without seminars and in-service training.

Language is another barrier in implementation of ICT in Kinondoni municipality. Public schools use Kiswahili language while ICT equipment all have English language command. Kiswahili is dominated first language and scarcity of Kiswahili software.

Literacy in reading and writing is another factor that hinders ICT implementation language skills and pupils’ dropouts in school. Pupils with special needs are not remembered.

Equity of access to resources y teachers, pupils and administration staff. These costs are in most cases inflated and cannot be provided by most developing countries including Tanzania.

# Conceptual Framework of Availability and Usability of ICTs in Primary Schools

Conceptual framework of availability and usability of ICTs in primary schools.

**AVAILABILITY USAGE IMPACT**

**AVAILABILITY**

The policy on availability and usage of ICTs in primary schools.

**ICTs USAGE**

The usage of these ICTs in learning and teaching process.

**ICTs usage impact**

The impact of integration of ICTs in learning and teaching process in primary schools.

Figure 2.1: Conceptual model

The study checks if there is ICT clear policy, that stipulates the usage of ICT devices like i.e. Computers, radio and mobile phones) in primary schools teaching and learning. However, the implementation of the policy depends on the availability and usage of ICTs where by teacher’s attitudes towards ICTs and the whole school culture. If teachers have positive attitude towards ICTs and the knowledge that ICTs can raise the teaching effectiveness, there will be a positive impact on the performance of pupils in primary schools.

# Summary of This Section

This chapter has dealt with one major research component, literature review on ‘availability and usability of ICTs in raising students’ performance.

# CHAPTER THREE

# RESEARCH METHODOLOGY

# Introduction

This chapter outlines and describes the research methods and techniques that were used in conducting this study. The first part explains the research approach and area of study. The second part describes in details the; data collection, instruments, how the population was sampled. The last part explains the procedures for and data analysis and ethical, reliability and validity considerations.

# Research Approach

Research approach is the structure or plan of a research indicating what has to be done and how to do it (Omari, 2011). In addition, it guides data collection, measurement and analysis. This study employed a qualitative approach because data required were in the mind of people also it enabled the researcher to study the problem under study. Using qualitative approach was more convenient in this study as it allowed the researcher to enter the personal world of the participants (Creswell, 2009), and understand the availability and usage of ICTs in primary schools teaching and learning. The researcher also observed in the site of the study, interviewed the respondents and interpreted the results according to the findings that were accumulated from the real situation on the site, thus the researcher had the opportunity to observe and interview the participants in their natural settings by collecting the data from the participants while are in the natural settings that maximized their confidence, freedom and chance of the researcher to get necessary information from the participants who are the implementers and beneficial of the ICT education policy implementers and benefitees of the ICT education. The approach also helped the researcher to interact face to face with the participants during data collection for the purpose of getting in depth insights of informants.

# Research Design

Research design is the conceptual structure within which the study will be conducted. It is a detailed strategy or plain for achieving research objectives (Orodho 2003).The design based on the study area, population samples the questionnaires and interviews conducted on the availability and usage of ICTs gave the researcher an opportunity to observe and interview, students, teachers and heads of schools and also to collect the data needed to answer the research questions where, they provided information about the availability and usage of ICTs in primary schools in Kinondoni Municipal Council.

Alternatively, research design has been defined as the structure or plan of a research indicating what has to be done and how to do it. (Omari,2011) In addition research design guides data collection, measurement and analysis. This empirical enquiry adopted helped the researcher to study the phenomenon in depth in its real work context. This design enabled the researcher to assess whether ICTs availability and usage affect positively the pupil’s performance.

# Study Area

The study was situated in Kinondoni Municipality with a focus on ten primary schools located in urban and rural areas. The area is suitable for this study because, it has enough schools both public and private, in rural and urban with its good population, was considered to be appropriate for this study to provide a clear picture of ICTs implementation in primary schools.

# Study Population

This study collected data from ten primary schools (five public schools and five private schools) in Kinondoni Municipality comprised of male and female pupils, teachers, head of schools and parents. Study population refer to targeted group to be studied in a particular place since it is impossible to study the whole population as such as sample is drawn to represent the population.

It is any group of individuals that own more common characteristics (Hoy & Miskel, 2008), that can be identified by the researcher for use in the study. A population is therefore a total collection of elements about which one wishes to get information in this study population includes different groups such as teachers and studies. Head of schools were involved as administrators and supervisors of educational matters; teachers were the main implementers in the schools and whose culture also can impact on the usage of ICTs in classroom teaching.

# Sample Size

Sample, according to Hoy and Miskel (2008) is a group of respondents drawn from a population in which the researcher is interested in collecting information. The researcher selected participants from 10 primary schools with a total of 110 respondents with 10 headteachers ,40 teachers,50 pupils and 10 parents from within the community in which sample schools were selected. Kothari (2004) states that “a decision has to be taken concerning a sampling unity before selecting a sample “The term sample has been defined by different scholars in different ways; Sample according to Hoy and Miske (2008) is a group of respondents drawn from a population in which the researcher is interested in collecting information.

Table 3.1: Presents sample composition of participants

|  |  |  |  |
| --- | --- | --- | --- |
| **S/n** | **Categories of informants** | **Distribution across schools** | **Total** |
| 1 | School Heads | 10 | 10 |
| 2 | Teachers | 40 | 40 |
| 3. | pupils | 50 | 50 |
| 4 | Parents | 10 | 10 |
|  | **TOTAL** | **110** | **110** |

Table 3.1 presents sample composition of participants who provided information on usability and availability of ICTs to raise pupils’ performance in Kinondoni Municipal schools.

This study used to students from each of the ten primary schools making a total of 50 students, 50 Teachers from 10 schools, 10 parents from within the community in within sampled school were selected 10 heads of schools. Therefore, total respondent used were 110.

This sample size is the representation of the population, because the researcher will not be able to access every member of the population in the study area.

# Sampling Procedures

The researcher used purposeful and random sampling techniques to gather required samples. Sampling is an act of drawing a sample from a given population (Matson&Brablmle,1997), for the purpose of gathering accurate data that are free from bias purposive and random sampling techniques.

# Purposive Sampling

Purposive sampling techniques was used to select parents especially chairpersons of schools’ committees and school heads. This is also known as non-probability sampling where each sample does not have an equal chance of being selected for a particular study. Omari, (2010) suggested purposive sampling technique involves picking the informants who are the most relevant and knowledgeable about the subject matter and working with them intensively.

Purposive sampling of the participant is done in order to allow the researcher to acquire specific information on the given study or research problem (Omari 2010). This is similar to Creswell (2013) who acknowledge that the use of purposive sampling allows the researcher to understand the research problem or phenomena under study closely. Purposive sampling is taken for several reasons including achieving standardization and achieving uniformity to enable comparisons to be made, to focus on specific unique issue or cases or to generate theory from different types of data generated (Cohen, Marrion & Morrison, 2000). In each of the sampled primary school, the head teacher was involved as they were responsible for ensuring that ICT policy is implemented successfully in their respective school. The sample selected provided relevant information that other respondents would not because they were the main implementers of the curriculum. The researcher opted to use purposive sampling so as to get detailed information about ICTs availability and usage.

# Random Sampling Techniques

In this technique, 100 Students were randomly sampled. Random sampling technique was used to select respondents from ten selected schools, by using a class register. Ten students were selected from each school using a systematic random sampling technique random sampling technique to get a total sample of 110 respondents for an interview.

This was done by selecting 50 students who were needed. A box of numbers mixed thoroughly was placed in front for each to pick. Those who picked even numbers were selected for the study.

This sampling technique allowed every member of the population to have an equal chance of being selected. This simple random sampling is the most primitive and mechanical that is used by lottery method. Each member of the population is assigned a unique number. Each number is placed in a body and mixed thoroughly. All the individuals bearing the numbers picked by the researcher are subjects for the study.

The same random sampling technique was used to get teachers from ten schools to make a total sample size of forty teachers.

# Instruments for Data Collection

Observation checklist, Questionnaire and Interviews were the instruments that were used to collect data for this study. Instruments for data collection are the tools used in the process of collecting information from different sources such as from the field’s newspapers, journals. (Kothari, 2003). Basing on the nature of the subject, observation, questionnaire and interviews were sufficient to collect the needed information.

# Observation

Observation schedule is an attempt to obtain a comprehensive picture of a situation, and the products of those is noted and or narrated. The researcher identified behaviour in ICTs usability. In this study, the researcher observed how teachers and students use ICTs in classrooms. Observation ascertained information obtained through questionnaire and interviews. This helped to obtain a valid and credible picture for the study. The researcher observed ICTs infrastructure available, the interactive nature of the class to determine to determine how the teachers used ICTs to raise performance.

# Questionnaire

The researcher used closed ended questionnaires that reflected study objectives and was designed in a simple way basing on research questions. The questionnaires administered by a researcher to the respondent and allowed them to fill them by themselves. Most questions in the questionnaires were closed ended questions as it was provided. Questionnaires consists of number of questions printed/typed in a definite order on a form or set of forms (Kothari 2004). A questionnaire is usually, sent to a person with request to answer the questions and return the questionnaire.

The purpose of using closed ended questions is to get responses that are directed short and clear. The method is not expensive, free from the bias of the interviewer and respondents have adequate time to provide their answers and very easy to achieve information.

# Interview

This tool uses a written list of questions or topics that need to be covered by respondents (Komoetal, 2006). Interview is a face-to-face method between the researcher and interviewee. This method applied will help to gather deep knowledge of respondents view on study phenomena by asking questions concerning study phenomena. Interview is another instrument used to gather data for this study. This tool was employed to collect information from Head teachers, ICT subject teachers and parents.The importance of interview method is to tackle more information from the respondents. An interview is a relatively brief series of topics or questions the researcher uses to guide the conversation Creswell, (2013). This study involved structured and interviews to collect rich and detailed information on the availability and usage of ICTs. According to Williman (2006) is the standardized questions read out by the interviewer according to the interview schedule, in contrast Denscommbe (2007).

In this study, face-to-face structured interview was administered to the interview method helped to collect data from the head teachers because they are the decision makers and closely supervise the implementation of ICTs in schools. Head teachers were involved as they are the first practitioners in ICTs availability and usability.The interview was conducted in a comfortably prepared rooms to enhance the respondent to give information freely and confidentially.

# Data Analysis

Data processing for this study involved the data editing, coding classification and

tabulation of collected raw data so as to make them ready for analysis (Kothari, 2003). The researcher used descriptive statistical techniques including summary of findings in the form of charts, tables and graphs form coded numbers and percentages. The data obtained were coded and analyzed by using computer excel program. The analysis of data helped the researcher to draw up and give recommendations.

# Ethical Considerations

Sullivan (2001) points out that social research are bound to ethical considerations in their studies. During the study, the participants were given opportunity to make an informed consent. In addition, their rights to privacy, protection from harm either physical or emotional was safe guarded by asking questions in appropriate manner. (Punch, 2005). In addition to that Putton, (1990) contends that the research design and procedure that fail to meet the standards by not treating the subject with respect are likely to cause misleading results which are not conclusive and may be biased.

In this study the researcher first sought permission from Kinondoni Municipal Council to conduct research in the study area. Also, all respondents were assured of confidentiality of information given to the researcher. More ethical considerations that were observed by the researcher included, non-interference if the respondents, religious beliefs, cultural values physical harm and respects of respondent’s dignity.

# Validity & Reliability

**Validity** is a key aspect of my research. The researcher has given attention to these aspects so as to make this research the best one credible and trustworthy. The researcher attuned himself to multiple factors in planning and implementing various tactics or strategies into each stage of a research. According to Le Comple and Goetz, (1982) a valid study should demonstrate what actually exists and a valid instrument should measure what is supposed to be measured. This is what the researcher arrived at in the ICTs availability and usability in Kinondoni Municipal Council schools.

**Reliability** is chiefly concerned with making sure the method of data gathering leads to consistent results. The researcher made sure that trustworthiness, truth, value, applicability, consistency and conformability from reliable sources of data.

# Summary of the Chapter

This chapter dealt with the methodology, employed in obtaining and dealing with the collected data. The instruments used to obtain data in this study included questionnaires.

# 

# CHAPTER FOUR

# DATA PRESENTATION, ANALYSIS & DISCUSSION

# Introduction

This chapter presents the results arising from the exploration of availability and usability of ICTs in primary schools in Kinondoni Municipal council. These results are presented according to the objectives of this study; the availability of ICTs in selected primary schools in Kinondoni district and the challenges related to ICT accessibility and user-ability the selected primary school in Kinondoni district. The chapter starts with biographic data of the respondents.

# Education Levels

Table 4.1: Demographic information of the respondents

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SN** | **Group** | **Education Level** | **Qualification** | **Male** | **Female** | **Total** | **Percentage** |
| 1 | Pupils  v - vii | Primary School | - | 25 | 25 | 50 | 45.5% |
| 2 | Teachers | Certificate | Teacher | 10 | 10 | 20 | 18.1% |
|  |  | Diploma | Teacher | 8 | 8 | 16 | 14.5% |
|  |  | Degree | Teacher | 2 | 2 | 4 | 3.6% |
| 3 | Head teachers | Diploma | Teacher | 3 | 3 | 6 | 5.4% |
|  |  | Degree | Teacher | 2 | 2 | 4 | 3.6% |
| 4 | Parents | Form iv | - | 2 | 2 | 4 | 3.6% |
|  |  | Degree | Various qualifications | 3 | 3 | 6 | 5.4% |
|  | **Total** |  |  | 55 | 55 | 110 | 100% |

**Source:** Field data 2017

Table 4.1 indicates 45.5% of the respondents were largest group of pupils at the primary school. Teachers interviewed were in three categories. Certificate holders made 18.1 % , diploma holders 14.5% and degree holders made 3.6%.With the head teachers, diploma holders were 5.4 % while degree holders made 3.6%.Parents group with no qualification made 3.6 % and the parent group had degree holders with various qualification with 5.4 %. The population above provided the researcher with valuable data for the study.

# Availability of ICTs in Selected Schools in Kinondoni Municipality

Availability of ICT’s is one of the most important steps toward the integration in teaching and learning. However, literature reports lack of availability of ICTs in many schools especially in the developing countries. This is because many of these countries include Tanzania have not developed policies on ICT mandatory in classroom teaching. The first objective was to examine the extent to which ICTs were available in primary school in Kinondoni district. Interview schedule and observational checklist were used to solicit this information. The question was: *To what extent are ICTs available in selected primary schools in Kinondoni District?*

When the researcher interviewed the head teachers on what extent are the ICTs available in selected primary schools in Kinondoni district, these were their comments.

“Availability of ICTs in my school is very scarce. I normally receive funds to run the school but not allocation for buying ICTs. We don’t have any, the TV you can see there is only used for entertainment and news”.

“Generally speaking, we don’t have ICTs at school. We could appreciate having them so as to integrate them in teaching and learning process. Displaying of maps diagrams through video could foster the understanding of the pupils”.

“I can doubtless say that ‘we have few of them” We have electricity here at school which makes easy to use them. My school has a TV, computer and a radio that was donated by stakeholders. The government does not provide funds for ICTs though the school quality assurers insist us to use technology during our teaching”.

“I only have a TV at school, I don’t have any other ICTs. It very bad to declare that we don’t have these ICTs since this is the era of science and technology. ICTs could simplify a lot in learning and teaching as a whole”.

“Not only in my school, but also in many schools around in our ward and district, ICTs are not available not only in primary schools but also in secondary schools. Pupils start in grade one to grade seven, or form one to form four without touching a computer. Availability of ICTs could broader open students mind in learning”

From the head teachers, it seems that there are inadequate ICTs in many of the selected school in Kinondoni district. To corroborate this information, teachers were also asked the same, and the following were some of the responses.

“I am an ICT teacher but i tech my students the meaning and importance of ICTs. Sometimes it is hard for the students to gain knowledge on how to use them. We have a lot of literature on ICTs. The availability of ICTs in schools could easier the teaching and the learning of these young students”.

“I think there is a low appreciation of the role of ICTs in teaching and learning process that’s why, the movement and the community does not supply ICTs to schools. Imagine this is the science and technology generation, but there is no ICTs available. Nowadays in all offices, industries technology is in use. The government should do something to make sure these young generations encounter ICTs at their early learning age”.

“One of the things that pain me as a teacher is the lack of ICTs in the teaching and learning process. The way I see the advanced world in the technology, then nothing of the ICTs available in schools, I feel that we don’t do fair to the learning of our children”.

“In my view not only the ICT policy has failed to address ICTs teaching and learning facilities challenge but also in totally the government has failed to make sure all primary schools have access to electricity. What do I mean here? Firstly, there are schools without electricity at all then there are schools with electricity but no money to pay for it. For the ICTs to work, electricity is very important”.

“We have two Computers only, unfortunately they are not working. I wonder how the government claims that ICTs syllabus is now implemented in all primary schools while the ICTs infrastructure is not there. I normally ask myself how ICTs subject can be taught without ICTs facilities”.

Furthermore, students were also subjected to the same.

The question was: to what extent are ICTs available in your school? Some of the responses were as follows.

“We don’t have ICTs at school, but we could be happy to have them. I am now in class seven. I started class one in 2012. We have never used ICTs during learning neither the teacher has never come into the class with any.

“We just learn theoretically. We don’t have ICTs. It’s very difficult to understand the teachers since they teach theoretically. Imagine how to turn the computer on or off how to open programs etc., they are all done theoretically”.

“Our teacher normally mentions some ICTs sometimes we get few pictures on books that displays them, but have never seen them at school for use”.

“At my school we have a computer lab, which has also a radio and television. Every week we get into the computer lab, for some minutes to learn how to use them and sometimes installed video for maths, and science are used for learning. Our parents pay for us to learn through ICTs”.

“Our teacher has her own computer (laptop) she sometimes comes with it in the class for us to see some things that she wants to explain to us. We normally stay in a large group to view the screen. Pictures audio is really nice but at least we could share 3 one computer”.

The responses from the students correspond with those of the head teachers and the teachers, that the availability of ICTs was scanty. The researcher wanted to know what were available and to what extent. This information was gathered through observational kit, and the findings were as shown in Table 4.2.

Table 4.2: Availability and status of ICTs in schools

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/N** | **Name of the school** | **Item** | **Quantity** | **Status** |
| **1.** | A | Radio  Television | 2  1 | In use  In use |
| **2.** | B | Photocopier  Computer  Radio  Television  Printer  DVD drives | 1  17  1  1  2  1 | In use  8 in use, 9 under service  In use  In use  1 in use: 1 under repair  In use |
| **3.** | C | Computer  Television | 2  2 | 1 in use |
| **4.** | D | Radio  Television | 2  2 | In use  In use |
| **5.** | E | Radio  Television  Photocopier  Projector | 2  2  1  1 | In use  Under repair  Under repair |
| **6.** | F | Radio  Television  DVD drives | 2  2  1 | In use  Under repair  In use |
| **7.** | G | Television | 1 | In use |
| **8.** | H | Computer  Television  Projectors  DVD drives  Photocopier | 24  2  2  1  1 | In use  In use  In use  In use  In use |
| **9.** | I | Computer  Photocopier  Televisions  Projectors  DVD drives | 30  1  2  2  1 | In use  In use  In use  In use  In use |
| **10.** | J | Computers  Televisions  Projectors  DVD drives  Photocopier | 16  2  2  1  1 | In use  In use  In use  In use  In use |

Table 4.2. Illustrates the availability, usability quality and quantity of ICTs available as collected through questionnaires. Data collected revealed that 99% of selected school had televisions. Televisions available were fixed in staff rooms mainly for entertainment and news and not for learning purposes. In 3 private schools Televisions were fixed in lower and upper classes for learning and teaching purposes. Computers were available in 30% and mostly in private schools. Some were for teaching and learning but some were for managerial activities. 60% of radios were available and in good condition but they were not used for teaching and learning. The reason given was that the radios have no programs for teaching and learning. They have some children programs on Saturdays and Sundays. DVD divers were available in 30%.

Table 4.3: Availability of ICTs in selected schools

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ITEM** | **Radios** | **Photocopiers** | **Computers** | **Televisions** | **DVDs** | **Projectors** |
| QUANTITY | 11 | 5 | 89 | 10 | 5 | 7 |

This research finding is in line with Gibson and Oberg (1997) who noted that the adoption of ICTs has been impeded by limited budget and lack of appropriation of ICT facilities in raising academic performance. From the interviewees response and the researcher’s observation, one can confidently conclude that ICT facilities in the selected primary schools in Kinondoni district are scant and inadequate to facilitates teach and learning.

# Usage of ICTs in Selected Schools in Kinondoni Municipality

Usability, and thus, integrations of ICTs in teaching and learning is one of the most important steps toward quality teaching and students’ academic success. However, literature reports low use of ICTs with the reasons that, apart from availability, there is also attitude, knowledge and skills in their use (Monyemange 2012). The second objective was to assess the usage of ICTs in selected Primary schools in Kinondoni District. Interview schedule and observational checklist were used to solicit this information. The question was: *How are ICTs used in selected Primary schools in Kinondoni District?*

The interview with the head teachers, teachers and students brought to view the respondents’ views as follows. Interview with the head teachers showed that 5 schools out of 10 had no trained ICT teachers or technicians. The school heads viewed the lack of qualified IT teachers and technician as a hindrance from effective integration of ICT in the teaching and learning processes. Some schools had hired part time ICT experts to teach ICT as a subject. These were the responses.

“Generally speaking, I don’t have a single teacher who is an expert in ICT or who knows how to teach it or integrate ICT in teaching. Successfully implementation of ICT needs well trained teachers who are conversant with ICTs and how to use them to teach. What is do, I sometimes hire a part time ICT expert to teach my students”

“The use of ICTs in teaching needs capable teachers trained well in the use of ICTs. Teachers in teachers training colleges are not trained to teach with ICTs”.

“I have a few teachers who used the computer and other ICTs. They can prepare power point presentations other just teach in a usual way”.

“I am an ICT teacher at this school, although I teach ICT as a subject theoretically. Sometimes I draw pictures to support me in my lesson”.

“I teach ICT as instructed in the curriculum, I usually do not go to class with my computer, I use the computer in searching content materials which I then copy in my papers or copy books to use in the classroom during teaching and learning. The curriculum instructs that I teach ICT as a subject I, do just that and have never integrated ICTs in teaching. So I don’t use ICTs to teach”.

“I have only ICT, syllabus and ICT text books which i use to teach ICT as a subject. I do not use ICT in teaching. Besides do not have any practical lessons related to ICTs, so it is very hard to integrate ICTs to teach”.

“I sometimes prepare notes in power points to present to my students. From the teachers’ responses, it seems that almost all the teachers do to use ICT s for teaching, but teach what ICTs are”

To triangulate this information, students were also asked the same. The question was: How are ICTs used in the classroom? The following were some of the responses

“We have never used ICTs during learning; neither the teacher has never come into the class with any. We could be happy to be taught with ICTs integrated”.

“I know what ICTs are, but i have not been taught how to use it”.

“Our teacher normally mentions some ICTs and rarely shows them in pictures. We haven’t used them”.

“We have a computer lab at school a radio and television. We normally spend 80 minutes to learn computer in the lab, but it is only one and we are not allowed to touch it”

“Our teacher has her own laptop. She sometimes comes with it in the class and shows some things especially videos and pictures on topics we have learnt in class e.g. types of mountains, planets, food digestive systems, solar system etc. The only problem is all the 90 pupils have to use one computer”.

The response from the students corresponds with those of the head teachers and teachers, that there was no much use of ICTs in classroom teaching and learning. The researcher wanted to know the actual classroom teaching, and thus visited several classrooms to see ICTs used to teach and learn using observational checklist.

TABLE 4.3 Usability of ICTs in selected primary schools in Kinondoni Municipality.

Table 4.4: Observational checklist for ICT usability in classroom teaching and learning

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ICTs to observe** | **Status** | | | |
| **Highly used** | **Used** | **Sparingly used** | **Not used** |
| Use Microsoft word |  |  |  |  |
| Use Microsoft Excel |  |  |  |  |
| Use Microsoft Access |  |  |  |  |
| Use Microsoft PowerPoint |  |  |  |  |
| Use Microsoft Explorer |  |  |  |  |
| Other Computer Informatics |  |  |  |  |

From Table 4.4 we see that, usability of the ICTs in Kinondoni Municipality is very minimal. Most of these few available ICTs are mainly use for administration purposes but not for teaching and learning, lack of support from the government, lack of proper maintenance and repair for the available ICTs which led to lack of motivation to learn are factor that hinders the effective use of ICT in schools. Gibson and Oberg (1997) cited that one teacher use ICTs for surfing on the internet and the majority of the computers were not working. This hinders the ICT usability in schools.

This research finding are in the line with Gibson and Oberg (1997) who noted that, the adoption of information Communication Technology in education has been impeded by limited budget and availability of appropriate ICT facilities. This factor also determines teachers and students’ commitment to learn and use this technology in the teaching and learning process. Lack of proper maintenance and repair, another factor found by Gibson and Oberg and which prevent effective use of Information and Communication Technology in schools.

# Challenges Encountered in the Use of ICTs in selected Primary Schools in Kinondoni Municipal Council

The last research question was related to determine the challenges in the access the usability of ICTs in Kinondoni primary schools. Interviews were used to the head teachers, teachers and pupils.

The question was: What are the main challenges in the accessing and using ICTs in teaching and learning? The following were the head teachers’ responses.

“The main challenge is lack of ICT teaching and learning facilities. For example, in this district all 16 public secondary schools cannot use radio; TV as we do not have electricity”. (Head teacher from school F 19.8.2018”

“I can say that, The ICT in terms of facilities is 0.5 % maintenance if full cost. The books are not available from the book sellers nor do we have the financial resources to purchase the books our 40% from capitation grants is not enough to buy the books we need so we would we get money to buy computers”. (Head teacher, from school G 13.8.2018)

“In my view, the government has failed to make sure that all primary schools have access to electricity power. I wonder how the government claims that syllabus is now implemented in all primary schools, while ICT infrastructures are not there in all primary schools. I ask myself, how ICT as a subject can be taught without ICT facilities. The government should recognise that ICT is very important today world and it cannot be implemented without ICT teaching and learning facilities”. (Interview with school head from school H 14.8.2018)

“I think there is politics in education which are hindering ICT planning and implementation, because the ICT policy is not clear to all teachers who lead the subject, not only is not clear, the policy itself is not available in schools. This makes the implantation impossible. For example, here at our school we teach ICT as you can see there are not Computers, no power, and there is nothing to support ICT policy implantation and integration with other subjects. The government has to really invest in ICT”. Teachers from school J.18.8.2018)

“Although pupils like to learn ICTs teachers feel that using ICTs to teach is an additional task to teachers and management” (interview with the head of school ‘I’ 20.08.2018).

“We have a challenge in language of instructions used with ICTs and the language we use at school. All instructions are in English language”.

“It is a challenge to me to using ICTs because they are not available at school”.

“To me language is a big challenge in using few ICTs available. I know ‘Kiswahili’ very well but the “I find myself in a big group to learn using ICTs. Due to the large group, it is difficult for me to hear to see clearly”.

In adequate facilities were illustrated in the response given by another head of school from school G who disclosed that:

“Although one of the objectives of ICT education objective is to address teaching and learning facilities in the education sector including primary schools, teachers and students ICT teaching and learning situation suggest otherwise”.

In one of the reports Mwalongo (2012) states in general, very few schools have computers or Internet access, and most schools also lack electricity. Most schools have radio, but very few have Television. The MOEVT is implementing radio programs for primary education. Star TV Broadcast program on various subjects for secondary education in English. The distribution of telecommunication landlines is limited, especially in rural areas where more than 80% of the populations live.

Private schools experience was a bit different from the public schools. The interviews had different views and opinions.

The researcher’s interview in school H which was a private school noted,

“In my school all teachers to be employed must computer literate since they have to use ICTs in the whole process of preparing the lesson, teaching, evaluating and producing results. I find the ICTs simplifying the work. (Interview with the head of school “h21”) 19.08.2018.

The finding shows that comparatively, non-government schools showed a huge difference in the usability and availability of ICTs to raise pupil’s performance. Schools had ICTs which were used as pedagogical tools to raise performance.

# Summary of the Chapter

In this chapter the findings of this study have been presented, analyzed and discussed. Three components have been assessed in this chapter to examine how ICTs availability and usability raise Kinondoni Municipality. These included, assessing the availability and usability of ICTs in Kinondoni Municipality, the key findings on the usability, the study found that most schools have no ICTs, that teaching and learning is not integrated with ICTs. Few ICTs available were mainly for administration purposes and not teaching and learning. Some few ICTs available had serious faults and repair is needed. The researcher has categorized key challenges in accessing and using ICTs to teach in Kinondoni Municipal into two groups. Challenges that face public schools in rural and urban and those facing private schools.

Most public schools in Kinondoni rural are not aware if ICTs usage can improve academics in their schools. ICTs are categorised as optional extra that if available or not they can’t bring any effect. Most rural public schools count that having ICTs is of more importance to private schools to attract customers. Schools had electrical power installed but there was no budget to pay the bills.

Urban schools had challenges on the language issue since public schools do not use English as a medium of instruction while the ICTs use English language in operation. Most private schools in Kinondoni Municipality urban had ICTs in use for teaching and learning. Teachers are happy to use them in teaching and learning since they simplify teaching work and pupils enjoy using them since understanding the topic becomes easier.

# CHAPTER FIVE

# SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

# Introduction

The availability and usage of ICTs in the academic environment is becoming a competitive advantage and critical to the ongoing success of the most educational institutions. Therefore, this study aimed at addressing questions regarding to whether ICTs availability and usability of ICTs and their effects on performance of pupils. Chapter one dealt with the introduction and background of the problem, while chapter 2 presents the literature related to this study. Chapter 3 is on the research methodology and chapter 4 was about data presentation, discussion and recommendation.

# Summary of the Study

The study assessed on the availability and usage of ICTs in Kinondoni Municipal Council. The specific objective was on the availability and usage of ICTs in primary schools and the impact on pupils performance. To identify factors relating to availability, usage and to suggest ways forward for ICTs availability and usage in primary schools.

# Summary of the Findings

# Lack of ICT Facilities

Access to ICTs in teaching and learning in primary schools in Kinondoni District as it relates to usability for raising academic performance was found to be inadequate. The findings showed that most schools lacked ICTs facilities and those which were found were inadequate. More specifically, most schools lacked Computer hardware and associated communication equipment and other technological connectivity including computer peripheral equipment such as printers and scanners and also communication support devices such as fax computers networks and internet. This implies that students complete primary education without adequate knowledge of ICTs. In the literature it is known as digital divide, where there is uneven distribution in the access to, use of, or impact of ICTs between people (U.S Department of Commerce, National Communication and Information Administration (NTIA) (1995).According to US report, those who cannot access or use ICTs their academic performance was absolutely down and teachers vowed that they wish they would have so as to raise performance. According to US report, those who cannot access or use ICTs their academic performance was absolutely down and teachers vowed that they wish they would have so as to raise performance. This is an antithesis with the current era of science and technology, where the integration of ICT’S in teaching is of vital importance, where parents’ expectations are that, ICTs should be integrated for higher performance.

The study findings agree with the observation that ICT’s availability and usage will raise more the performance in science subjects. The findings show that the schools that use ICT’s the performance in science subjects is also better. Furthermore, it was found that the performance in private schools is higher since they integrated ICTs in teaching and learning. Data collected showed that most private schools had computers and television for both teaching and learning and for managerial activities.

It was also observed in the study that school attendance will be more stable, if the ICTs are integrated in teaching and learning. Pupils get more attracted to audio visual that is ICT’s when they are integrated in the classroom. There is a say that says ‘seeing is believing’ where pupils see real thing, i.e., Mountains they get more attracted to learn, dropouts, truancy.

It was also noted that these ICTs are also available at home, where pupils can access and use them for learning. Almost all homes have televisions, which apart from other uses, there are some channels or TV programs which can be used for learning. Gadgets connected to a TV i.e. deck can add value to home learning since educational DVDs / CDs can be inserted and hence learning time is increased.

# Challenges in usage of ICTs

The study also finds, difficulties with the usability of those ICT’s since most of the teachers were trained to teach from the textbooks and not from ICT’s. Most teachers find difficulties for themselves have to learn how to use them, before using them for teaching. The usability needs technical knowhow. Under the case of usability, some classrooms had a great number of pupils in the glass, which makes difficult for all to participate fully. The research observed that the quantity is not sufficient.

# Challenges in Accessing Using ICTs

However, the study found that most teachers lacked experience due to lack of seminars, workshops to update their skills knowledge and attitudes. The study also revealed that there were problems of management in primary schools ICT management that, some head teachers had taken initiatives to make sure that they start integrating ICTs in teaching and learning by involving stakeholders to contribute for, while some head teachers were reluctant that, it is the issue of the government to improvise these changes.

The study observed that there was a problem of using the ICTs available. Since the language operating was English. Most pupils are not conversant with English language. There was also a problem of deficit of teachers who could manage the use of ICTs, it was one of the critical errors that led to the deteriorating of the quality of education in primary schools.

Despite the fact that both public and private schools had a low level of ICTs integration, though the main challenge was mainly in public schools, the analysis from both of the two groups revealed that low investments were made to ensure quality adequate ICTs were put in schools.

This means that significant measures have to be taken to make sure that pupils are exposed through ICTs during teaching and learning process.

In this chapter the findings of this study have been presented analyzed and discussed. Three components have been assessed in this chapter to examine how ICT’s availability and usability to raise pupils’ performance in Kinondoni Municipal, Availability usability and quantity and quality of ICT’s facilities at schools and the relationship between availability and usability of ICTs to raise academic performance. This study found that if ICTs are used effectively, they will raise pupils’ performance.

One of the factors that led to the high performance was the availability and usability of ICTs in a school. Data analyses showed that schools that had ICT’s and used them had a higher performance. Interviewed students, revealed that they are ability to understand is highly fostered by the availability and usability of ICT’s.

The study findings revealed that those schools which had no ICT’s the performance was absolutely down and teachers vowed that they wish they would have so as to raise performance.

Findings revealed that we are in the era of science and technology, where the integration of ICT’S in teaching is of vital importance, parents’ views, expectations are that, ICTs should be integrated for higher performance.

The study findings agree with the observation that ICT’s usability and availability will raise more the performance in science subjects. The findings show that the schools that use ICT’s the performance in science subjects is also better.

The results showed that the performance in private schools is higher since they integrated ICTs in teaching and learning. Data collected showed that most private schools had computers and television for both teaching and learning and for managerial activities.

It was also observed in the study that school attendance will be more stable, if the ICTs are integrated in teaching and learning. Pupils get more attracted to audio visual that is ICT’s when they are integrated in the classroom. There is a say that says ‘seeing is believing’ where pupils see real thing, i.e. Mountains they get more attracted to learn, dropouts, truancy.

It was also noted that these ICTs are also available at home, where pupils can access and use them for learning. Almost all homes have televisions, which apart from other uses, there are some channels or TV programs which can be used for learning. Gadgets connected to a TV i.e. deck can add value to home learning since educational DVDs / CDs can be inserted and hence learning time is increased.

The study also finds, difficulties with the usability of those ICTs since most of the teachers were trained to teach from the textbooks and not from ICT’s. Most teachers find difficulties for themselves have to learn how to use them, before using them for teaching. The usability needs technical knowhow.

Under the case of usability, some classrooms had a great number of pupils in the glass, which makes difficult for all to participate fully. The research observed that the quantity is not sufficient.

However, the study found that most teachers lacked experience due to lack of seminars workshops to update their skills knowledge and attitudes. The study also revealed that there were problems of management in primary schools ICT management that, some head teachers had taken initiatives to make sure that they start integrating ICTs in teaching and learning by involving stakeholders to contribute for, while some head teachers were reluctant that, it is the issue of the government to improvise these changes.

The study observed that there was a problem of using the ICTs available, since the language of operating was English. Most pupils are not conversant with English language. There was also a problem of deficit of teachers who could manage the use of ICTs; it was one of the critical factors that led to the deteriorating of the quality of education in primary schools.

Despite the fact that both public and private schools had a low level of ICTs integration, though the main challenge was mainly in public schools, the analysis from both of the two groups revealed that low investments were made to ensure quality adequate ICTs were are put in schools.

This means that significant measures have to be taken to make sure that pupils are exposed through ICTs during the teaching and learning process.

# Conclusions

It can be concluded that, the availability and usability of ICTs in primary schools have potential to transform pupils learning and performance to higher grades and permanent understanding. ICTs facilities and resources for classroom delivery are of vital importance.

Percentages show that, schools that had ICTs did better than those with no ICTs. Analysis of the data revealed that ICTs were not available in most of the studied public schools. Kinondoni schools are facing challenges with limited budget and over increased enrolments and expenditures that hinder them from integrating ICTs in teaching and learning.

Best performance goals can be met if ICTs will involve, teacher professional development, digital learning resources in classroom with other affordable technologies. The use of ICTs can facilitate a transition role of a teacher into a classroom into that of instructional manager helping to guide pupils through individualized learning pathways, identified learning resources, creating collaborative learning opportunities providing insight and support for both, during formal class time and outside of contact time. The research findings established that, apart from school ICTs can be used at home with instructions from the elders available there. This can increase the learning time and strengthening what has been learnt at school.

# Recommendations for Actions

In view of the study findings, the following recommendations were suggested.

1. The Ministry of Education Science and Technology should ensure that all schools in Tanzania have access to ICTs regardless the level of education.
2. All head teachers should make sure that they start to use the facilities in teaching and learning.
3. Parents should make sure that ICTs available at home are also used for learning and pupils should get chance in using them.
4. The televisions available in schools should be used not only used for entertainment but also for teaching and learning.
5. Parents should be involved in the whole process of integrating ICTs in learning. Parents can fundraise to make sure pupils get these ICTs at school.
6. The Ministry of Education Science and Technology through the Tanzania Education Institute has been changing curriculums regularly. This brings instability in teaching in Primary schools. It is the researcher’s advice that, curriculums should not change at short intervals.
7. vii. The budget allocated for the Ministry of Education should also focus on the buying ICTs for Primary schools.

# Recommendation for Further Research

Areas for further research in view of the study findings areas for further research were to find out the possible policy alternatives that can improve performance of pupils in general.

# REFERENCES

BECTA, (2004). A review of the research literature on barriers to the uptake of ICT   
by teachers. Retrieved on 24th September, 2019 from https://dera.ioe.ac.uk/1603/1/becta\_2004\_barrierstouptake\_litrev.pdf.

Farrell, G. (2007). Survey of ICT and Education in Africa: Kenya Country Report. InfoDev ICT and Education Series. World Bank, Washington, DC: Retrieved from https://openknowledge.worldbank.org/handle/10986/10707 on 21st May, 2020.

Hamdy, A. (2007). Survey on ICT and Education in Africa. Morocco country report. Retrieved from https://openknowledge.worldbank.org/handle/10986/10663 on 7th June, 2019.

Hare, H. (2007). Survey of ICT and education in Africa: Tanzania country report. Retrieved from https://openknowledge.worldbank.org/handle/10986/10648? locale-attribute=es on 5th May, 2019.

Isaac, S. (2007). Survey on ICT and Education in Africa. Morocco country report. Retrieved from https://openknowledge.worldbank.org/handle/10986/10663 on 7th June, 2019.

Kafanabo, E. (1999). *Exploring the potentials of computer supported curriculums*. Dar es Salaam: Dar es Salaam University Press.

Khan, S.H. & Markauskaite, L. (2013). Emerging teachers’ conceptions about their current use of ICT in vocational education. In Proceedings of Electric Dreams. Proceedings Ascilite 2013 Sydney (pp. 476-480). Australasian Society for Computers in Learning in Tertiary Education. Retrieved 1st September, 2020 from https://www.learntechlib.org/p/171166/.

Kozma, R.B. (2003). Technology and Classroom Practices: An International Study. *Journal of Research on Technology in Education*, *36*(1): 1-14.

Maiye, A. & McGrath, K.(2010). The role of institutions in ICT innovation: learning from interventions in a Nigerian e-government initiative. *Inf. Technol. Dev. 16*(4): 260-278.

Maiye, A. and McGrath, K. (2010) 'ICTs and sustainable development: A capability perspective'.16th Americas Conference on Information Systems (AMCIS). Lima, Peru. 12 - 15 August. pp. 3049 - 3064.

Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: A review of the literature. *Journal of Information Technology for Teacher Education, 9*(3): 319-342, DOI: 10.1080/14759390000200096.

Orodho, (2003). *Techniques of writing a research proposal*. Nairobi, Kenya: Nairobi University Press.

Sharma, (2003). Barriers To the Introduction of ICT into Education in Developing Countries: The Example of Bangladesh. *International Journal of Instruction. 5:* 1694-609.

Smeets, E. (2005). Does ICT contribute to powerful learning environments in primary education? Computer & Education., 44(3): 343-355.

Swarts, P. & Wachira, W. (2010). Tanzania: ICT in education situational analysis. Ministry of Education and Vocational Training [MoEVT], Dar es Salaam, Tanzania.

Swarts, P. (2008). Tanzania ICT in Education situational analysis. Ministry of Education and Vocational Training [MoEVT], Dar es Salaam, Tanzania.

URT, (2003). Information and Communication Technology Policy for Basic Education. Ministry of Education and Vocational Training [MoEVT], Dar es Salaam, Tanzania.

# APPENDICES

**Appendix 1: Introduction**

This interview aims at seeking the information from primary schools Head teachers regarding to availability and usability of ICTs in Primary Schools in Kinondoni Municipal council.

Dear respondent your participation is of paramount importance so as to make this study fruitful and achieve the desired objectives. Your responses will be treated with strict confidentiality. Please do not identify yourself in this interview.

**Section A: Background Information**

Please provide information by ticking the appropriate box

1. What is your level of education?
2. From IV with Teacher Certificate ---------
3. With Diploma -----------
4. From VI with Diploma
5. I have B Ed. BA -----------

Other, mention -------------

1. From how long have you been teaching?

Less than 2 years

Between 2-5 years 

Between 5 -10 Years

More than 10 Years

1. What subject do you teach?
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What ICT tools you personally own?
6. Desk Top Computer
7. Laptop Computer
8. Digital Camera
9. Smart phone
10. Others, specify

**B. Background information about Teachers’ ICT training.**

1. What type of training on using ICT has got among the following?
2. Pre-service training at college
3. Pre-service training at university
4. In -service training
5. Private sponsored training
6. What computer programs are you able to use?
7. Microsoft Windows
8. Microsoft Word
9. Microsoft Excel
10. Microsoft Power point
11. Microsoft Access
12. Microsoft Movie Maker
13. Microsoft Explorer
14. What training about ICT integration in teaching and learning processes have you got?
15. Using ICT in lesson preparation
16. Using ICT in lesson preparation
17. Using ICT in making digital materials
18. Using online community to exchange ideas with others

**Section C: Availability of ICTs**

1. How do you agree or disagree on the availability of ICT resources in your school?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Not available** | **Poorly Available** | **Available** |
| 1. Electricity |  |  |  |
| 1. Computers |  |  |  |
| 1. Wired and wireless internet connection |  |  |  |
| 1. Computer lab |  |  |  |
| 1. Printer/canner |  |  |  |
| 1. Photocopying Machine |  |  |  |
| 1. Projectors |  |  |  |
| 1. Courseware |  |  |  |
| 1. Videos |  |  |  |
| 1. Audios |  |  |  |

**Section D: Accessibility of ICT**

1. How do you access ICT in the following areas?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Not accessible** | **Poorly Accessible** | **Accessible** |
| i)Staff room |  |  |  |
| ii)Library |  |  |  |
| ii)Computer Lab |  |  |  |
| iv)Classroom |  |  |  |
| v)Home |  |  |  |

1. How do you access electricity for computer use in the following areas?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Not accessible** | **Poorly Accessible** | **Accessible** |
| i)Staff room |  |  |  |
| ii)Library |  |  |  |
| ii)Computer Lab |  |  |  |
| iv)Classroom |  |  |  |
| v)Home |  |  |  |

1. How do you access the computer in the following areas?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Not accessible** | **Poorly Accessible** | **Accessible** |
| i) Computer Lab |  |  |  |
| ii)Library |  |  |  |
| ii)Staff room |  |  |  |
| iv)Classroom |  |  |  |
| v)Home |  |  |  |

1. How do you access internet connection in the following areas?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Not accessible** | **Poorly Accessible** | **Accessible** |
| i)Computer Lab |  |  |  |
| ii)Library |  |  |  |
| ii)Staff room |  |  |  |
| iv)Class room |  |  |  |
| V)Home |  |  |  |

1. How often do you access the following ICT tools at your school?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Never** | **Rarely** | **Several times** | **Every time** |
| 1. Projector |  |  |  |  |
| 1. Printer/canner |  |  |  |  |
| 1. Photocopying Machine |  |  |  |  |
| 1. Courseware |  |  |  |  |
| 1. Video clip |  |  |  |  |
| 1. Audio recording |  |  |  |  |
| 1. Others, Specify |  |  |  |  |

**Section E: Usage of ICTs.**

1. How do you use ICT in teaching and learning process?
2. Making research on subject matter on internet
3. Publishing handouts for students
4. Saving and processing students records
5. Organizing and delivering teaching and learning activities
6. Preparing publishing assessments for students
7. Others, specify, -----------
8. What challenges do you face in the integration of ICT in teaching and learning processes and Training?
9. Lack of adequate ICT in fracture in classroom
10. Lack of personal ICT tools
11. Lack of ICT sensitive curriculum
12. iv) Lack of School ICT integration plan
13. Inadequate school routines
14. Lack of ICT implementation incentives
15. Lack of administrative support
16. Lack of competence
17. Other specify
18. What ICT usage skills do you impart to your students? (Only for ICT teachers)
19. Use Microsoft Word
20. Use Microsoft Excel
21. Use Microsoft Access
22. Use Microsoft Power point
23. Use Microsoft access
24. Use Microsoft Explorer
25. Other Computers informatics
26. Others specify....................................................................

**Thank you.**

**Appendix 2: Interview guide Head teachers**

Dear sir/Madam

**RE: Research on Availability and Usability of ICTs to Raise Students Performance in Primary School in Kinondoni Municipal Council**

In order for me to quality for award of Masters of Education, in Educational Administration Planning and policy Studies (MED APPS) in the open University of Tanzania, I am to carry out a research entitled: ‘Availability and Usability of ICTs To Raise Students Performance in Primary School in Kinondon Municipal Council’’. It is believed that your knowledge and experience will enable me to provide suitable information on this topic.

I request you to kindly respond to all questions in this questionnaire as honestly and independently as you can. Be assured that the information you give will be treated in confidence and there is no need to write your name.

**Thank you**

**Appendix 3: Interview Guide for the Head Teachers**

**A. Background information**

You are kindly requested to provide information on the following areas:

The name of your School------------------------------------------

Your qualification: -------------------------------------------------

Your working experience in teaching: --------------------------

The number of students in your school: -------------------------

The number Teachers: ---------------------------------------------

The number of computers in your school: -----------------------

The number Teachers: ---------------------------------------------

Number of Projectors: ---------------------------------------------

Number of Digital Cameras:

Number of Printer: --------------------------------------------------------

Number of Photocopy Machine: ----------------------------------------

**B. Information on ICT availability and user ability in school**

1. What challenges do tutors face regarding ICT availability, accessibility and their ability in integrating ICT in teaching and learning processes?

---------------------------------------------------------------------------------------

---------------------------------------------------------------------------------------

---------------------------------------------------------------------------------------

1. Does the school have the plan to improve ICT availability and accessibility? How is it?

--------------------------------------------------------------------------------------------

--------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------

-------------------------------------------------------------------------------------------

1. Do teachers have sufficient skills to integrate ICT in their teaching and learning activities?

---------------------------------------------------------------------------------------------

---------------------------------------------------------------------------------------------

1. What plain does the school have to improve teachers’ ability to integrate ICT in education?

---------------------------------------------------------------------------------------------

---------------------------------------------------------------------------------------------

---------------------------------------------------------------------------------------------

---------------------------------------------------------------------------------------------

**Thank you**

**Appendix 4: Interview guide to students**

Dear sir/Madam

**RE: Research on Availability and Usability of ICTs to Raise Students Performance in Primary School in Kinondoni Municipal Council**

In order for me to quality for award of Masters of Education, in Educational Administration Planning and policy Studies (MED APPS) in the open University of Tanzania, I am to carry out a research entitled: ‘Availability and Usability of ICTs To Raise Students Performance in Primary School in Kinondoni Municipal Council’’. It is believed that your knowledge and experience will enable me to provide suitable information on this topic.

I request you to kindly respond to all questions in this questionnaire as honestly and independently as you can. Be assured that the information you give will be treated in confidence and there is no need to write your name.

**Thank you**

Dear respondent your participation in this study is of paramount importance so as to make this study fruitful and achieve the desired objectives. Your responses will be treated with strict confidentiality. Please to not identify yourself in this interview.

1. Does the school have a policy to promote or support ICT – based innovation in the process of teaching and learning in the classroom Yes/No
2. Is there a special academic department dedicated to the use of ICT at your school? Yes/No
3. Does the school have internet or wireless network? Yes/No/Other
4. To what extent are teaching and learning activities about use of ICT provided to the students?
5. Is computer support provided for student at your school? (tick in the following answers)
6. No, not provided at all
7. Yes, but very limited
8. Yes, during office hours
9. Yes, provided for all students 24 x 7
10. What are your suggestions on ICT education policy and practices so that teaching and learning of ICT in secondary schools could be successfully implemented?
11. Based on your own experience is the government of Tanzania and Tanzanians giving ICT subject the status it deserves?
12. If the answer for question number (8) is NO, what are the reasons for not giving the status it deserves; and if t answer is yes elaborate.
13. What are your suggestions regarding ICT integration in teaching and learning challenges in secondary school?

**Appendix 5: Interview guide to Parents**

Dear sir/Madam

**RE: Research on Availability and Usability of ICTs to Raise Students Performance in Primary School in Kinondoni Municipal Council**

In order for me to quality for award of Masters of Education, in Educational Administration Planning and policy Studies (MED APPS) in the open University of Tanzania, I am to carry out a research entitled: ‘Availability and Usability of ICTs To Raise Students Performance in Primary School in Kinondoni Municipal Council’’. It is believed that your knowledge and experience will enable me to provide suitable information on this topic.

I request you to kindly respond to all questions in this questionnaire as honestly and independently as you can. Be assured that the information you give will be treated in confidence and there is no need to write your name.

**Thank you**

Dear respondent your participation in this study is of paramount importance so as to make this study fruitful and achieve the desired objectives. Your responses will be treated with strict confidentiality. Please to not identify yourself in this interview.

**Government Private**

1. In which school is your child?
2. In which class is he/she? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Yes No

1. Do they learn by using ICT’s?
2. Which of this ICT’s/infrastructure that support ICTs does the school have?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Not available** | **Poorly Available** | **Available** |
| 1. Electricity |  |  |  |
| 1. Computers |  |  |  |
| 1. Wired and wireless internet connection |  |  |  |
| 1. Computer lab |  |  |  |
| 1. Printer/canner |  |  |  |
| 1. Photocopying Machine |  |  |  |
| 1. Projectors |  |  |  |
| 1. Courseware |  |  |  |
| 1. Videos |  |  |  |
| 1. Audios |  |  |  |

1. **Which of these ICT’s is your child able to use?**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Very well** | **Average** | **Poorly** |
| 1. Television |  |  |  |
| 1. Computers |  |  |  |
| 1. Wired and wireless internet connection |  |  |  |
| 1. Smart phone |  |  |  |
| 1. Printer/scanner |  |  |  |
| 1. Photocopying Machine |  |  |  |
| 1. Projectors |  |  |  |
| 1. Videos |  |  |  |
| 1. Audios |  |  |  |

1. **Observation**

Availability of ICTs in selected Primary school in Kinondoni District

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Responses Total %**

Electricity availability

ICTs physical infrastructures available

ICTs using cultures

ICTs curriculum implementation

Supply of ICTs facilities

Support from the ministry of education

ICT facilities available

How are ICTs used in selected Primary school in Kinondoni District?

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Responses Total %**

Adequacy of training on ICTs uses

Time allocated to integrate ICT in classroom teaching

Maintenance and care of ICTs

ICTs policy implementation in schools

Language conflict with ICTs use in public primary school