**CHALLENGES PREVENTING STUDENT TEACHERS AND TUTORS FROM EXPLOITING ICT IN THEIR LEARNING AND TEACHING IN TEACHERS COLLEGES**

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**THE OPEN UNIVERSITY OF TANZANIA**

**2018**

# CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania. Dissertation entitled: Challenges Preventing Student Teachers and Tutors from Exploiting ICT in the Learning and Teaching Process in Teachers’ Colleges in partial fulfilments of the requirements for the Degree of Master of Education in Planning, Administration and Policy Studies.

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I,Kwangu Masalu, do herebydeclare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

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Signature

............................................

Date

# DEDICATION

This dissertation is dedicated to my wife and children in memory of my parents, who supported me in everything I wanted to do. I love all of you and I thank you for giving me the opportunity to complete this dream.

# ACKNOWLEDGEMENTS

I thank the almighty God, for giving me strength and health throughout the time I worked on this dissertation. The first person I would like to thank is my supervisor Dr. K. A. Nihuka for his directives, suggestions, tolerance, understanding, encouragement and useful inputs that contributed to the accomplishment of this dissertation. I am also indebted to other numerous people who assisted me in one way or another, though not explicitly mentioned in this brief acknowledgement, I would kindly ask all of them to accept my sincere appreciations for the support they provided in the accomplishment of this study.

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# ABSTRACT

This study investigated challenges that student teachers and tutors face in using ICT in their learning and teaching in teachers’ colleges. Specifically, the study investigated factors for effective use of ICT in teacher education particularly in terms of student teachers and tutors’ perceptions, basic skills of ICT, access to ICT physical facilities, availability of enough ICT resources and institutional support for both student teachers and tutors were looked at. The study used multiple holistic research design. Data were collected using structured questionnaires and classroom observation techniques from a sample of 140 respondents out of a population of 1900. The study used qualitative and quantitative techniques to analyse qualitative and quantitative data respectively. Findings have indicated that student teachers and tutors face various challenges that prevent them from effectively use of ICT in learning and teaching, these include negative perceptions about using ICT in teaching and learning, luck of ICT basic knowledge, perceive least of benefit of ICT use in teaching and learning to develop writing skills, lack of institutional support, limited access to available ICT physical facilities, lack of ICT resources within teachers colleges, college face un-reliable electricity and absence of back-up electricity system. Integration of Information and Communication Technology in teacher education would be the solution to effective use of ICT in teacher education. Training for student teachers and capacity building to tutors on the use of ICT in teaching and learning is an important base towards allowing student teachers and tutors use ICT effectively. To develop the ICT knowledge and skills of student teachers, motivating tutors and advising them to integrate ICTs in the student teachers’ activities would help the use of ICT and feel more confident as ICT users.

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# ]gLIST OF ABBREVIATIONS AND ACRONYMS

CD-ROM Compact Disc Read-Only Memory

ESDP Education Sector Development Program

ICT Information and Communication Technology

IM Instant Messaging

LMS Learning Management System

Mch Mchungaji

MoEVT Ministry of Education and Vocational Training

MOODLE Modular Object-Oriented Dynamic Learning Environment

MS Microsoft

SCORM Shareable Content Object Reference Model

SIDA Swedish International Development Agency

TEHAMA Teknolojia ya Habari na Mawasiliano

URT United Republic of Tanzania

VSAT Very Small Aperture Terminal

WEMU Wizara ya Elimu na Mafunzo ya Ufundi

# CHAPTER ONE

## **1.0 INTRODUCTION**

### **1.1 Overview**

This chapter presents the introduction of the study that investigated challenges preventing student teachers from exploiting ICT in the learning process. The chapter starts by presenting the background of the study, followed by statement of the problem, objectives of the study, research questions, significance, limitation of the study, delimitation, definition of key terms and finally organization of the dissertation.

### **1.2 Background of the Study**

Information and Communication Technology include computers, the internet, and electronic systems such as radios, televisions, smart phones and projectors to mention the few, which is widely used in today’s education arena. ICT includes the full range of computer hardware, computer software, and telecommunications facilities. It include computing devices ranging from handheld calculators to super computers. It include the full range of display and projection tools used to display computer output. It also includes the local area networks and wide area networks that allow communication between computer systems and people and includes digital cameras, computer games, cell telephones, satellites, and fiber optics.

ICTs cover Internet service provision, telecommunications equipment and services, information technology tools and services, media and broadcasting, libraries and documentation centres, commercial information benefactors, network based information services, and other related information and communication activities (United Nations report, 1999).

ICT therefore is thought to be powerful tool for educational change and reform. The main objective of the Government of Tanzania through the Ministry of Education and Vocational Training (MoEVT) to see that, there is a need to incorporate ICT in teacher education programs in Tanzania is well reflected in the ICT Policy for Basic Education (URT, 2007: ICT Policy). As stipulated in this policy, the major aims of ICT integration in teacher education is to enable student teachers to be able to: (i) integrate ICT in teaching and learning to achieve educational objectives, (ii) facilitate the use of Information and Communication Technology resources in schools and (iii) facilitate development and use of ICT as a pedagogical tool for teaching and learning (URT, 2007:04). With these ambitions, several efforts have been made to make ICT implemented in teacher’s education in Tanzania.

As it was stipulated in the teachers website ([www.teachers.or.tz](http://www.teachers.or.tz)) the ICT in Tanzania teachers colleges have been implemented by the SIDA with the aim of training tutors and student teachers on the general use of ICT in the process of teaching and learning. The findings from various readings indicate that ICT is critical in providing new methods of teaching and learning. According to Plomp (1996) and Voogt (2003), if propery implemented ICT can be used to improve students skills for collaboration, communication, problem solving and lifelong learning. Also Brush, Glazewski and Hew (2008) point out that, ICT is an important tool for students to determine learning topics, solve problems, and give solutions to the problems in the learning process because it makes knowledge gaining more accessible, and concepts in learning areas be understood while engaging students in the application of ICT.

In recognizance of this, the knowledge and competences on how to use ICT in teaching and learning has gained enormous importance in today’s teacher education courses. However, a study by August, Joel, Mgeni, Msolla and Nihuka (2013) found that there are several challenges that prevent tutors from exploiting ICTs pedagogically in the teaching in colleges including those in Northern zone. This study investigate challenges that prevent student teachers from using information and communication technology (ICT) in the learning process in the northern zone teachers colleges in Tanzania.

### **1.3 Statement of the Problem**

Teachers’ Training Colleges are the only institutions where teacher education is provided. Application of Information and Communication Technology (ICT) in teachers college during teaching and learning process is a sound strartegy to channel the use of ICT in other levels of education like secondary and primary levels when competent teachers are produced. The Government of Tanzania through its ICT policies is committed to implement ICT in teacher training colleges in Tanzania. However, despite the commitment by the Government, still the integration of ICT to enhance students learning in teacher training colleges is still limited since student-teachers are unable to use specific ICT to facilitate learning process of students in schools (Swarts & Wachira, 2010:7). This reason elicited the initiation of the proposed study to investigate about the challenges that student teachers are facing in teachers training colleges that prevent them from using ICT in the learning process.

### **1.4 Objective of the Study**

The main objetive of this study was to investigate the challenges prevent studentteachers from using ICT in their learning process Teachers Colleges. The following were specific objectives of the proposed study;

1. To examine student teachers and tutors perceptions about using ICT in their teaching and learning process,
2. To assess the specific ICT basic knowledge that student teachers and tutors have,
3. To investigate student teachers and tutors access to physical ICT facilities that they can use in the teaching and learning process, and
4. To determine availability of institutional support that is available for students and tutors in colleges.

### **1.5 Research Question**

This study was guided by the following main research question: What challenges prevent student teachers and tutors from using ICT in their learning process in Teachers Colleges? To address the main research question, the following sub-questions were used:

1. What are student teachers and tutors perceptions about using ICT in learning and teaching?
2. What specific ICT basic knowledge do student teachers and tutors have?
3. What kind of physical ICT facilitation do student teachers and tutors access to facilitate their learning and teaching process and where?.
4. What institutional support is available for student teachers and tutors in the colleges?

### **1.6 Significance of the Study**

This study was intends to investigate the challenges that student teachers face that prevent them from using ICT in learning process in the Northern Zone Government Teachers Colleges in Tanzania. The proposed study is significant in the following ways. The findings from the proposed study expects to serve the college management and tutors to appreciate the critical challenges that hinder student teachers from using ICT in their learning. The knowledge about the challenges help the management and tutors in determining the best way to address the challenges and overcome them.

Furthermore the findings from this study help tutors and college administration to set up faverable environment that will enable student teachers to effectivey use ICT in learning process. Also findings from the study inform the curriculum developers when reviewing the ICT curriculum in teacher training colleges so that it considers various problems that hinder the proper usage of ICT in teaching and learning. The findings from the research provide possible areas for further research in relation to ICT application in education in teacher training colleges.

### **1.7 Limitations of the Study**

It was anticipated that limitations would come from cooperation during administration of questionaires instrument, as it is normally prone to reluctance among respondents who may not cooperate to fill them immediately. Sometime some of the respondents even demand money on the beliefs that researchers do have enough money. Financial problems in transport costs, meal expenses and other related costs as well as changing in time table due to unforeseen emergences are the main obstacles encoutered by the researcher.

Another obvious limitation of the study was its cross-sectional design. Therefore, researcher views about the directions of causality implied in the design cannot be drawn. Thus, relationships among variables be interpreted with caution. Quantitetive interpretations of data using tables and charts are also not proof of causality. True causal inferences can only be drawn using longitudinal data. This is especially important for a subject like problems preventing student teachers to use ICT in their learning.

Since only self-report measures will be used, common method-variance and response consistency effects may have bias to observe relationships. However, perceptions of usefulness and ease of use are not objective measures. Because perceptions are necessarily self-reported, such measures are the most effective at measuring these cognitions. Therefore, this will be an unavoidable criticism of this study. At the sametime the data collection will be confined to only four relatively government teacher training colleges in northern part of Tanzania. The replication of the study at different regions of Tanzania will not enable better generalizability of the findings of the study. The sample for the study will comprise of 84 sum total of student teachers and ICT tutors which is only small proportion of the entire population from the six teacher training colleges in northern zone of Tanzania and in the country. Therefore, this may be hard to apply for research studies with much larger sample size in the future to ensure appropriate generalization of the findings.

The present study will rely largely on quantitative methodology of data collection (though qualitative methodology will perhaps be used to limited extent) and will therefore be restrictive. Therefore, more of qualitative methodology of data collection should be undertaken in future to provide wider perspective to the present study. For instance, the research design can employ case study methodology or content analysis to provide a holistic picture to the given subject. However some of the limitations will be overcomed by building a good rapport with the respondents during administering the respective research instruments.

### **1.8** **Delimitation of the Study**

Delimitation means drawing boundaries around a study, showing clearly what is and what is not included (Punch, 2005). This study was specifically dealing with the challenges preventing student teachers to effectively use ICT in learning process in Nothern zone and not other zones in Tanzania. The study was also conducted in teachers colleges and not other levels of education. The data related to the challenge under investigation was therefore obtained from four out of six teachers college in Northern zone. Thus, the findings are not necessarily generalizable to other teachers colleges and areas in Tanzania though some aspects of the study findings will be applied else where depending on the need and suitability.

### **1.9 Definition of Key Terms**

Information and Communication Technology (ICT): Information and Communications Technology is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network, hardware and software, satellite systems as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICT in education, health care, or libraries.

**Learning Management System (LMS):** Is a software application or web-based technology used to plan, implement, and assess a specific learning process. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. Also it provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums. These LMS include Shareable Content Object Reference Model (SCORM) and Modular Object-Oriented Dynamic Learning Environment (MOODLE) to mention few.

**Education Sector Development Program (ESDP):** It is a sector-wide programme aimed at operationalizing the various policies pertaining to sub sectors in education and training policy. The programme covers all sub-sectors in education sector. The contents are: basic education which includes (pre-primary, primary, adult, secondary, and teacher education), higher education, vocational education both formal and non-formal. Programme priorities, resource allocation and disbursement are consistent with the guidelines provided under the macro reform policies and programmes which include Tanzania Development Vision 2025.

#### Instant Messaging (IM): Instant messaging, often shortened to simply IM or IMing, is the exchange of text messages through a software application in real-time. Generally included in the IM software is the ability to easily see whether a chosen friend, co-worker or buddy is online and connected through the selected service. Instant messaging differs from ordinary e-mail in the immediacy of the message exchange and also makes a continued exchange simpler than sending e-mail back and forth. Most exchanges are text-only, though popular services, such MSN Messenger, Yahoo Messenger and Apple's iChat now allow voice messaging, file sharing and even video chat when both users have cameras.

#### Very Small Aperture Terminal (VSAT): The technological satellite communications system, in which information traveling between a satellite and a ground station. The sends information to the satellite, which receives and then sends the information to the ground station, which acts as a system hub.

### **1.10 Organizational of the Dissertation**

This dissertation have six chapters. Chapter one dealt with the introduction of the study including background to the study, statement of the broblem, puporse of the study, objectives of the study, research questions and significance of the study. In addition, the chapter provided limitations of the study, delimitations of the study, definition of key terms and organization of the study. Chapter two dealt with literature review and conceptual framework related to the study. Chapter three presented research methodology which include research design, study area, target population, sample and sampling procedures.

Also the chapter included reseach instruments for data collection, validation of insruments, administration of instruments and data analysis plan. Chapter four presented findings while chapter five provides discussions of the findings and chapter six presents conclussions and recommendations. Towards the end, the study provide references of the literature used in the research as well as the appendices.

# CHAPTER TWO

## **2.0 LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK**

### **2.1 Overview**

This chapter presents review of literature related to challenges prevent student teachers from using ICT in learning process and a conceptual frame work that guided the study. In the literature review section, the chapter is organized into the following sub-section: Student teachers perceptions about using ICT in learning process, student teachers basic ICT knowledge, student teachers access to physical ICT facilitaties and availability of institutional support for student teachers to use ICT in learning process. Afterwards, conceptual framework of the study is desribed.

### **2.2 Learning Theories and Implication for ICT Use in Teacher Education**

Various scholars had tried to explain teaching and learning based on different aspects. These definitions became theories of teaching and learning, created to try and clarify the meaning of teaching and learning. Learning theories provide us with conceptual frameworks of interpretation for the act of learning, and indicate where to look for solutions to practical problems (Alharbi, 2014). Teaching methods are mainly based on theories of learning. The common important learning theories are behaviourism and constructivism. These approaches are based on two main schools of psychology that have influenced todays learning theories which have different perceptions on learning, teaching styles, and different approaches to pedagogy and evaluation.

Constructivist learning theory has been used to study the challenges that prevent student teachers and tutors from using ICT in their teaching and learning process in teachers’ colleges. This learning theory contributes to understanding of factors that hinder both student teachers and tutors from effective use of ICT and the relationship between the factors and the effectual use of technology in their teaching and learning. The use of constructivist theory also provides direction for further research and implementation. The influence of the constructivist learning theory supports the individual’s growth and allow the students to explore their learning potential.

A close examination of the classroom in teachers’ college in Tanzania reveal what goes on in teaching and learning using modern technology. One continuous dilemma for student teachers is problem for them to use ICT in learning process. Embedded in this problem are a number of questions that limit them from using ICT in learning process. These include student teachers perceptions about using ICT in learning process, basic ICT knowledge student teachers have, kind of physical ICT facilitation that student teachers access to facilitate their learning process and where and availability of institutional support for student teachers to use ICT in learning process.

#### 2.2.1 Student Teachers Perceptions About Using ICT in Learning Process

ICT has introduced a new learning environment for students which need a different knowledge and skill set to be successful to use. Critical thoughtful, study, and evaluation skills are importantly developed as students have openly increased volumes of material from a different sources to sort through (The New Media Consortium, 2007) . Attitude is a predisposition to react favorably or unfavorably to an thing, person, or event (Ajzen, 1988). Aiken (1980) described attitudes as cultured predispositions to act positively or negatively to certain situations, ideas, or individuals. Many scholars have tried to evaluate the attitude of student teachers in the use of ICT in learning process with much emphasis being placed on the components of the learning process.

In review articles report on teachers’ perceptions about ICT use for teaching and learning, professional capacity building, administration and personal use (eg. Mwalongo, 2011) little is known about teachers’ and students’ perceptions of ICT in Tanzania for learning and teaching professional development, administrations and personal use. These perceptions are important as they may influence the student teachers practices on the use of ICT during learning process. However, Colin and Hales, (2013) pointed out that, the use of modern technologies in learning could be justified by the fact that students perceive the benefits of using modern technology in learning been incresed. Guma and August (2013) cited that among the factors that effect integration of ICT into teaching are teachers and students attitudes and beliefs towards technology. They pinpointed that if teachers and students attitudes are positive toward the use of educational technology, they can therefore easily provide useful insight about the use of ICT in teaching and learning processes. Attitudes toward computers influence student acceptance of the usefulness of technology in learning (Huang & Liaw, 2005).

A majority of the students feel that learning becomes easier when aided by a computer and thus they want to use the computer more often (Kullberg, 2011). Colin and Hales, (2013) on their study found that many students still like to read printed texts in faver of digital materials because learning through ICT needs acquisition of improved computer skills.

ICT helps students to their learning by improving the communication between them and the trainers though different studies on effects of the technological modernizations on the students’ perceptions towards the learning process according to which suitable use of ICT in education can have positive effects both on students’ perceptions and their accomplishment (Valasidou, Sidiropoulos, Hatzis, & Bousiou-Makridou, 2005).

According to Mbah, (2010), found that, students are of the view that ICTs have a positive impact on their study, however in regard to his finding, male students support the view that ICT has added value on learning process in regard to female students. He pointed out that male students craimed to use computer daily to facilitate learning on the basis of computer availability and internet connectivity. Since students depict positive attitudes toward ICT, efforts in creating or implanting the right kind of attitudes toward the use of ICT in learning among students simply means reinforcing existing positive attitudes. Therefore if students are confident in using the technology, it is predicted that their attitudes toward computer will also rise (Ariffin, Nordin, & Karim, 2014).

Shashaani & Khalili, (2001) surveyed some males and females about their interest in technology use and revealed that there was a great difference on the interest level between the two groups. Male showed to be more interested in internet services and use more than female, consequently students feel that appropriate use of ICT would have a positive impact on their study practices, and can help them improve on their academic performance since ICT facilitate information access enhance study or reading behaviors and accelerate academic success by making information easily available. Its also found that male college students rated computers as more useful than did female students (Koohang,1989).

According to Ndibalema, ( 2014) lack of exposure to lessons fully-designed with ICT tools, lack of chances to practice ICT, the need to practice in a ICT laboratory, lack of ICT teachers, an exam-driven learning management system and learn only what is to be tested were some of the fundamental reasons for the potential teachers’ negatively perceiving of ICT use in the teaching process. Albion (1999) is of the opinion that positive attitudes toward technology integration increase learning to use technologies in teaching and learning and negative attitudes constrain it. Continuing suggesting that this does not necessarily mean that only teachers or students with positive attitudes should be included in technology training and learning activities, it does mean that negative attitudes among participants need to be valued and addressed, and that positive attitudes should be encouraged and developed.

#### 2.2.2 Student Teachers Basic ICT Knowledge

According to Ropp (1999), said that teacher trainees who are confident in their ability to use computer or computer self efficiency are also less anxious about using computers, have positive attitudes toward technology, are more confident in their ability to perform tasks related to learning with technology and they use more computers. Consequently, Nihuka (2014) emphasises that it is vital student-teachers acquire appropriate knowledge, skills and competences on how to integrate technology in education since knowledge and abilities on how to use ICT in learning has gained enormous importance in today’s teacher education programs

Sabzian & Gilakjani (2013) quoted that computer experience often raises positive behavior towards computers, besides the lack of computer use often accounts for learners low confidence level when they come across computer activities. This feeling of low confidence often results in high anxiety towards use of technology and high anxiety can lead to negative attitudes and eventually negatively influence their learning process.

Tasir, Abour, Halim, & Harun (2012) on their study found that, there is a relationship between student teachers’ competency and confidence level towards using ICT, their finding indicated positive relationship between student teacher’s competency and confidence level toward using ICT, that the more student teachers’ knowledgeable in ICT the more confidence level of them for using ICT. Likewise, the teacher trainees who have high confidence level are motivated and encouraged to improve their competencies of using ICT in learning according to results support research findings by Becker and Riel (2000) and William (1993).

#### 2.2.3 Student Teachers Access to Physical ICT Facilities

European Commission (2011) reports that all educational establishments must have access to appropriate networks, equipment and software in order to promote ICT in all subjects and for all students. This infrastructure must be efficient and effective, available for use by all students and teachers and not limited to specific fields of study or subjects. According to Ndibalema, (2014) using computers and other digital tools in teaching and learning process is of vital importance but the available digital tools are not enough to accommodate students in most schools and colleges. Thus, one computer room which is open to both students and tutors or teachers you may find scrambling to get computers when there is internet connectivity, therefore make the students access to ICT facilities difficulty.

When students grow up in an ICT intensive home or school environment such as cellular telephones, handheld computer games TV, PDAs, DVD players, CD players and recorders, video tape players and recorders, they gain many thousands of hours of experience using ICT facilities and hence familialize and arose interest to use ICT in learning (Moursund., 2005). Ariffin, Nordin, & Karim (2014) discuss that students’ levels of computer experience and frequency of use of computer are two factors predictors of computer attitudes, measures should be taken to ensure that students are given more exposure to hands on experience, since not every student can afford to have computers at home, therfore schools environment should provide more opportunities for students to use computers as frequently as possible.

Provision of the appropriate technical infrastructure can make all the difference to the success of ICT use at any educational institution. Administrative representatives of universities, polytechnics, and adult education institutions cited technical infrastructure as a major obstacle to using ICT. For instance adequate hardware, software, and internet access, as well as existing frameworks and controls for data security and privacy need to be provided by institution to all learners, teachers and administrators (Kumar & Tammelin, 2008). Introduction of ICT in education, when done without careful deliberation, can result in the further marginalization of those who are already underserved. For instance, women have less access to ICT and fewer opportunities for ICT related training compared to men because of illiteracy and lack of education, lack of time, lack of mobility, and poverty. Thus, boys are more likely than girls to have access to computers in school and at home therefore not unexpectedly, boys tend to enjoy working with computers more than girls. Girls have narrowed some significant gender gaps, but technology is now the new boys club in developing country public schools thus, while boys programme and problem solve with computers, girls use computers for word processing (Tinio, 2002).

Moursund, (2005) asserts that computer access continues to grow as the nature of connectivity continues to change, thus most educational institution take for granted that students have such facilities at home therefore tend to assume many students have microcomputer, telephone (hard wired or cellular), color television, and other modern technology nowadays, it is therefore unusual to find a school that does not have computers and internet connectivity on average approximately one microcomputer per five students.

Students with computers at home often have access to pure entertainment (games that are not designed to be educational), pure educational, designed specifically to provide instruction to help the user learn, edutainment which lying some place on the line between pure entertainment and pure educational, communication tools and reference materials, including email, Web, and laser disc encyclopedias, books, and other reference materials, tools such as a word processor, graphic software and other generic tools which make student familiar to digital tools and maximise the use in teaching and learning process (Moursund., 2005).

Peeraer and Van Petegem (2009), as quoted by (Ndibalema, 2014) stress that barriers to use of ICT in teaching and learning are the teacher educators’ computer skills and confidence in using ICT. Students teacher face several infrastructural and personnel challenges on the use of ICT in learning process (Mwalongo, 2011). Limited schools with ICT facilities, costly internet access, limited information sharing, limited skills for ICT integration, ineffective organizational structures at the various education management levels to accommodate ICT integration in teaching and learning, (Swarts & Mwiyeria, 2010).

Shortage of labour force or ICT trained tutors due the failure of training institutions and government to produce ICT tutors, technicians and professionals required (Mendes, Tuijnman, & Young, 2003), limited electricity supply, fixed networks and number of computers (Swarts & Mwiyeria, 2010, Hesselmark 2003), lack of policy framework, poor infrastructure and cost of bandwidth, and inadequate in-service training on ICT integration in education for teachers to help students’ effective integrate ICT in learning (Hare, 2007) and (Farrell, Isaacs, & Trucano, 2007). In developing countries large areas are still without a reliable supply of electricity and the nearest telephones are miles away. Countries in Africa point to wireless technologies such as VSAT as possible levers for advancing though this currently is costly approach, other developing countries may find it difficult to adopt (Tinio, 2002).

Ndibalema (2014), also pointed out some hindrances that hinder the use of ICT in teaching and learning process in Tanzania which are inadequate national ICT and electricity infrastructure, telecommunication network and internet access higher costs, making it difficult for education institution to access and afford. National policies should also make more commitment to helping teachers effectively integrate computers and internet technologies into the classroom by aligning curricula, exams, and incentives with the educational outcomes that they hope to gain this is because computers by themselves bring very little to the learning process as they are only tools for teaching and learning (Hennessy, Harrison, & Wamakote, 2010).

#### 2.2.4 Availability of Institutional Support

College will need to address the issues of availability, reliability and access to equipment for both tutors and student teachers. In particular it is essential to deal with any problems or technical difficulties quickly if tutors are to reach the point where they can choose to use ICT in numeracy as the most efficient option. David, Steve, and Rod, (1999) assert that institution choosing to use ICT to support the teaching of literacy will need to consider learners’ ICT skills as part of the development process. Targeting these skills with focused teaching may be necessary to enable learners’ to achieve subject-specific objectives. However some tutors may find the process of learning to use ICT effectively to support their teaching a particular challenge. Assisting them in overcoming difficulties will need careful planning and supportive implementation.

As with the responsibility for policy formulation and strategy coordination the responsibility for providing funding for the delivery of the ICT strategy in teacher education lies with public authorities at the central and college level (URT, 2007). The report from Learnovation Consortium (2008) also support that, teaching staff are the key players in strengthening and fostering the new digital environment in schools or college. It is vital that the teacher training colleges have well trained teachers, able to incorporate ICT into education in a way that leads to change from the old to the new paradigms of learning which are much more student centred than before.

Kumar and Tammelin, (2008) acerts that learners is a group that is often neglected when planning technical training for various people to use ICT in the college. Unless learner’s supported their readiness for the use of ICT for their education, their access to ICT, and their familiarity with the technologies and methods of learning through ICT can contribute greatly to the success or failure of ICT use at college. Learners’ ICT skills need to be taken into account explicitly to ensure that the use of ICT is efficient as well as effective. Learners should have adequate ICT skills to enable the subject-specific objective to be achieved. This involved considerable time in supporting the introduction of new software and, in some cases, teaching skills directly to learners (David, 1999).

School administrators offer very little support and few incentives for student teachers to use the technology effectively in the classroom and often the curriculum in developing countries is rigid and overloaded, leaving little time for classroom practices (Hennessy, Harrison, & Wamakote, 2010). Accessibility to systems using ICT and technical support for the use of ICT round the clock seven days a week could contribute tremendously to the success of student teachers ICT use initiative. Before introducing ICT, therefore, it is necessary that institution assesses the number of technical personnel currently available with adequate skill sets to support administrators, teaching staff, and students in their use of ICT (Kumar & Tammelin, 2008).

It is unlikely that the provision of infrastructure and the presence of an institutional strategy will have positive outcomes if teaching staff are not trained and willing to use ICT in their teaching. Findings report that the following external factors influence teaching staff’s use of technology: lack of support from administrators, training, accessibility and scheduling problems, lack of time to prepare lessons, connectivity, and home access (Jaber & Moore, 1999; Vanfossen, 2001). The support provided by institution for the initiative taken by teachers at the institution, for their development and use of ICT, and for their willingness to experiment could play a major role in the success of integrating ICT in their teaching (Kumar & Tammelin, 2008).

Kumar & Tammelin, (2008) also discuss that while many institutions are aware that their teaching staff needs training in ICT use, few realize that their learners are also in need of training when they study in ICT enhanced teaching and learning environment. Likewise, many teachers seem to think their students are more knowledgeable about the use of technologies than they themselves are of which is true in many ways as the digital natives as the younger generations are now called, are accustomed to using various technologies in their everyday activities outside of school. However, this may lead to the false impression that learners in ICT enhanced teaching and learning environments automatically know how to use ICT in their learning and therefore fail to support learners with varying experience skills on using ICT in their learning.

According to Ertmer, Addison, Lane, Ross, & Woods, (1999) pedagogical training for any teahing subject in the use of ICT is importance regardless of the types of technologies that teachers are exposed to during technical training (e.g. course Websites, Internet resources, online communication tools, podcasts, online activities like Webquests) teachers will integrate ICT in classroom situation only if they see concrete benefits to their students’ learning. Therefore in order to be successful for teachers support students use technology training their students, capacity building programmes cannot ignore the connection between technology and school or course curricula.

Kumar & Tammelin, (2008) found that, the use of ICT in teaching and learning not only involves pedagogical changes for teachers but also involves environmental and pedagogical changes for learners who are traditionally used to face-to-face teaching in classrooms. Although an increasing number of learners have access to online technologies and use ICT for personal interactions, they find it challenging to use ICT in an educational context therefore, students support need from their teachers to guide them integrate ICT in learning is of paramount.

Pedagogical training at the beginning of the course and ongoing support needs to be provided to teaching staff for the development and integration of ICT in teaching. Financial incentives and other forms of rewards are important when teachers begin experimenting with ICT as well as later, when their online materials or courses, for instance, need updating. Some examples of incentives that can be offered to teachers are: additional payment for preparation time, when teaching using ICT, spend time researching online materials, pating in chat or IM sessions, or reading and responding to online discussion postings. Therefore institutions are recommended to consider additional ways to appreciate or reward the time spent on such activities (Kumar & Tammelin, 2008).

### **2.3 Conceptual Framework**

Studies show that ICT has great potential to change the way student teachers learn and that it is especially useful in supporting more student centered approaches to instruction and in developing the higher order skills and promoting collaborative activities (Haddad, 2003). Recognizing the importance of ICT in teaching and learning, teachers colleges have changed the mode of teaching by deploying the use of ICT in variety of forms and degrees by both tutors and student teachers to use technology as tools for enhancing teaching and learning.

**Effective use of ICT by student teachers to learn**

Figure 2.1: Conceptual Framework Showing Relationship Between Effective Use Of ICT and Contributing Factors

Source: Adapted from (Peter, 2013)

The following conditions are critical for effective use of ICT by student teachers for their learning in collegeges: basic ICT knowledge that student teacher have, student teachers perceptions about using ICT in learning process, student teachers access to physical ICT infrastructure that they can use in the learning and availability of institutional support that encourages students teachers explore ICT in their learning process (Peter, 2013) as summarized in Figure 2.1. The effectiveness use of ICT in various teachers colleges may highly be discouraged by the outlined factors therefore, these factors have to be addressed inorder to bring about effective application of ICT in learning process to student teachers in various colleges in Tanzania as they have impact to effective use of ICT by student teachers to learn in the following ways:

**Student Teachers Perceptions About Using ICT:** Effective use of ICT by student teachers to learn in teachers training colleges depends strongly on learners support and attitudes. Among the factors that influence successful integration of ICT into learning are student teachers attitudes and beliefs towards technology. If student teachers attitudes are positive toward the use of educational technology then they can easily provide useful insight about the adoption and integration of ICT into their learning processes. (Ali, Haolader, & Muhammad, 2013 )

**Student teacher ICT Basic Knowledge:** Student teacher ICT competence is defined as being able to handle a wide range of varying computer applications for various purposes (Tondeur, Valcke, & Braak, 2008). According to Bordbar (2010), learners computer competence is a major predictor of effective use of ICT in learning. Evidence suggests that majority of student teachers who reported negative or neutral attitude towards the use of ICT in learning processes lacked knowledge and skills that would allow them to apply in their learning process (Al-Oteawi, 2002). According to Peralta and Costa (2007), learners with more experience with computers have greater confidence in their ability to use them effectively. To conclude student teachers basic ICT knowledge skill relate directly to confidence and student teachers confidence also relate to their effective use of ICT in their learning process.

**Student Teachers Access to Physical ICT Infrastructures:** Access to ICT infrastructure and resources in college is a necessary condition to the effective use of ICT in education (Ali, Haolader, & Muhammad, 2013 ). Effective use of ICT into learning in teacher training colleges depends mainly on the availability and accessibility of ICT resources such as hardware, software, etc. It is obvious that if student teachers cannot access ICT resources, then they will not use them. Therefore, access to computers, updated learning resources and hardware are key elements to effective use of technology by student teachers in learning process. A study by Yildirim (2007) found that access to technological resources is one of the effective ways to both teachers and students pedagogical use of ICT in teaching and learning process.

**Institutional Support:**Effective use of ICT by student teachers also depends on institutional various supporting factors like; providing computer literacy training for college academics, keeping academics informed on new and effective ICT`s instruments and equipments, students financial resources, tutors and system administrators incentives for coordinating newly ICT enhanced learning atmosphere, possibility of having enough budget in ICT department to equip with needed digital resources. It is a well known fact that professional teacher development is a key to successful integration of ICT in teaching and learning process. According to Carlson (2002), teachers remain the gatekeepers for students‘ access to educational opportunities afforded by technology. They cannot not be ignored. Moreover, providing technical skills training to teachers in the use of technology is not enough. Teachers also need professional development in the pedagogical integration of ICT application to improve teaching and learning process. Teachers must be trained to effectively use the technology for planning student instruction.

# CHAPTER THREE

## **3.0 RESEARCH METHODOLOGY**

### **3.1 Overview**

This chapter describes the research design, area of study, population, sample and sampling procedures. It also provides information about data collection instruments used and data analysis techniques used in this study.

### **3.2 Research Design**

Research design is a plan showing approach and strategies of investigation conceived by the researcher in order to obtain relevant data which fulfill research objectives and answers the set of research questions or tasks (Cohen, Manion and Morrison, 2000). Decisions regarding what, where, when, how much, by what means concerning an inquiry or a research study constitute a research design. “A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.” (Kothari, 2004: 31).

In fact, the research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. Multiple holistic design was employed in this study. Sample of student teachers and tutors came from four northern zone government teachers’ college namely Monduli teachers’ college, Patandi teachers’ college, Mandaka teachers’ college and Marangu teachers’ college. Quantitative approach was used that involved generation of data in quantitative form which was subjected to quantitative analysis.

### **3.3 Population of the Study**

A population is defined as all members of any well-defined class of people, events, or objects (Ary, 2010). The target population of this study included all government teachers’ colleges in northern zone, all second year student teachers in northern zone government teachers’ colleges and all tutors in northern zone government teachers’ colleges. Selection of the colleges in the northern zone of Tanzania was due to the belief that, all student teachers and tutors in those colleges face the same problems as all served under the same government.

### **3.4 Sample and Sampling Procedure**

#### 3.4.1 Sample

Since it is very difficult for the researcher to cover the whole population or Universe due to time, resource constraints and climatic problems, therefore a sample become very important to be applied. According to Ary (2010:148), sample is a small group that is observed and share the same characteristics with the rest of the population.Therefore a small group of individuals was selected convenient for data collection and large enough to be a true representative of the population selected. The sample of this study included four teachers training colleges out of six northern zone government teachers colleges. In this study, ICT tutors and student teachers were used as sample. 5 ICT tutors and thirty student teachers from each of the four selected teachers’ colleges were involved. Sample size of 140 participants was the true representative of all government teacher’s colleges in northern zone of Tanzania. *Thus,* Sample size= (5 X 4 ) ICT tutors + (30 X 4) Student teachers = 140 Respondents.

#### 3.4.2 Sampling Procedures

The sample consist of hundred and fourty (140) respondents from four (4) teachers colleges with each college providing thirty (30) student teacher and five (5) tutors. Four (4) teachers colleges were selected using stratified random sampling technique. Twenty (20) tutors were sampled from selected colleges using convinience sampling tecninque. Hundred and twenty (120) student teachers were selected using systematic random sampling technique.

### **3.5 Instruments for Data Collection**

Research tools for data collection are central in quality assurance and control in the research enterprise and no one instrument is good for all designs and paradigms (Omari, 2011). According to Kothari (1990) argues that the choice of instruments for data collection depends on the type of investigation, objectives, scope of the inquiry, financial resources, available time and the desirable degree of accuracy. In this study, structured questionnaire and real classroom observation were used as data collection instrument.

#### 3.5.1 Questionnaires

Questionnaires were designed (Appendix 1 and 2) such that each question was related to a given research question of the study. Structured questions in Likert Scale were administerd to help supplement the information given in the closed ended questions and helped in obtaining more complete data. Leedy, (1980) argues that a questionnaire is a useful instrument in data collection in that it is easy to administer and it collects only the needed data. Questionnaire involves the formulation of questions that aid in collecting data. Questionnaires were used because they allow respondents to give responses which are correct to the best of their knowledge in private setting. The questionnaire to student teachers were designed specifically to collect information about perceptions about using ICT in their learning process, the basic ICT knowledge they have, access to physical ICT facilitaties and availability of institutional support for them to use ICT in learning process while questionnaire for ICT tutors were designed based on their ICT background, professional development support and were either closed or open-ended questionnaires.

#### 3.5.2 Observation

Observation to participants in the context of a natural scene was made. Observation provided knowledge of the setting in which teaching and learning occurred, and enabled the researcher to see things that participants themselves were not aware of. Observation on the use of ICT in teaching by tutors during lesson was done at Monduli and Patandi teachers colleges. Two tutors were lively observed in class rooms context integrating ICT in teaching at Monduli and one tutor was observed at Patandi teachers’ college and data were collected.

### **3.6 Data Analysis**

Bogdan and Biklen, (2007) explained that data analysis is a systematic process that involves working with data, organizing them into manageable units and synthesizing them, such for patterns, discovering what is important and what to tell others. This study utilized the quantitative approach to analyze the findings on student teacher’s perceptions about using ICT in their learning process, their basic ICT knowledge, access to physical ICT infrastructure and availability of institutional support for them to use ICT in learning and teaching process. Quantitative data on the other hand are in numerical symbols resulting from counting and measuring. Data collected was mainly presented by use of quantitative methods and analyzed by using statistical package for social sciences (SPSS). Data from the closed ended questions Likert Scale and observation were coded using SPSS program and analyzed by indicating the magnitude of responses. Coding like the “1=Strongly Disagree”, “2= Disagree”, “3=Not Sure”, “4=Agree” and “5=Strongly Agree” were coded and analyzed into frequency counts and percentages, one-way analysis of variance, t-test and standard deviation. It was summarized and tabulated for easy presentation, assessment, analysis and interpretation.

### **3.7 Ethical Considerations**

For the most part issues of ethics focus on establishing safeguards that protects the rights of the participants. The traditional and often dominant issues that emerge when considering research ethics involve obtaining:

**Protection from Harm;** the researcher didn’t harm any individual which was involved in the research that is the researcher effort to assure the participants to prevent any sort of harm that would have happened to them.

**Informed Consent;** the researcher informed participants that participation in the study was entirely voluntary. Participants were informed that their lack of participation would not result in negative consequences.

**Confidentiality;** the researcher ensured that what a participant sayed or reported was not to be shared with anyone in any way and only be used for the purpose of the study.

# CHAPTER FOUR

## **4.0 PRESENTATION OF FINDINGS**

**4.1 Overview**

This chapter presents findings of the study that investigated “challenges preventing tutors and student teachers from using ICT in their teaching and learning process in the northern zone teachers’ colleges”. The chapter is organized into the following sections: student teachers’ and tutors’ perceptions about using ICT in teaching and learning, student teachers’basic ICT knowledge, student teachers access to physical ICT facilitaties and availability of institutional support for student teachers to use ICT in learning process.

### **4.2 Student Teachers’ and Tutors’ Perceptions about Using ICT in Teaching and Learning**

The first research question investigated perception of student teachers and tutors about using ICT in teaching and learning in the sellected northern zone government teachers’ colleges. Finding in Table 4.2.1 indicate that, overall student teachers and tutors have positive perceptions about using ICT in the learning and teaching process as indicated by percentages ranging from (27.5%) to (37.5%) for student teachers and (30.0%) to (35.0%) for tutors. Also, findings show that student teachers (43.3%) and tutors (65%) do not prefer traditional way (chalk-board) to learn and teach in the college.

Furthermore, both student teachers (64.2%) and tutors (95%) disagree that using ICT to learn is evil. On the other hand student teachers (65%) and tutors (75%) perceive that using ICT can improve performance in teaching and learning. Also, findings indicate that both student teachers (36.7%) and tutors (40%) percieve that using ICT in teaching and learning is demanding in terms of time required to learn new skills.

Table 4.1: Student Teachers’ and Tutors’ Perceptions about using ICT in the Teaching and Learning Process

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Responses (N=140)** | | | | | | | | | | |
| **Perceptions** | **Student Teachers** | | | | | **Tutors** | | | | |
| ***SA*** | ***A*** |  | ***D*** | ***SD*** | ***SA*** | ***A*** |  | ***D*** | ***SD*** |
| Freq. (%) | Freq  .( %) |  | Freq. (%) | Freq. (%) | Freq. (%) | Freq.  ( %) |  | Freq.  (%) | Freq.  (%) |
| Using ICT to learn/Teach is difficult | 8 (6.7) | 25 (20.8) |  | 45 (37.5) | 33 (27.5) | 2 (10) | 2 (10) |  | 6  (30) | 7  (35) |
| I prefer traditional way (chalk-board) to learn/Teach | 14 (11.7) | 18 (15) |  | 28 (23.3) | 52 (43.3) |  | 1 (5) |  | 6  (30) | 13  ( 65) |
| Using ICT is evil | 6  ( 5) | 1 (0.8) |  | 25 (20.8) | 77 (64.2) |  |  |  | 1  (5) | 19  ( 95) |
| I believe ICT can improve performance in teaching and learning | 9 (7.5) | 10 (8.3) |  | 19 (15.8) | 78 (65) |  |  |  | 5  (25) | 15  ( 75) |
| Demanding in terms of time to learn new skills | 34 (28.3) | 44 (36.7) |  | 18 (15) | 17 (14.2) | 3 (15) | 8 (40) |  | 1  ( 5) | 6  ( 30) |

***Scale:***

**SD**=Strongly Disagree,

**D**= Disagree,

**A**=Agree and

**SA**=Strongly Agree

Benefits of using ICT in the learning process from student teachers perspective was also investigated and findings presented in Table 4.2.2. Generally, findings show that student teachers in different colleges perceive that there are benefits associated with the use of ICT in the learning process. Specifically, findings show that student teachers from Monduli (Mean = 4.76; SD = 0.435) and Patandi (Mean = 4.77; SD = 0.430) perceive that using ICT in learning improves flexibility in carrying out tasks, ICT use in class motivates the tendency to continue using ICT outside college hours (Patandi: Mean = 4.50; SD = 0.731) and Monduli: Mean = 4.57; SD = 0.728). significantly reduce learning costs (Monduli: Mean = 4.30; SD = 0.988) and Patandi: Mean = 4.33; SD = 0.994).

On the other hand, findings indicate that student teachers from Mandaka and Marangu colleges perceive the benefits of using ICT in the learning process as the least. However, majority of student teachers in all the four colleges (i.e. Monduli, Patandi, Mandaka and Marangu) percive positively about the benefits on using ICT in terms of supporting knowledge sharing on a large scale, enabling fast transmission of information, development of writing skills and opportunities for collaboration with people outside or inside educational institution particularly on assignments.

Findings on the comparison of the perceived benefits of using ICT in teaching and learning from student teachers and tutors’ perspective are presented in Table 4.3. Findings indicate that there is a significant difference between colleges in terms of student teachers and tutors’ perceptions on the benefits of using ICT (for P values < 0.05).

Table 4.2: Benefits of Using ICT in Learning from Student Teachers’ Perspective

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Responses (N=120** | | | | | | | | | | | | | | | |
|  | **Monduli** | | | **Patandi** | | | | **Mandaka** | | | | **Marangu** | | | |
| **Benefits** |  | **Mean** | **Std.**  **Deviation** | |  | **Mean** | **Std.**  **Deviation** | |  | **Mean** | **Std.**  **Deviation** | |  | **Mean** | **Std.**  **Deviation** |
| Greater flexibility in carrying out tasks |  | 4.76 | 0.435 | |  | 4.77 | 0.43 | |  | 4.3 | 0.794 | |  | 4.4 | 0.724 |
| ICT supports knowledge sharing on a large scale |  | 4.87 | 0.346 | |  | 4.87 | 0.346 | |  | 4.73 | 0.45 | |  | 4.77 | 0.43 |
| ICT use in class, motivates to continue using outside school hours |  | 4.5 | 0.731 | |  | 4.57 | 0.728 | |  | 4.2 | 0.961 | |  | 4.33 | 0.884 |
| ICT enables information travel faster |  | 4.86 | 0.351 | |  | 4.9 | 0.31 | |  | 4.9 | 0.305 | |  | 4.87 | 0.346 |
| Significantly reduce learning costs |  | 4.3 | 0.988 | |  | 4.33 | 0.994 | |  | 3.47 | 1.4.8 | |  | 3.6 | 1.354 |
| Development of writing skills |  | 3.31 | 1.517 | |  | 3.23 | 1.569 | |  | 3.14 | 1.575 | |  | 3.07 | 1.624 |
| Opportunities to collaborate on assignments with people outside or inside school |  | 4.57 | 0.679 | |  | 4.47 | 0.979 | |  | 4.5 | 0.509 | |  | 4.53 | 0.507 |

***Scale:*** **1**=Strongly Disagree, **2**= Disagree, **3**=Not Sure, **4**=Agree and **5**=Strongly Agree.

**Table 4.3: Comparison of the Benefits of Using ICT in Teaching and Learning from Student Teachers’ and Tutors’ Perspectives**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Responses (N=120)** | | | | | | | | | | | |  |  | |
| *Benefits* | | **Sum of Squares** | | | | | **df** | | | **Mean Square** | | | | **F** | **Sig.** | |
| Greater flexibility in carrying out tasks | Between Groups | |  | 5.218 | | 3 | | | | | 1.739 | | 4.528 | | 0.005 | |
| Within Groups | 44.177 | | | 115 | | | | 0.384 | | |  | | |  | |
| Total | 49.395 | | | 118 | | | |  | | |  | | |  | |
| ICT support knowledge sharing on large scale | Between Groups | |  | 0.425 | | | | 3 | | | 0.142 | | 0.905 | | 0.441 | |
| Within Groups | 18.167 | | | 116 | | | | 0.157 | | |  | | |  | |
| Total | 18.592 | | | 119 | | | |  | | |  | | |  | |
| ICT enable information travel faster | Between Groups | |  | 0.034 | | | | 3 | | | 0.011 | | 0.106 | | 0.956 | |
| Within Groups | 12.305 | | | 114 | | | | 0.108 | | |  | | |  | |
| Total | 12.339 | | | 117 | | | |  | | |  | | |  | |
| ICT use in class, motivate to learn outside class | Between Groups | |  | 2.467 | | | | 3 | | | 0.822 | | 1.187 | | 0.318 | |
| Within Groups | 80.333 | | | 116 | | | | 0.693 | | |  | | |  | |
| Total | 82.800 | | | 119 | | | |  | | |  | | |  | |
| Significantly reduce learning cost | Between Groups | |  | 18.692 | | | | 3 | | | 6.231 | | 4.311 | | 0.006 | |
| Within Groups | 167.633 | | | 116 | | | | 1.445 | | |  | | |  | |
| Total | 186.325 | | | 119 | | | |  | | |  | | |  | |
| Development of writing skills | Between Groups | |  | 0.453 | | | | 3 | | | 0.151 | | 0.061 | | 0.980 | |
| Within Groups | 281.377 | | | 114 | | | | 2.468 | | |  | | |  | |
| Total | 281.831 | | | 117 | | | |  | | |  | | |  | |
| Opportunity to collaborate on assignment | Between Groups | |  | 0.167 | | | | 3 | | | 0.056 | | 0.120 | | 0.948 | |
| Within Groups | 53.800 | | | 116 | | | | 0.464 | | |  | | |  |
| Total | 53.967 | | | 119 | | | |  | | |  | | |  |

**Source**: Field Data, 2017

### **4.3 Student Teachers’ and Tutors’ ICT Basic Knowledge**

The other question that was of great concern during the study was to investigate student teachers’ and tutors’ ICT basic knowledge. Findings in Table 4.3.1 indicate that while both students’ teachers and tutors from colleges have knowledge on how to use smart phones, (Student teachers: Mean = 3.91; SD = 1.13 and tutors: Mean = 4.35; SD = 0.933), how to learn and teach using ICT (Student teachers: Mean = 4.23; SD = 0.968 and tutors: Mean = 4.2; SD = 0.951) and how to communicate in Facebook (Student teachers: Mean = 4.51; SD = 0.746 and tutors: Mean = 4.35; SD = 0.988). respectively.

Table 4.4: Student Teachers’ and Tutors’ ICT basic Knowledge

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Responses (N=140)** | | | | |
|  | **Student Teachers'** | | | **Tutors** | |
| **Basic knowledge** | | **Mean** | **Std. Deviation** | **Mean** | **Std. Deviation** |
| I know how to use overhead data projector | |  |  | 4.25 | 1.118 |
| I know how to use computer | | 3.66 | 1.049 | 4.4 | 0.995 |
| I know how to use Smart phone | | 3.91 | 1.13 | 4.35 | 0.933 |
| I know how to use Tabulate | | 2.68 | 1.178 | 3.8 | 1.24 |
| I am confident in using MS Word, | | 3.46 | 1.222 | 4.3 | 1.129 |
| I am confident in using MS Spreadsheet. | | 3.36 | 1.201 | 4.35 | 1.137 |
| I am confident in using MS PowerPoint | | 3.36 | 1.237 | 4.15 | 1.137 |
| I find it easy to learn through ICT | | 4.03 | 1.008 |  |  |
| I know how to learn/ teach through LMS, | | 2.69 | 1.175 | 3.35 | 1.182 |
| I know how to communicate through Email | | 3.63 | 1.353 | 4.3 | 1.031 |
| I know how to communicate through Facebook | | 4.23 | 0.968 | 4.2 | 0.951 |
| I know how to find learning resource from the internet | | 4.51 | 0.746 | 4.35 | 0.988 |
| I have no computer skills, so I find it difficult to use | | 2.42 | 1.351 | 1.5 | 0.688 |
| I know how to teach through television | |  |  | 3.35 | 1.268 |

***Scale:*** 1=Strongly Disagree, 2= Disagree, 3=Not Sure, 4=Agree and 5=Strongly Agree.

Moreover, the finding shows that tutors are further knowledgerble on general use of computer compared to student teachers, mean 4.4 (SD 0.995), confident in using MS Word, mean 4.3 (SD 1.129), are confident in using MS Spreadsheet, mean 4.35 (SD 1.137), are confident in using MS PowerPoint mean 4.15 (SD 1.137), are eble to use overhead data projector, mean 4.25 (SD 1.118) and eble to communicate through email, mean 4.3 (SD 1.031).

However, though the results show that student teachers lack computer skills, lead to difficult use computers but they find it easy to learn through ICT, mean 4.03 (SD 1.008). The observation found that apart from lack of skills to use computer also find difficult to learn through ICT becourse the computer labs from the colleges were over clouded student teachers with little number of available computer of which most of the students were idle, inactive and uneasy during teaching and learning process.

Table 4.4 of one-way analysis of variance of student teachers and tutors ICT basic knowledge on computer use, tabulate use, confident in using MS spreadsheet, communicating through Email, finding learning resource from the internet and lacking computer skills, so difficult to use computers was presented. Since the P value (P < 0.05) was less than 0.05 that is (0.004) on the use of computer, (0.000) the use of tabulate, (0.001) confident in using MS spreadsheet, (0.037) to communicate through Email, (0.392) ability to find learning resource from the internet and (0.004) lack of computer skills to use computer.

As depicted on Table 4.5, therefore there is a significant difference between the mean ICT basic knowledge that student teachers and tutors have for them effectively use ICT in teaching and learning process. This means that there is a relationship between student teachers and tutors’ ICT basic knowledge have to effectively use ICT in teaching and learning process.

**Table 4.5: Comparison of Student Teachers’ and Tutors’ ICT Basic Knowledge**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Responses (N=140)** | | | | | | | | | | | |
| **Basic knowledge** | | **Sum of Squares** | | | **df** | **Mean Square** | | | **F** | | **Sig.** |
| I know how to use computer | Between Groups | |  | 9.430 | 1 | | 9.430 | 8.687 | | 0.004 | | |
| Within Groups | | | 149.792 | 138 | | 1.085 |  | |  | | |
| Total | | | 159.221 | 139 | |  |  | |  | | |
| I know how to use smartphone | Between Groups | |  | 3.344 | 1 | | 3.344 | 2.738 | | 0.100 | | |
| Within Groups | | | 168.542 | 138 | | 1.221 |  | |  | | |
| Total | | | 171.886 | 139 | |  |  | |  | | |
| I know how to use tabulate | Between Groups | |  | 21.452 | 1 | | 21.452 | 15.223 | | 0.000 | | |
| Within Groups | | | 193.066 | 137 | | 1.409 |  | |  | | |
| Total | | | 214.518 | 138 | |  |  | |  | | |
| I am confident in using MS word | Between Groups | |  | 12.144 | 1 | | 12.144 | 8.297 | | 0.005 | | |
| Within Groups | | | 201.992 | 138 | | 1.464 |  | |  | | |
| Total | | | 214.136 | 139 | |  |  | |  | | |
| I am confident in using MS spreadsheet | Between Groups | |  | 16.858 | 1 | | 16.858 | 11.861 | | 0.001 | | |
| Within Groups | | | 196.142 | 138 | | 1.421 |  | |  | | |
| Total | | | 213.000 | 139 | |  |  | |  | | |
| I am confident in using MS PowerPoint | Between Groups | |  | 10.296 | 1 | | 10.296 | 6.875 | | 0.010 | | |
| Within Groups | | | 206.675 | 138 | | 1.498 |  | |  | | |
| Total | | | 216.971 | 139 | |  |  | |  | | |
| I know how to communicate through Email | Between Groups | |  | 7.619 | 1 | | 7.619 | 4.417 | | 0.037 | | |
| Within Groups | | | 238.067 | 138 | | 1.725 |  | |  | | |
| Total | | | 245.686 | 139 | |  |  | |  | | |
| I know how to communicate through Facebook | Between Groups | |  | .019 | 1 | | .019 | .020 | | 0.887 | | |
| Within Groups | | | 128.667 | 138 | | .932 |  | |  | | |
| Total | | | 128.686 | 139 | |  |  | |  | | |
| I know how to find learning resource from the internet | Between Groups | |  | .453 | 1 | | .453 | .736 | | 0.392 | | |
| Within Groups | | | 84.281 | 137 | | .615 |  | |  | | |
| Total | | | 84.734 | 138 | |  |  | |  | | |
| I have no computer skills, so I find it difficult to use | Between Groups | |  | 14.405 | 1 | | 14.405 | 8.789 | | 0.004 | | |
| Within Groups | | | 226.167 | 138 | | 1.639 |  | |  | | |
| Total | | | 240.571 | 139 | |  |  | |  | | |

***Scale:*** **1**=Strongly Disagree, **2**= Disagree, **3**=Not Sure, **4**=Agree and

**5**=Strongly Agree.

### **4.4 Tutors’ and Student Teachers’ Access to Physical ICT Facilitation to Facilitate Teaching and Learning Process**

The t-independent was considered for both student teachers and tutors. T-test were made based on the following decision rule:

1. If the observed P value is greater than 0.05, then, there is no significant difference between the mean student teachers and tutors access to physical ICT facilitation. (Do not reject the Null value)
2. If the observed P value is less than 0.05, then, there is a significant difference between the mean student teachers and tutors access to physical ICT facilitation. (Reject the Null value)

Table 4.6: Tutors’ and Student Teachers’ Access to physical ICT Facilitation in the College

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Responses (N=140)** | | | | | |  |
|  | **Student Teachers** | | | **Tutors** | |  |
| **Physical ICT Facilities** | **Mean** | | **Std Deviation** | **Mean** | **Std Deviation** | **Independent**  **T-test** |
| Personal computer | | 1.41 | 0.587 | 1.20 | 0.410 | 0.006<P |
| Thin-client computer | | 1.59 | 0.493 | 1.40 | 0.503 | *0.908>P* |
| Laptop computer | | 1.38 | 0.504 | 1.15 | 0.366 | *0.000<P* |
| Smart phones | | 1.24 | 0.430 | 1.55 | 0.510 | *0.011<P* |
| Tabulate | | 1.77 | 0.421 | 1.80 | 0.410 | *0.584>P* |
| Learning Management System | | 1.63 | 0.485 | 1.45 | 0.605 | *0.041<P* |
| Video conferencing system | | 1.78 | 0.415 | 1.85 | 0.366 | *0.133<P* |
| Digital video camera | | 1.77 | 0.425 | 1.75 | 0.444 | *0.753>P* |
| Interactive whiteboards | | 1.51 | 0.502 | 1.40 | 0.503 | *0.042<P* |
| Projection system | | 1.40 | 0.867 | 1.05 | 0.224 | *0.001<P* |

***Scale:***  **1**=Strongly Disagree, **2**= Disagree, **3**=Not Sure, **4**=Agree and **5**=Strongly Agree.

Since the P value (P < 0.05) was less than 0.05 that is (0.006) on access to personal computer in the college, (0.000) access to laptop computer in the college, (0.011) access to Smart phones in the college, (0.041) access to Learning Management System in the college, (0.042) access to interactive whiteboards in the college and (0.001) access to projection system in the college, as presented on Table 4.7

Therefore, there is a significant difference between the mean tutors and student teachers’ access to physical ICT facilitation to facilitate their effective use of ICT in teaching and learning process to effective use of ICT during teaching and learning process. This means that there is a relationship between student teachers and tutors access to physical ICT facilitation in the colleges and effective use of ICT during teaching and learning process. However, it is observed that there is no significant difference between mean tutors and student teachers’ access to physical ICT facilitation on access to video conferencing system, access to digital video camera and access to thin-client computer in the college, since the P value (P> 0.05) is greater than (0.05) Table 4.7.

### **4.5. Availability of Institutional Support for Tutors and Student Teachers in the Colleges**

Table 4.5.1 presents institutional support available for tutors and student teachers’ in the college. Generally the results shows that, while tutors are highly supported by institutions, student teachers are forgoten, therefore receive little institutional support. Specifically, tutors are given free internet access (agree 45.0%), Policy to support ICT-based innovations in teaching and learning which supposed to be employed to both tutors and student teachers, unfortunaletly tutors (agree 40.0%) understandy the existence of the policy while few student teachers understand the availability of the policy. However, the finding shows that training regarding pedagogical use of ICT in teaching and learning (student techers 33.3% and tutors 35.0%) and provision of training about technological skills (student techers 56.7% and tutors 45.0%) are exercised to both student teachers and tutors.

Table 4.8: Institutional Support for Tutors and Student Teachers’ in the Colleges

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Responses (N=140)** | | | | | | | | | | |
|  | **Tutors** | | | | | **Student Teachers** | | | | |
| **Institutional Supports** | **SA** | **A** | **NS** | **D** | **SD** | **SA** | **A** | **NS** | **D** | **SD** |
|  | *Freq.*  *(%)* | *Freq*  *( %)* | *Freq*  *( %)* | *Freq*  *.(%)* | *Freq*  *.(%)* | *Freq.*  *(%)* | *Freq*  *( %)* | *Freq*  *.( %)* | *Freq*  *.(%)* | *Freq*  *.(%)* |
| Broadband internet access | 4  (20.0) | 9  (45.0) | 1  (5.0) | 4  (20.0) | 2  (10.0) | 8  (6.7) | 20  (16.7) | 27  (22.5) | 27  (22.5) | 38  (31.7) |
| Wifi network | 1  (5.0) | 4  (20.0) | 2  (10.0) | 6  (30.0) | 7  (35.0) |  |  |  |  |  |
| Training on technological skills | 2  (10.0) | 9  (45.0) | 2  (10.0) | 5  (25.0) | 2  (10.0) | 20  (16.7) | 68  (56.7) | 6  (5.0) | 3  (2.5) | 23  (19.2) |
| ICT Policy | 3 (15.0) | 8  (40.0) | 3  (15.0) | 2  (10.0) | 4  (20.0) | 12  (10.0) | 28  (23.3) | 23  (19.2) | 28  (23.3) | 29  (24.2) |
| Training on pedagogical use of ICT | 5 (25.0) | 7  (35.0) | 3  (15.0) | 3  (15.0) | 2  (10.0) | 23  (19.2) | 40  (33.3) | 20  (16.7) | 19  (15.8) | 18  (15.0) |
| Technical support |  |  |  |  |  | 20  (16.7) | 28  (23.3) | 11 (9.2) | 41  (34.2) | 20  (16.7) |

***Scale:*** **SD**=Strongly Disagree, **D**= Disagree, **NS**=Not Sure, **A**=Agree and **SA**=Strongly Agree.

Other kinds of support that are needed by student teachers and tutors for effective use of ICT were also investigated. Results in Table 4.10.1 shows that a 42.5% of student teachers strongly agreed and 40.0% agreed to a statement that “One of other institutional support need for them effectively use of ICT is free printing service and internet access”. However, 55.8% of student teachers strongly agreed and 35.0% agreed while 35.0% of tutors strongly agreed and 35.5% agreed that “All need enough time to access computer laboratory for effectively make use of ICT.

Table 4.9: Other kinds of Support needed by Student Teachers and Tutors for Effective use of ICT

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Responses (N=140)** | | | | | | | | | | |
|  | **Student Teachers** | | | | | **Tutors** | | | | |
| **Other Kinds of Support** | **SA** | **A** | **NS** | **D** | **SD** | **SA** | **A** | **NS** | **D** | **SD** |
|  | Freq  .(%) | Freq  ( %) | Freq  ( %) | Freq  .(%) | Freq  (%) | Freq  .(%) | Freq  ( %) | Freq.  ( %) | Freq  .(%) | Freq.  (%) |
| Free printing service and internet access | 51  (42.5) | 48  (40.0) | 3  (2.5) | 9  (7.5) | 7  (5.8) |  |  |  |  |  |
| Extend computer lab access time | 67  (55.8) | 42  (35.0) | 2  (1.7) | 9  (7.5) |  | 7 (35.0) | 7  (35.5) | 1  (5.5) | 4  (20.0) | 1  (5.0) |
| Add more computers for students and tutors to use | 80  (66.7) | 32  (26.7) | 2  (1.7) | 4  (3.3) | 2  (1.7 | 10  (50.0) | 2  (10.0 | 3  (15.0 | 3  (15.0) | 3  (15.0) |
| Use of Learning Management System (LMS) | 58  (48.3) | 44  (36.7 | 10  (8.3) | 4  (3.3) | 4  (3.3) | 7  (35.0) | 5  (25.0 | 2  (10.0 | 5  (25.0) | 1  (5.0) |
| Capacity building on ICT use, both Student teachers and tutors | 59  (49.2) | 45  (37.5 | 4  (3.3) | 12  (10.0) | | 12  (60.0) | 3  (15.0 | 1  (5.0) | 3  (15.5) | 1  (5.0) |
| Tutors use ICT in their teaching on a regular basis | 64  (53.3) | 44  36.7) | 4  (3.3) | 8  (6.7) |  |  |  |  |  |  |

***Scale:*** **SD**=Strongly Disagree, **D**= Disagree, **NS**=Not Sure, **A**=Agree and **SA**=Strongly Agree.

Other support need for Student teachers and tutors for effective use of ICT as shown in Table 4.10.1 are; adding more computers for students and tutors to use, 66.7% and 50.0% respectively; Capacity building on ICT use, both Student teachers and tutors, 49.2% and 60.0% respectively. On the other hand, results show that student teachers 48.3% and tutors 35.0% all support and need to make use of Learning Management System of which hadn’t been fully implemented according observation during live data gathering in live class. Judging from the results in Table 4.10.1 student teachers and tutors all need close support from institutions for effective integrating and use ICT in teaching and learning process.

### **4.6 Challenges Encountered by Tutors and Student Teachers when Using ICT in Teaching and Learning Process**

Student teachers’ and tutors’ ICT challenges encountered by tutors and student teachers when using ICT in teaching and learning process was presented in Table 4.6.1. The results in Table 4.6.1 shows that student teachers and tutors from the four teachers training colleges face difference challenges. While student teachers face limited access to ICT labalatories (Strongly agree 43.3% and Agree 40.0% ) tutors find difficulties on access to internet (Strongly agree 55.0% and Agree 35%).

The result also shows that student teachers (Strongly agree 23.3% and Agree 42.5%) and tutors (Strongly agree 20.0% and Agree 50.0%) do face un-reliable electricity in the colleges which contribute to inefective use of ICT facilities in teaching and learning process. Not only un-reliable electricity in the colleges but also lack of standby generator to back up electricity system is another challenge that tutors (Strongly agree 40.0% ) and student teachers (Strongly agree 20.0%) face in the colleges. The table 4.6.1 also indicates that student teachers (Strongly agree 35.8% and Agree 36.7%) do face high scramble for computers use in the college because of few computers available to certisfy number of student teachers in the colleges.

Table 4.10: Challenges Encountered by Tutors and Student Teachers when using ICT in Teaching and Learning Process

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Responses (N=140)** | | | | | | | | | | |
|  | **Student Teachers** | | | | | **Tutors** | | | |  |
|  | **SA** | **A** | **NS** | **D** | **SD** | **SA** | **A** | **NS** | **D** | **SD** |
| **Challenges** | Freq.  (%) | Freq.  ( %) | Freq  (%) | Freq. (%) | Freq. (%) | Freq.  (%) | Freq.  ( %) | Freq.  (%) | Freq.  (%) | Freq.  (%) |
| Limited access to ICT labs | 52 (43.3) | 48 (40) |  | 6  (5.0) | 13 (10.8) |  |  |  |  |  |
| Limited access to internet |  |  |  |  |  | 11 (55.0) | 7 (35.0) | 1 (5.0) |  | 1  ( 5.0) |
| Un-reliable electricity in the college | 28 (23.3) | 51 (42.5) | 7  (5.8) | 19  (15.8) | 15 (12.5) | 4 (20.0) | 10 (50.0) | 1 (5.0) | 4 (20.0) | 1  (5.0) |
| Lack of standby generator to back up electricity system | 48 (40.0) | 23 (19.2) | 9  (7.5) | 26  (21.7) | 14 (11.7) | 5 (25.0) | 4 (20.0) | 2 (10.0) | 5 (25.0) | 4  20.0 |
| High scramble for computers use in the college | 43 (35.8) | 44 (36.7) | 11  (9.2) | 12  (10.0) | 9 (7.5) | 8 (40.0) | 6  (30.0) | 1  ( 5.0) | 3 (15.0) | 2  (10.0) |
| Lack of computer skills |  |  |  |  |  | 1  (5.0) | 5 (25.0) | 4 (20.0) | 6 (30.0) | 4  (20.0) |
| Consumes time during teaching process |  |  |  |  |  | 2 (10.0) | 1 (5.0) | 2 (10.0) | 9 (45.0) | 6  (30.0) |

***Scale:*** **SD**=Strongly Disagree, **D**= Disagree, **NS**=Not Sure, **A**=Agree and **SA**=Strongly Agree.

# CHAPTER FIVE

## **5.0 DISCUSSION OF FINDINGS**

### **5.1 Overview**

This chapter discusses findings of the study that investigated “challenges preventing tutors and student teachers from using ICT in their teaching and learning process in teachers’ colleges”. The chapter is organized into the following sub-sections: discussion and summary of the chapter.

### **5.2 Discussion**

The main objective of this study was to investigate challenges that prevent student teachers and tutors from using ICT in their learning process. Findings of the study have identified several challenges that prevent student teachers and tutors from using ICT in their learning process. The first challenge is student teachers and tutors negative perception about using ICT in teaching and learning. Evidence from this study have shown that, student teachers and tutors percieve that using ICT in teaching and learning is demanding in terms of time required to learn new skills. Both student teachers and tutors also percieve that ICT can not improve performance in teaching and learning process.These challenges are also reported by other scholars.

Ertmer (1999) classifies two types of perceptions-related challenges, namely; extrinsic and intrinsic challenges. Intrinsic challenges include teachers or instructors’ beliefs, perception concerning technology integration, and visions about teaching, learning and knowledge. Extrinsic challenges include lack of resources, inadequate training, insufficient technical support and lack of time. Almusalam,(2001) and Mumtaz (2000) as cited by (Khan, Hasan, & Clement, 2012) assert that tutors' attitudes are major predictors of the use of new technologies in instructional settings. tutors' beliefs about teaching and learning with ICT are central to integration. To be successful in computer use and integration, tutors need to engage in conceptual change regarding their beliefs about the nature of learning, the role of the student teachers, and their role as tutors. Therefore,the successful use of ICT into classroom largely depends on tutors' attitudes and belief as well as student teachers as it has been discussed already.

The second challenge is student teachers and tutors perceiving least on benefit of ICT use in teaching and learning to develop writing skills and significantly reduce learning costs. The study have proven that student teachers perceive negative benefits of using ICT in learning process would develope their writing skills and considerably reduce reduce their learning costs. Eadie (2001), in his report on the study about “Impact of ICT on Schools: Classroom Design and Curriculum Delivery” identified the key changes in student learning behaviour attributed to the use of computers, the internet and other learning technologies. Fourteen observations relating to the changes brought about by effective classroom integration of ICT, among those some were development of various intellectual skills like; reasoning, problem solving, learning how to learn, writing skills and creativity; ease of access to information sources develops the research spirit and gain information on new learning resources that consequently reduce learning costs.

Student teachers’ and tutors’ luck of ICT basic knowledge is the third challenge. The findings in this study depict that, while student teachers do not know how to use computer and tabulate, are incompentent in using MS Word, MS Spreadsheet MS PowerPoint, do not know how to communicate through Email and learn through LMS, tutors like wise do not know how to teach through LMS and use tabulate. lucking of ICT basic knowledge is the challenge for effective use of ICT for both student teachers and tutors in teaching and learning as it has been explained by other scholars as well. Chainda, (2011) explain that, for effective use of ICT in learning, pre-service student teachers should be able to use a computer, communicate by e-mail, find information using web-based systems, create output using a word processor, spreadsheet and presentation software for them to respond to their assignments. Noor,(2013) asserts that, ICT integration in educational institutions has to meet certain requirement.

Among the requirement needed by both instructors and learners are skills and competency in regards to ICT skills and pedagogical knowledge for instructors and Chainda, (2011) also asserts that today’s students are digital connected, social and prefer learning that includes peer-to-peer interaction, prefer to be actively engaged in their learning and prefer learning resources that are visual and relevant, interact and engage in discussions with their peers and teachers on-line and in the process acquire ICT skills and abilities that are needed in the use of ICT to enhance their learning.

Also the study conducted on teaching competencies in relation to the utilization of ICT at the University of Salamanca in Spain as sited by (Noor, 2013), indicates that from the lecturers’ opinions, there are twelve critical competencies that they should acquire and utilize. They were identified as follows: knowing how to use the internet to search for data and information in preparing for the lesson; knowing websites (portals, web pages, electronic magazines, dictionaries, search engines) related to their courses; to explore and to use presentations to discuss specific topics of the lessons; knowing how to use software programs in their specific field would lead to competencies and effective use of ICT in teaching and learning process.

Karsenti (2009) summarizes the required students’ teachers skills and knowledge for them to realize the potential and effectively use of ICT pedagogy into three categories which are (i) general competencies on knowledge of different parts of the computer (familiarization with basic software like word processing, spreadsheet, presentation software, browsers), use of interactive software to create and save text, tables, annotations, objects, copy and paste images and email communication with teachers and other students (ii) capacity to use ICT for academic activities, this includes knowledge and use of search engines like google, use of ICTs for research, navigation on the web sites containing educational resources, download document (text and images) and the use of CD-ROM and creation of resource materials and (iii) capacity to use ICT for other learning purposes, this includes the use of other ICT resources (digital camera, and slides overhead projector to teach the whole class), use of Office software (Word, Excel, PowerPoint) for professional purposes to create and adapt educational resources, writing reports, planning working time, data recording and miscellaneous notes, the using of generic software to create resources for self-learning, drawing and the use of other ICT resources like digitizer or scanner, and digital camera.

The fourth challenge that prevent student teachers and tutors from using ICT in their learning process was observed to be limited access to available ICT physical facilities. Evidence from this study shows that student teachers are disadvantaged much interms of access to ICT physical facilities than tutors. The study proves that student teachers have no or limited access to personalcomputer in the college, access to laptop computer, Smart phones, Learning Management Systemin, projection system and tutors face the challenge of limited access to Smart phones, Learning Management System, video conferencing system, interactive whiteboards and limited access to projection system in the college. This means that there is a relationship between student teachers and tutors access to physical ICT facilities in the colleges and effective use of ICT during teaching and learning process.

This challenge is also reported by Noor (2013), whereby addressing that the educational system where ICT facilities are integrated needs specific infrastructure and resources that learners and instructors access, such as computers hardware and software, servers, network items internet availability, power, furniture, and rooms. Other ICT facilities include digital content, computer accessories, printers, copiers, classroom projectors, whiteboards and specialized tools. Therefore, student teachers and tutors may be competent but if access to ICT physical facilities is ignored, then effective use of ICT in teaching and learning and integration of ICT into pedagogy will not be effectively achieved.

Fifth identified challenge that prevent student teachers and tutors effectively use of ICT in their learning and teaching was lack of institutional support. While it is proven in this study that student teachers face challenge on both broadband wifi internet access, no ICT policy that support them onto maximum use of ICT in their learning and lack technical support from institution, tutors on their side lack wifi network connection. Generally, tutors though receive lillte supported in some cases by institutions for example provision of free broadband internet access, student teachers are forgoten, therefore receive little institutional support.

The challenge on lack of institution support to student teachers and tutors is also addressed by several scholars. Ehrmann (2016) indicates that the power of the internet in education is its ability to host huge amounts of information to which students may refer and which they may use to enhance their learning. The ever-present availability of electronic books, journal articles, newspapers, magazines and educational materials seems to make the internet a widely acceptable resource and a support tool for students. It might therefore be perceived by students to enhance deeper forms of learning. Thus, insttitution should give full support on provision of internet to students, because the use of ICT in education system results in transforming education from discrete skills to reflective practice, require appropriate planning that involve fund allocation, time off for the tutors, and access to ICT facilities because tutors have not been motivated enough but opportunities granted to head of departments (Noor, 2013).

Un-reliable electricity and absence of back-up electricity system was the sixth identified challenge that prevent student teachers and tutors from fully exploiting ICT in their learning and teaching process. It is evident from the study that un-reliable electricity in the colleges and lack of standby generators to back up electricity system are other challenges that colleges are in, which in turn affects both student teachers and tutors on effective use of ICT in teaching and learning. Consequently ICT use is still constrained by irregular or unavailable electricity supply, this is also proven by MoEVT, (2007) whereby curriculum for ICT in primary and pre-primary education, referred to as Teknolojia ya Habari na Mawasiliano (TEHAMA) currently, is only taught in a few schools located at district headquarters, which have ICT facilities, have computers or internet access, have radiosand TV but these are restricted to areas that have electricity only. Hennessy (2010), also report that lack of electricity and frequent power outages, poor technology infrastructure, overcrowded computer labs and low bandwidth, high costs of internet connectivity, software licences and equipment maintenance, insufficient and inappropriate software are physical, cultural, socioeconomic and pedagogical factors hindering the use of ICT by teachers and students in sub-Saharan Africa, particularly in rural schools, emerge from the review.

Lack of resources within teachers colleges was identified as the seventh challenge or hindrance to the implementation of ICT in nothern zone government teachers colleges. It is proven from this study that, lack of enough computers both hardware and software and other ICT-supported tools in and out of classroom is a limitation for the use of ICT by tutors and student teachers. This is in support by Rosen & Weil,(1995), Winnans & Brown,(1992), Dupagne & Krendl,(1992) and Hadley & Sheingold,(1993) who gave explanation that limited resources results in lack of computer integration, which in turn results in lack of sufficient computer experience for both pupils and teachers. Thefore tutotrs and student teachers need to be provided with adequate facilities and resources for effective use of ICT.

This study show that inadequate of computers to certisfy number of student teachers and tutors in the colleges which lead to scramble for computers use in the college was another challenge that result to ineffective use of ICT for both tutors and student teachers in teaching and learning process. According to Onchari and Wachira (2008) asserted that one of the challenges lead to ineffective use of ICT in teaching and learning include the unavailability and scarce of ICT facilities, serviceability of the facilities, lack of maintenance and technical support. Mumtaz (2000) and Afshari, Bakar & SuLuan,(2009) state that many scholars proposed that the lack of funds to obtain the necessary hardware and software is one of the reasons tutors do not use technology in their classes and therefore, efficient and effective use of technology depends on the availability of hardware and software.

Despite these challenges, most student teachers and tutors indicate that there are different opportunities in the use of ICT in learning and teaching has such as improving performance in their teaching and learning, greater flexibility in carrying out tasks, supports knowledge sharing on a large scale, use of ICT in class, motivates to continue using outside class hours and provide opportunities to collaborate on assignments with people outside or inside school. The students’ positive perceptions of ICT applications to enhance their learning might be attributed to Tanzania's ICT policy in education regarding the application of technology at all levels of the education sector specifically in teacher education anddevelopment level requirements of Tanzania’s ICT policy which depicts that “all pre-service student teachers should be able to use a ICT (TEHAMA)in teaching and learning process (WEMU, 2014).

# CHAPTER SIX

## **6.0 CONCLUSSIONS AND RECOMMENDATIONS**

### **6.1 Overview**

This chapter concludes the study and presents its contribution to the existing body of knowledge about challenges that prevent student teachers and tutors from exploiting ICT in their teaching and learning processes. The chapter constitutes two major sections: the study conclusions and recommendations.

### **6.2 Summary**

The aim of this study was to investigate the challenges preventing student teachers from using ICT in their learning process in the northern zone government teachers’ colleges. To do this, factors needed to be investigated as reasons to effective use of ICT in teacher education were considered. To accurately investigating the challenges that prevent student teachers’ and tutors from fully using ICT in teaching and learning several factors were investigated and their effects were quantified, examined and presented.

A number of factors were identified, such as student teachers and tutors negative perception about using ICT in teaching and learning, student teachers’ and tutors’ luck of ICT basic knowledge, student teachers and tutors perceiving least on benefit of ICT use in teaching and learning to develop writing skills, lack of institutional support, limited access to available ICT physical facilities, lack of resources within teachers colleges and un-reliable electricity and absence of back-up electricity system. These factors were identified as main hindrance of effective use of ICT by both tutors and student teachers in teacher education. The conceptual framework was adapted, using a wide ranging literature review, regarding the effective use of ICT in teacher education. Structured questionnaire and observation guide question instruments were also constructed, which were designed to investigate challenges of ICT use by tutors and student teachers in teacher education. It is very important to highlight that the findings of the study are context specific and may probably not be generalized.

### **6.3 Conclusions**

On the basis of the findings on this study about challenges that prevent student teachers and tutors from using ICT in their learning and teaching process in relation to literature, the following conclusions are drawn and pointed out from the study;

Firstly, findings from the study suggest that integration of Information and Communication Technology in teacher education maximizes the use of ICT in teaching by tutors and use of ICT in learning by student teachers in teachers colleges. ICT skills training for student teachers seem an important institutional challenge. To develop the ICT knowledge and skills of student teachers as dipicted in the findings of this study, the college administration need to find a way of training students teachers at intermediate and advanced levels in ICT skills. This may help student teachers feel more confident as ICT users and apply word processing, spreadsheet, internet and e-mail, presentation and other related computer applications to boost their learning hence change their perceptions.

Secondly, the study found that effective use of Information and Communication Technology in teaching and learning process by both tutors and student teachers largely in teachers colleges depend on the altitude of tutors concerning ICT integration and student teachers postive perception over the benefits of using Information and Communication Technology in their learning processes in and outside classroom situation. Thirdly, findings from this study further suggest that lack of Information and Communication Technology facilities in teachers colleges, lack of computer experience, student eachers’ knowledge and skills about ICT, institutional support, and limited access to Information and Communication Technology facilities are some of the factors preventing both student teachers and tutors from effectively use of ICT in their learning and teaching process.

There is positive relationship between effective use of Information and Communication Technology in learning and student teachers’ ICT basic knowledge like using computers, communicate by e-mail, find information using web-based systems, create output using a word processor, spreadsheet and presentation software. To resolve the challenge of lack of skills in ICT, institutions of teacher education could be encouraged to employ a variety of teacher training methods, ranging from face to face, workshops to online self study ICT programs depending on training objectives and environments. Facilitation could be enabled to physically be in touch with ICT tools in order to increase skills and expertise in the use of it. Users will need basic computing and ICT skills before make use of access initiatives. Therefore, appropriate training could be provided for tutors and student teachers accessing and using information communication technologies (Twinomujuni, 2011).

### **6.4 Recommendations**

Student teachers and tutors effective use of ICT into teaching and learning requires a lot of changes to be made to aspects of an educational system. Conceptual framework that was developed in this study appears to provide some ways as to maximize the possible use of Information and Communication Technology by student teachers and tutors in teacher education. Based on the conclusion of this study, recommendations for action, recommendation for policy reform and recommendation for further research are made;

#### 6.4.1 Recommendation for Action

It is found in this study that ICT use in learning come with challenges such as number of computers in relation to the number of student teachers, internet speed and connectivity, inadequate technical support and inadequate training of students. If these challenges are not attended to and resolved, students may develop negative attitudes to and perceptions of the use of ICT in their learning. The study by Ertmer, (1999) and Yildrim, (2009) acknowledges these challenges and indicate that they are regarded as obstacles in the use of ICT in teaching and learning. It is the call for college principals and college administration at large to make sure the identified challenges that prohibit student teachers and tutors from using ICT in teaching and learning are taken care.

College principals should organize workshops or seminars at intervals for tutors and student teachers on ICT related issues and encourage both tutors and student teachers to use ICT in their teaching and learning activities. Since it has been proven from this study that student teachers and tutors perceive negatively and least benefit of using ICT in teaching and learning, therefore there must be some effort to college principals to organize indoor workshops and seminars for tutors and student teachers over the use of ICT in teaching and learning process. Literature (Khan, Hasan, & Clement, 2012) suppose that tutors' attitudes are major predictors of the use of new technologies in instructional settings. tutors' beliefs about teaching and learning with ICT are central to ICT integration in teaching and learning. Therefore,the successful use of ICT into classroom also largely depends on college administration to change tutors’ attitude by training them through seminars and workshops.

Since inadequate of ICT facilities was proved to be among the challenges, college administration should collaborate with various stakeholders in ensuring that ICT facilities are available in their respective colleges and there after encourage tutors and student teachers to make use of ICT facilities in their respective colleges to ensure maximum utilization of ICT in teaching and learning process. Scholars like Rosen & Weil,(1995), Winnans & Brown,(1992), Dupagne & Krendl, (1992) and Hadley & Sheingold,(1993) explain that limited resources results in lack of computer integration, that results in lack of sufficient computer experience for both pupils and teachers. A big challenge that lead to ineffective use of ICT in teaching and learning is unavailability and scarce of ICT facilities, serviceability of the facilities, lack of maintenance and technical support (Onchari and Wachira, 2008). Thefore tutotrs and student teachers should be provided with adequate facilities and resources for effective use of ICT in their teaching and learning process.

Student teachers should do their assignments using information and communication technology components such as computers, internet, online libraries etc. This study proves that student teachers lack ICT experiences and basic knowledge to allow them use in their learning process. It is then recommended that college tutors should integrate Information and Communication Technology in their teaching activities and encourage student teachers to constantly do their assignments using ICT components available in the college. MEC, (2005:7) support that, all pre-service student teachers should be able to use ICT facilities like computers, communicate by e-mail, find information using web-based systems, create output using a word processor, spreadsheet and presentation software, e.g. assignments. Chainda, (2011) also clarify that, for use of ICT in learning, pre-service student teachers should have ability to use a computer, communicate by e-mail, find information using web-based systems, create output using a word processor, spreadsheet and presentation software for them to respond to their assignments.

#### 6.4.2 Recommendation for Policy Reform

Curriculum developers should develop broad Information and Communication Technology integrated curriculum at teacher education level during curriculum review so that it gives room for ICT effective utilization during its implementation. Ministry of Education, Science and Technology should continue providing Information and Communication Technology facilities to teachers’ colleges and advise the curriculum developers to develop broad ICT integrated curriculum at teacher education level.

According to Twinomujuni (2011), suggest that the Ministry of Education and the National Curriculum Development should explore the possibility of reviewing the national curriculum of teacher education to include ICT integrated activities, which will help student teachers, and tutors to have ICT basic skills competence to enable them use ICT in learning and teaching. Ministry of education should encourage teacher education institutions to have an ICT policy and master plan which could include a component for training users. Considerable knowledge and skills have to be developed among the end users so that they are able to use ICT services and systems effectively.

#### 6.4.3 Recommendation for Further Research

The section discusses possible methods which could further expand the current study which was successfully implemented despite many challenges and constraints. Data collected during the course of study can be considered as valid and reliable and can also be used for further analysis in future studies. Further studies may be designed based on the findings and discovered challenges of this study to investigate the challenges that hinder student teachers and tutors from fully using ICT in their teaching and learning process. Further studies may be designed taking into consideration administration perception and advocacy about using ICT in teacher education, availability of technical team to support both student teachers and tutors, government support in the use of ICT in teacher education, Finally, fund directed to ICT infrastructure in teachers’ colleges may also be investigated.

Despite thousands of studies attempting to identify the challenges prohibiting student teachers and tutors from using ICT in teacher education, there is no widely accepted standard methodologies to assess effective use of ICT by student teachers and tutors in teacher education. This study has presented a true educational experiment conducted to investigate the challenges of ICT use by student teachers and tutors in teacher education. The findings of this study may give an additional information for further analysis of teacher education curriculum implementation with ICT.

The research tool that has been developed in this study consisted of 5 scales. The whole questionnaire of 63 items may be retested for internal consistency. This validated tool might be useful to measure student teachers and tutors’ perceptions, basic knowledge, access to technology outside college when investigating challenges student teachers and tutors face when using ICT in their teaching and learning. Future study may improve aspects of this topic, if it was to focus on particular challenges. Therefore, detailed planning of the studies could offer further insight into this topic.

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APPENDICES

APPENDIX 1: STUDENT TEACHERS’ QUESTIONNAIRE

Dear Student teacher,

Thank you for your interest in this study. This study aims at finding out challenges that prevent student teachers from exploiting ICT in their learning process. This questionnaire consists of a few questions, and it takes few minutes to answer. All responses you provide in this questionnaire will be treated confidentially and for the purpose of this research only.

1. General Information (Put a tick (**√**) to the appropriate option)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1.1 Gender:   |  |  | | --- | --- | |  | Male | |  | Female | | 1.2 Year of study:   |  |  | | --- | --- | |  | First year | |  | Second Year | |
| * 1. Which course are you pursuing in the college:  |  |  | | --- | --- | |  | Grade A | |  | Diploma | | 1.4 Type of the teacher training college   |  |  | | --- | --- | |  | Special and inclusive teacher education | |  | Teacher education | |
| * 1. Is there ICT lab in the college?  |  |  | | --- | --- | |  | Yes | |  | No | | * 1. Is the college computer lab connected to internet?  |  |  | | --- | --- | |  | Yes | |  | No | |
| * 1. Which of the following ICT do you possess?  |  |  |  |  | | --- | --- | --- | --- | |  | Yes |  | No |   Computer:   |  |  |  |  | | --- | --- | --- | --- | |  | Yes |  | No |   Smart phone:   |  |  |  |  | | --- | --- | --- | --- | |  | Yes |  | No |   Tabulate: | |

2. Habits of ICT/Computer Use

*Please rate your agreement with the following statements by placing a tick (****√*** *) on one of the following rate against the statement. (Strongly* **Agree =SA, Agree =A, Not Sure =NS, Disagree =D, Strongly Disagree =SD)**

RQ No. 1 (a) What are student teachers’ perceptions about using ICT in their learning process?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **1.0 What do you perceive about using ICT in learning?** | | **SA** | **A** | **NS** | **D** | **SD** |
| *1.1* Using ICT to learn is difficult | |  |  |  |  |  |
| *1.2* I prefer traditional way (chalk-board) to learn | |  |  |  |  |  |
| *1.3* Using ICT is evil | |  |  |  |  |  |
| *1.4* I don’t believe ICT can improve my performance | |  |  |  |  |  |
| 1.5 Demand on time to learn new skills | |  |  |  |  |  |
| 1(b) Benefits of ICT use in learning | | | | | | |
| **2.0 What are the benefits of using ICT in learning** | | **SA** | **A** | **NS** | **D** | **SD** |
| *2.1*Greater flexibility in carrying out tasks | |  |  |  |  |  |
| *2.2* ICT supports knowledge sharing on a large scale | |  |  |  |  |  |
| *2.3* ICT enables information travel faster | |  |  |  |  |  |
| * 1. ICT use in class, motivates to continue using outside school hours | |  |  |  |  |  |
| 2.5 Significantly reduce learning costs | |  |  |  |  |  |
| * 1. Development of writing skills | |  |  |  |  |  |
| * 1. Opportunities to collaborate on assignments with people outside or inside school | |  |  |  |  |  |
| RQ No.2 What specific ICT basic knowledge do student teachers have? | | | | | | |
| **3.0 What specific ICT knowledge do you have?** | | **SA** | **A** | **NS** | **D** | **SD** |
| *3.1* I know how to use computer | |  |  |  |  |  |
| 3.2 I know how to use Smart phone | |  |  |  |  |  |
| *3.3* I know how to use Tabulate | |  |  |  |  |  |
| *3.4* I am confident in using MS Word, | |  |  |  |  |  |
| *3.5* I am confident in using MS Spreadsheet. | |  |  |  |  |  |
| *3.6* I am confident in using MS PowerPoint | |  |  |  |  |  |
| *3.7* I find it easy to learn through ICT | |  |  |  |  |  |
| *3.8* I know how to communicate through LMS, | |  |  |  |  |  |
| *3.9* I know how to communicate through Email | |  |  |  |  |  |
| *3.10* I know how to communicate through Facebook | |  |  |  |  |  |
| *3.11* I know how to find learning resource from the internet | |  |  |  |  |  |
| *3.12* I have no computer skills, so I find it difficult to use | |  |  |  |  |  |
| RQ No.3 (a) What kind of physical ICT facilitation do student teachers access to facilitate their  learning process and where? (*place a tick (****√*** *) on one of the given options)* | | | | | | |
| **4.0 What kind of physical equipment is accessible for you as a Student teacher**  **at your college?** | | | **YES** | | **NO** | | |
| *4.1* Personal computers | | |  | |  | | |
| *4.2* Thin-client computers | | |  | |  | | |
| *4.3* Laptop computers | | |  | |  | | |
| *4.5* Smart phones | | |  | |  | | |
| *4.6* Tablets | | |  | |  | | |
| *4.7* Learning Management Systems | | |  | |  | | |
| *4.8* Video conferencing systems | | |  | |  | | |
| *4.9* Digital video cameras | | |  | |  | | |
| *4.10* Interactive whiteboards | | |  | |  | | |
| *4.11* Projection system | | |  | |  | | |
|  |  | |  | |  | | |
| (b) Challenges of using ICT in learning | | | | | | |
| **5.0 What challenges of using ICT in learning do you face?** | | **SA** | **A** | **NS** | **D** | **SD** |
| *5.1* Limited access to ICT labs | |  |  |  |  |  |
| *5.2* Un*-*reliable electricity in the college | |  |  |  |  |  |
| *5.3*  lack of standby generator to back up electricity system | |  |  |  |  |  |
| *5.4* High scramble for computers use in the college | |  |  |  |  |  |
| (c) Where do you access ICT for learning | |  |  |  |  |  |
| **5.0 Where do you access ICT for learning** | | **SA** | **A** | **NS** | **D** | **SD** |
| 5.1 College computer laboratory | |  |  |  |  |  |
| 5.2 Internet which connects my laptop | |  |  |  |  |  |
| 5.3 Internet which connects my smart-phones | |  |  |  |  |  |
| 5.4 Intranet which connects my smart-phones | |  |  |  |  |  |
| 5.5 Intranet which connects my laptop | |  |  |  |  |  |
| RQ No.4 (a) What institutional support is available for student teachers in the colleges? | | | | | | |
| **6.0 What institutional support do you get?** | | **SA** | **A** | **NS** | **D** | **SD** |
| *6.1* Regular training on how to use computer so to learn | |  |  |  |  |  |
| *6.2 Free* internet access. | |  |  |  |  |  |
| *6.3* Technical support | |  |  |  |  |  |
| *6.4* Pedagogical support | |  |  |  |  |  |
| *6.5* Incentives/ Prizes for those who use ICT | |  |  |  |  |  |
| (b) What other support is needed for effective use of ICT in learning | | | | | | |
| **7.0 What other support needed for effective use of ICT in learning** | | **SA** | **A** | **NS** | **D** | **SD** |
| *7.1*  Free printing service | |  |  |  |  |  |
| *7.2* Extend computer lab access time | |  |  |  |  |  |
| *7.3*  Add more computers for students to use | |  |  |  |  |  |
| *7.4* Use of Learning Management System (LMS) | |  |  |  |  |  |
| *7.5*  Capacity building on ICT use in learning | |  |  |  |  |  |
| *7*.6 Tutors use ICT in their teaching on a regular basis | |  |  |  |  |  |

**Thank you for your time!**

**APPENDIX 2: TUTORS’ QUESTIONNAIRE**

Dear Sir/Madam,

Thank you for your interest in this study. This study aims at finding out challenges that prevent student teachers from exploiting ICT in their learning process. This questionnaire consists of a few questions, and it takes few minutes to answer. All responses you provide in this questionnaire will be treated confidentially and for the purpose of this study only.

*Please rate your agreement with the following statements by placing a tick (√ ) on one of the following rate against the statement.* ***(Strongly* Agree =SA, Agree =A, Not Sure =NS, Disagree =D, Strongly Disagree =SD)**

1. General Information (Put a tick (**√**) to the appropriate option)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1.1 Gender:   |  |  | | --- | --- | |  | Male | |  | Female | | 1.2 Teaching experience   |  |  | | --- | --- | |  | Below 5 years | |  | Above 5years | |
| * 1. Which course are you teaching?  |  |  | | --- | --- | |  | Grade A | |  | Diploma | | 1.4 Type of the teacher training college   |  |  | | --- | --- | |  | Special and inclusive teacher education | |  | Teacher education | |
| * 1. Is there ICT lab in the college?  |  |  | | --- | --- | |  | Yes | |  | No | | * 1. Is the college computer lab connected to internet?  |  |  | | --- | --- | |  | Yes | |  | No | |
| * 1. Which of the following ICT do you possess?  |  |  |  |  | | --- | --- | --- | --- | |  | Yes |  | No |   Computer:   |  |  |  |  | | --- | --- | --- | --- | |  | Yes |  | No |   Smart phone:   |  |  |  |  | | --- | --- | --- | --- | |  | Yes |  | No |   Tabulate: | |

RQ No. 1 (a) What are tutors perceptions about using ICT in their teaching process?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **1.0 What do you say about using ICT in teaching** | **SA** | **A** | **NS** | **D** | **SD** |
| *1.1* Using ICT to teach is difficult |  |  |  |  |  |
| *1.2* I prefer traditional way (chalk-board) to teach my students |  |  |  |  |  |
| *1.3* Using ICT is evil |  |  |  |  |  |
| *1.4* I don’t believe ICT can improve my performance |  |  |  |  |  |
| 1.5 Demand on time to learn new skills |  |  |  |  |  |
| (b) Benefits of ICT use in teaching | | | | | |
| **2.0 What are the benefits of using ICT in learning** | **SA** | **A** | **NS** | **D** | **SD** |
| *2.1*Greater flexibility in carrying out tasks |  |  |  |  |  |
| *2.2* ICT supports knowledge sharing on a large scale |  |  |  |  |  |
| *2.3* ICT enables information travel faster |  |  |  |  |  |
| * 1. Provides opportunities for students to have a real audience |  |  |  |  |  |
| 2.5 Significantly helps to clear doubts on abstract concept |  |  |  |  |  |
| 2.6 Enable tutors to turn teacher-centred lessons into student-centred |  |  |  |  |  |
| * 1. Provides tutors with more opportunities to be facilitator |  |  |  |  |  |

RQ No.2 What ICT knowledge level do tutors have?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **3.0 What ICT knowledge do you have?** | **SA** | **A** | **NS** | **D** | **SD** |
| *3.1* I know how to use overhead data projector |  |  |  |  |  |
| *3.2* I know how to use computer |  |  |  |  |  |
| 3.3 I know how to use Smart phone |  |  |  |  |  |
| *3.4* I know how to use Tabulate |  |  |  |  |  |
| *3.5* I am confident in using MS Word, |  |  |  |  |  |
| *3.6* I am confident in using MS Spreadsheet. |  |  |  |  |  |
| *3.7* I am confident in using MS PowerPoint |  |  |  |  |  |
| *3.8* I find it easy to teach through LMS |  |  |  |  |  |
| *3.9* I know how to teach through television |  |  |  |  |  |
| *3.10* I know how to communicate through Email |  |  |  |  |  |
| *3.11* I know how to communicate through Facebook |  |  |  |  |  |
| *3.12* I know how to find learning resource from the internet |  |  |  |  |  |
| *3.13* I have no computer skills, so I find it difficult to use |  |  |  |  |  |

RQ No.3(a) What kind of physical ICT facilitation do tutors access to facilitate their teaching process ?. (*Place a tick (****√*** *) on one of the given options)*

|  |  |  |
| --- | --- | --- |
| **4.0 What kind of physical equipment is accessible for you as a tutor in your college?** | **YES** | **NO** |
| *4.1* Personal computers |  |  |
| *4.2* Thin-client computers |  |  |
| *4.3* Laptop computers |  |  |
| *4.5* Smart phones |  |  |
| *4.6* Tablets |  |  |
| *4.7* Learning Management Systems |  |  |
| *4.8* Video conferencing systems |  |  |
| *4.9* Digital video cameras |  |  |
| *4.10* Interactive whiteboards |  |  |
| *4.11* Projection system |  |  |

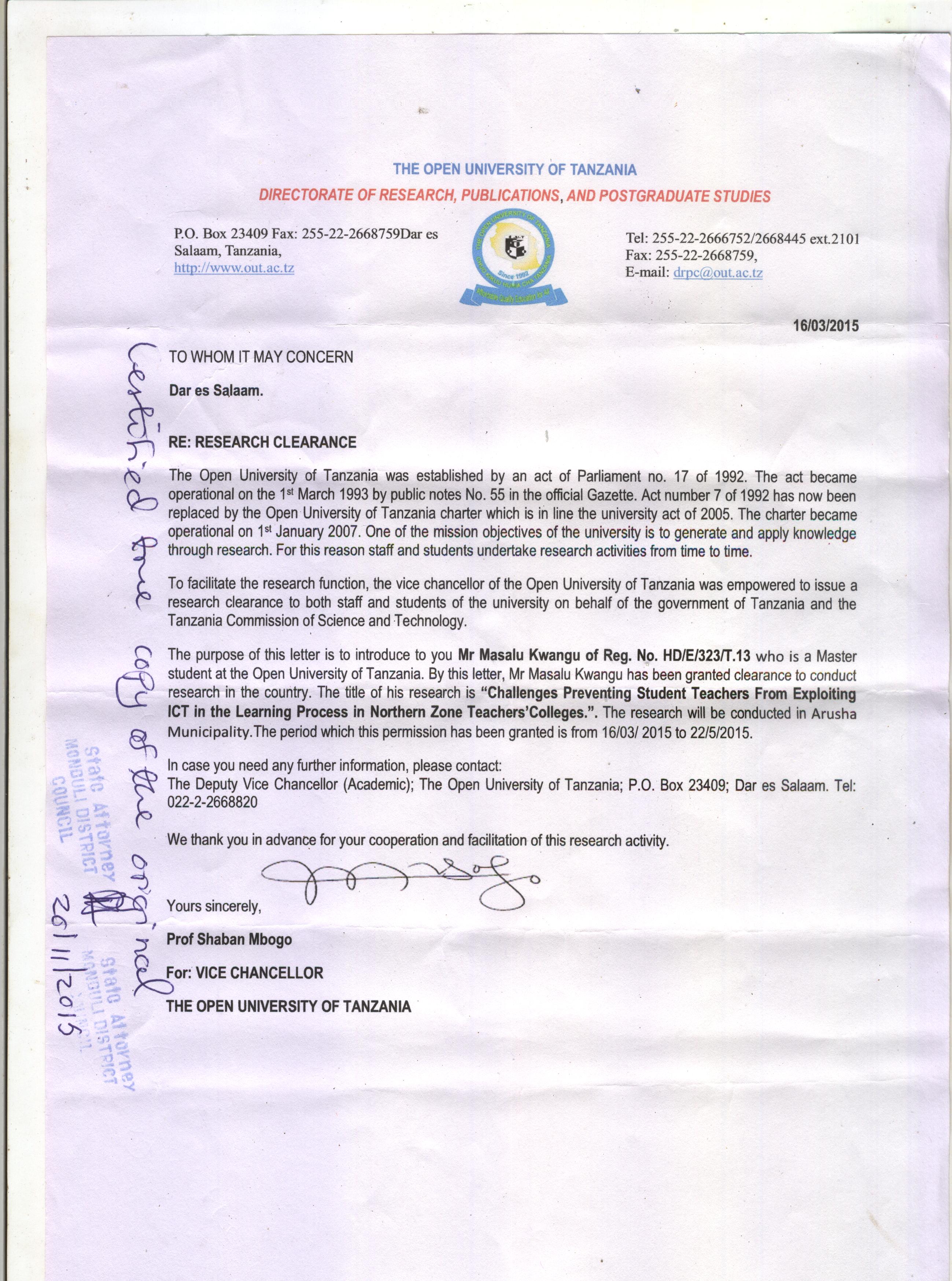
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| (b) Challenges of using ICT in teaching | | | | | |
| **5.0 What challenges do you face on using ICT in teaching** | **SA** | **A** | **NS** | **D** | **SD** |
| *5.1* Limited access to internet |  |  |  |  |  |
| *5.2* Un*-*reliable electricity in the college |  |  |  |  |  |
| *5.3*  Lack of standby generator to back up electricity system |  |  |  |  |  |
| *5.4*  High scramble for computers use in the college |  |  |  |  |  |
| *5.5* Lack of computer skills |  |  |  |  |  |
| *5.6* Consumes time during teaching process |  |  |  |  |  |
| (c) Where do you access ICT for teaching |  |  |  |  |  |
| **5.0 Where do you access ICT for teaching** | **SA** | **A** | **NS** | **D** | **SD** |
| 5.1 College computer laboratory |  |  |  |  |  |
| 5.2 Internet which connects my laptop |  |  |  |  |  |
| 5.3 Internet which connects my smart-phones |  |  |  |  |  |
| 5.4 Intranet which connects my smart-phones |  |  |  |  |  |
| 5.5 Intranet which connects my laptop |  |  |  |  |  |

RQ No.4(a) What institutional support is available for tutors in your college

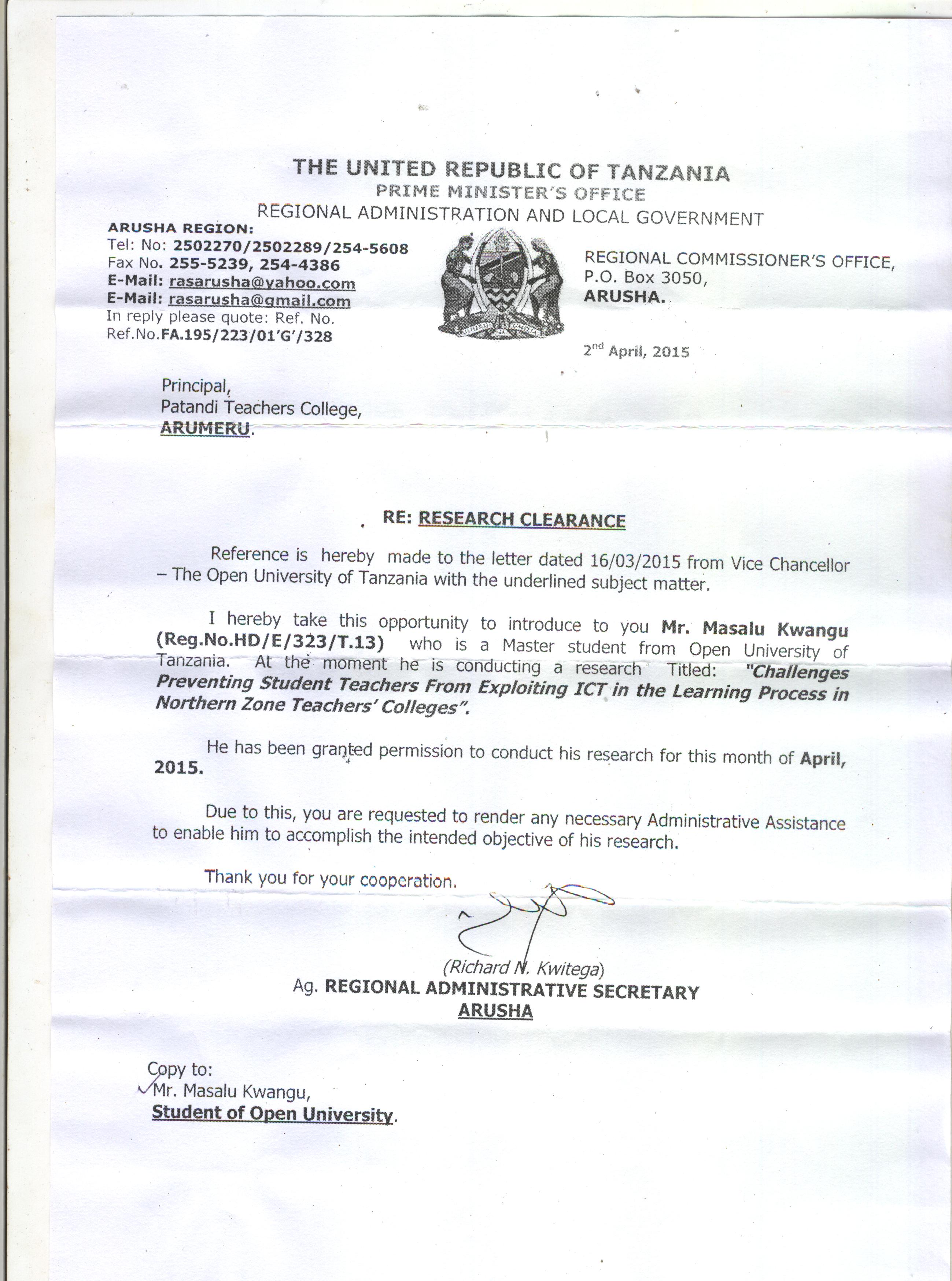
|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **6.0 What institutional support for tutors to use ICT** | **SA** | **A** | **NS** | | **D** | | **SD** | |
| *6.1* Free internet access |  |  |  | |  | |  | |
| *6.2* The institution have a wifi network |  |  |  | |  | |  | |
| *6.3* Provisionof training about technological skills to tutors |  |  |  | |  | |  | |
| 6.4 Policy to support ICT-based innovations by tutors in their teaching |  |  |  | |  | |  | |
| * 1. Training for tutor regarding pedagogical use of ICT in teaching |  |  |  | |  | |  | |
| (b) What other support is needed for effective use of ICT in teaching | | | | | | | | | |
| **7.0 What other support needed for effective use of ICT in teaching** | **SA** | **A** | | **NS** | | **D** | | **SD** | |
| *7.1*  Free internet access |  |  | |  | |  | |  | |
| *7.2* Extend computer lab access time |  |  | |  | |  | |  | |
| *7.3*  Enough laptops for tutors to use in teaching |  |  | |  | |  | |  | |
| *7.4* Incentives for tutor who use Learning Management System to teach |  |  | |  | |  | |  | |
| *7.5*  Capacity building on ICT integration in teaching |  |  | |  | |  | |  | |

**Thank you for your time!**

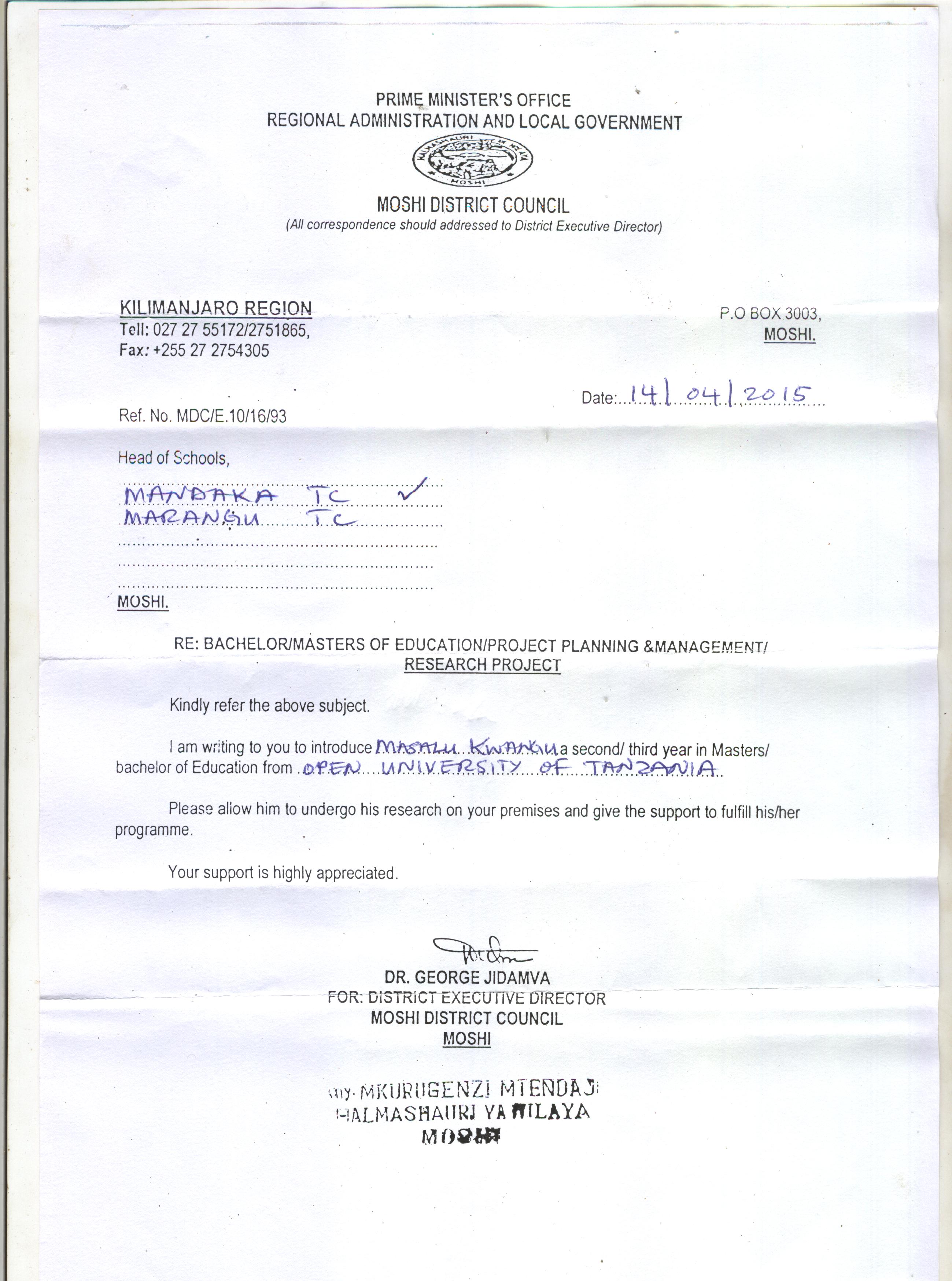
**APPENDIX 3: RESEARCH CLEARANCE**



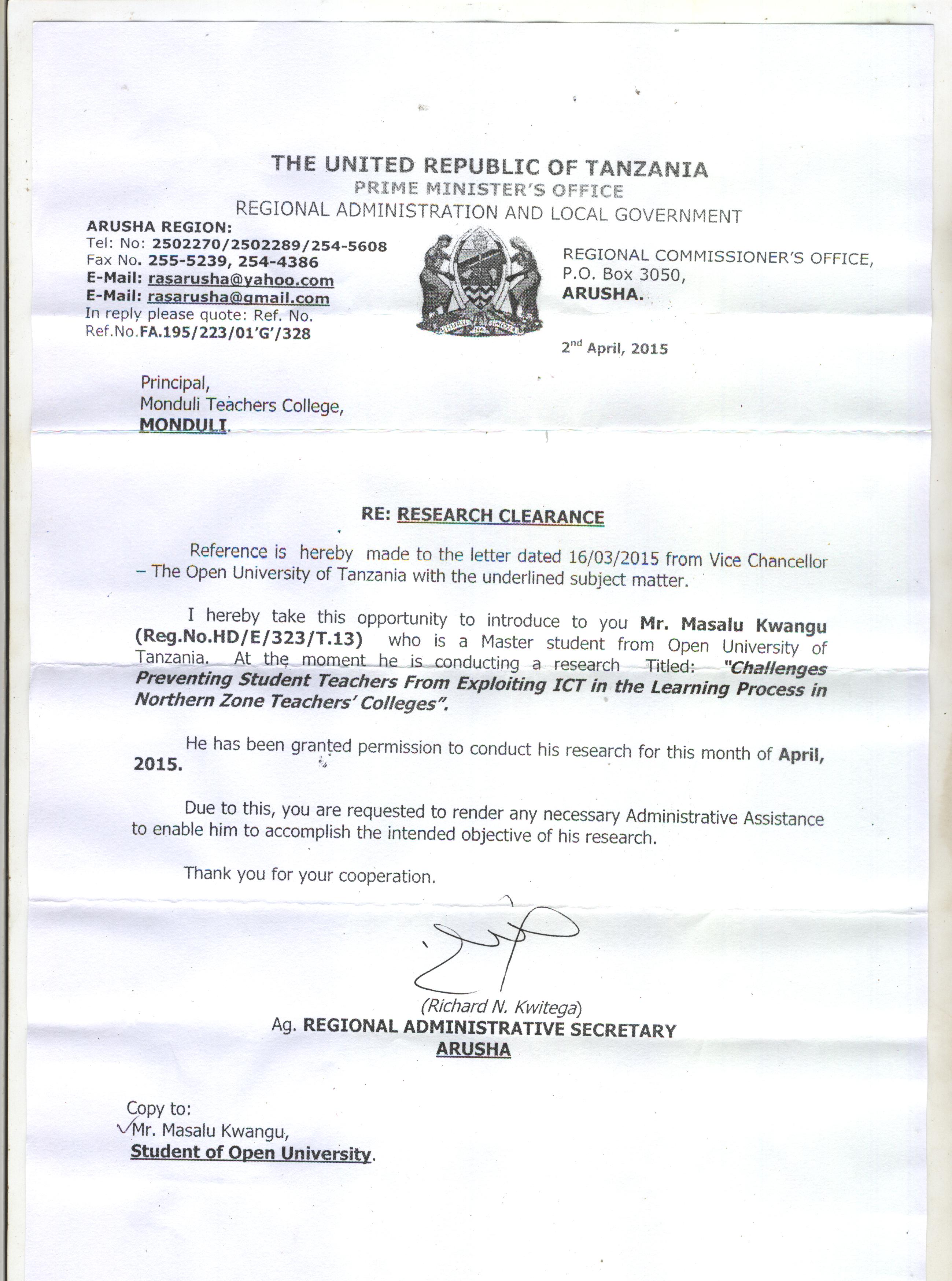
**APPENDIX 4: RESEARCH CLEARANCE PERMIT, PATANDI TC**



APPENDIX 5:RESEARCH CLEARANCE PERMIT, MANDAKA TC



APPENDIX 6: RESEARCH CLEARANCE PERMIT, MONDULI TC



APPENDIX 7: RESEARCH CLEARANCE PERMIT MARANGU TC

