

**USAGE OF THE AVAILABLE ICT FACILITIES IN TEACHING
AND LEARNING PROCESSES IN TANZANIA:
A COMPARATIVE ANALYSIS OF SELECTED SECONDARY
SCHOOLS IN MVOMERO DISTRICT AND MOROGORO
MUNICIPALITY**

By

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**A Dissertation Submitted in Partial Fulfillment of the Requirements for the
Award of the degree of Master of Arts in Education (MAED) of
Mzumbe University**

2020

CERTIFICATION

We, the undersigned, certify that we have read and hereby recommend for acceptance by Mzumbe University, dissertation entitled ***“Usage of available ICT Facilities in Teaching and Learning Process in Tanzania: A Comparative Analysis of selected Secondary Schools in Mvomero District and Morogoro Municipality”*** in partial fulfillment of the requirements for the award of Master degree of Arts in Education of Mzumbe University, Morogoro.

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DEDICATION

I dedicate this work to my beloved mother Rukia H. Ulimwengu (Rest in Peace) for her love. All the same, this dedication goes to my beloved daughters Careen and Catherine.

LIST OF ABBREVIATIONS

ADSI	-	African Digital School Initiative
BRN	-	Big Result Now
CD's	-	Compact Disc
MMSEO	-	Morogoro Municipal Secondary Education Officer
MVDSEO	-	Mvomero District Secondary Education Officer
DVD's	-	Digital Video Disc
GESCI	-	Global e-Schools and Communities Initiative
ICT	-	Information Communication Technology
MKUKUTA	-	Mpango wa Kukuza Uchumi na Kupunguza Umaskini Tanzania (National Strategy for Growth and Reduction of Poverty)
NGO's	-	Non Governmental Organizations
PEDP	-	Primary Education Development Plan
SEDP	-	Secondary Education Development Plan
TIE	-	Tanzania Institute of Education
TPB	-	Theory of Planned Behavior
TV	-	Television
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
URT	-	United Republic of Tanzania
WEO	-	Ward Education Office

ABSTRACT

This study compares the usage of available ICT facilities in teaching and learning process among secondary schools in Morogoro, Tanzania. Specifically, the study aimed to identify the availability of ICT facilities in schools; to find out the teachers and learners attitude on the usage of available ICT facilities and; to identify opportunities and challenges in usage of ICT facilities in teaching and learning process. The study was guided by constructivism and planned behavior theories. The study used qualitative and quantitative research approach through a multiple case study design, purposive and simple random sampling techniques were used to select 97 respondents from 8 schools in Morogoro.

Data were collected through, observations, interviews, focus group discussions and questionnaires. Quantitative data were analysed by the use of SPSS, and qualitative information were analysed through content analysis where different codes and categories were organized to form broad themes. Findings indicate variation in ICT facilities and attitudes among the studied respondents and schools. Urban and national schools had more facilities compared to rural and ward schools. To a great extent a positive attitude among majority of teachers and students towards ICT use revealed a favorable infrastructures and accessible ICT facilities. In Contrast, in some schools with inadequate facilities, the attitudes are implicitly negative.

In spite of the varied attitudes, the usage of ICTs seems to evidently support teachers in their daily pedagogical and administrative roles. Students also used ICTs in their learning responsibilities. However, the usage of ICTs in teaching and learning faced some challenges, such as shortage of computers and absence of internets access. These findings imply that, the implementation of ICT policies is more efficient in urban schools compared to rural schools. It is thus concluded that, effective usage of available ICTs depends on the infrastructural and contextual factors on one hand and intrinsic motivation of teachers and students on the other. This calls for continuous promotion of ICT integration across stakeholders for effective teaching and learning in schools.

TABLE OF CONTENTS

CERTIFICATION	i
DECLARATION AND COPYRIGHT	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
LIST OF ABBREVIATIONS	v
ABSTRACT	vi
LIST OF TABLES	xi
LIST OF FIGURES	xii
LIST OF APPENDICES	xiii
CHAPTER ONE	1
PROBLEM SETTING	1
1.1 Introduction	1
1.2 The Background of the Problem	1
1.3 Statement of the Problem	5
1.4 General Objective	5
1.4.1 Specific Objectives	6
1.5 Research Questions	6
1.6 Significance of the Study	6
1.7 Scope of the Study	7
1.8 Limitations of the Study	8
1.9 Organisation of the Study	8
CHAPTER TWO	9
LITERATURE REVIEW	9
2.1 Introduction	9
2.2 Conceptualisation of keywords	9
2.2.1 Information and Communication Technologies	9
2.2.2 ICT Usage in Education	10
2.2.3 ICT Facilities	10
2.2.4 Concept of Teaching	10
2.2.5 Concept of Learning	11

2.3 Theoretical Literature Review.....	11
2.3.1 Constructivism Learning Theory	11
2.3.2 Theory of Planned Behaviour	13
2.4. ICT Policies in Tanzania.....	15
2.4.1 ICT Policy 2003	15
2.4.2 ICT Policy 2007	16
2.5 Empirical Literature Review	16
2.5.1 Uses of ICTs in Teaching and Learning Processes.....	17
2.5.2 Perceptions in the use of ICT facilities in schools	18
2.5.3 Challenges on the use of ICT Facilities in Schools	20
2.5.4 Availability of ICT Facilities in Schools	21
2.5.5 Comparison between the Schools in the uses of ICT.....	21
2.6 Research Gap	22
2.7 Conceptual Framework.....	23
CHAPTER THREE	25
RESEARCH METHODOLOGY	25
3.1 Introduction.....	25
3.2 Research Approach	25
3.3 Research Design.....	26
3.4 Area of the Study	26
3.5 The Study Population.....	28
3.6 Sampling technique and Sample size.....	28
3.6.1 Sample size.....	28
3.6.2 Sampling techniques	29
3.7 Data Collection Methods	30
3.7.1 Interview	30
3.7.2 Focus Group Discussion	30
3.7.3 Observation	31
3.7.4 Questionnaire	31
3.7.5 Documentary Review.....	32
3.8 Data Analysis	32

3.9 Validity and Reliability	32
3.10 Ethical Considerations	33
CHAPTER FOUR.....	34
DATA PRESENTATION AND ANALYSIS OF FINDINGS	34
4.1 Introduction	34
4.2 Attributes of Respondents	35
4.2.1 Sex of the Respondents	36
4.2.2 Education Level	36
4.2.3: Age Group of Respondents	37
4.2.4 Occupation/Positions of Respondents.....	38
4.3 The level of ICT Facilities availability in Mvomero and Morogoro Districts	39
4.3.1 The level of ICT Facilities availability in Morogoro Municipal choools	39
4.3.2 Availability of ICT facilities in selected secondary schools in Mvomero	42
4.3.3 Comparison of available ICT facilities between selected secondary schools in Morogoro Municipal and Mvomero District.....	43
4.4 Attitudes in usage of ICT facilities in teaching and learning.....	45
4.4.1 Teachers’ attitudes towards the use of available ICT facilities.....	45
4.4.2 Students’ attitudes in usage of available ICT facilities in learning.....	49
4.5 Challenges in Integrating ICT Facilities to Teaching and Learning	53
4.5.1 Inadequacy of ICT Facilities	53
4.5.2 Instability of Power supply	54
4.5.3 Inadequate ICT Knowledge and skills	55
4.5.4 Rigidity of some Teachers to Integrate ICT in Curriculum Pedagogy	56
4.6 Opportunities of using ICT Facilities in Teaching and Learning	57
4.6.1 ICT facilities help teachers to prepare and storing teaching materials	57
4.6.2 ICT facilities help teachers to apply varieties of teaching methods.....	58
4.6.3 Uses of ICT facilities help student to have scholarship opportunity	58
4.6.4 Uses of ICT facilities and students’ interaction with learning materials	59
4.7 Summary of the chapter	60

CHAPTER FIVE	62
DISCUSSION OF THE FINDINGS	62
5.1 Introduction	62
5.2 Demographic Information	63
5.3 Availability of ICT Facilities	64
5.4 Teachers and learners’ attitude towards the uses of available ICT facilities	66
5.5 Opportunities of using ICT facilities in teaching and learning	67
5.5.1 ICT facilities help teachers to prepare and store teaching materials	68
5.5.2 Uses of ICT facilities to support teaching methods	68
5.5.3 Uses of ICT facilities and students’ scholarship opportunity	69
5.6 Challenges of using ICT in teaching and learning process	70
5.6.1 Inadequacy of ICT equipments	70
5.6.2 Lack of internet and electricity in schools	70
5.6.3 Unsupportive ICT environment in schools	71
5.6.4 Shortage of in-service training to teachers	71
5.7 Summary of chapter five	72
CHAPTER SIX	74
SUMMARY AND CONCUSSION	74
6.1 Introduction	74
6.2 The summary of the study	74
6.3 Conclusion	75
6.4 Policy implications and recommendations	77
6.5 Recommendations for further studies	79
REFERENCES	80
APPENDICES	90

LIST OF TABLES

Table 1.1: The targeted secondary schools from both districts.....	7
Table 2.1: The Influence of the Planned Behaviour Theory.....	14
Table 4.1: Anonymous names for respondents	35
Table 4.2: The Number of Available ICT facilities from Morogoro schools	40
Table 4.3: Availability of ICT services available in Morogoro Municipal schools..	41
Table 4.4: The available ICT facilities observed in Mvomero District secondary school.....	42
Table 4.5: The availability of ICT services in Mvomero secondary schools.....	42
Table 4.6: Differences in ICT facilities between the two districts.....	44
Table 4.7: The number of ICT trained teachers in selected secondary schools	55

LIST OF FIGURES

Figure 2.1: Conceptual framework	23
Figure 4.1: Sex	36
Figure 4.2: Education level of the respondents.....	37
Figure 4.3: Age Group of Respondents.....	38
Figure 4.4: The pyramid of the occupation of respondents	39
Figure 4.5 The available ICT facilities between MMS & MVS schools	43
Figure 4.6: Distribution of computers in selected secondary schools.....	53

LIST OF APPENDICES

Appendix I:	Anonymous Names for Respondents' Confidentiality	90
Appendix II:	Interview Guide for MSEO	91
Appendix III:	Interview Guide for Heads of Schools	92
Appendix IV:	Interview Guide for Subject Teachers	93
Appendix V:	Interview Guide for A Focused Group Discussion to Student's in Secondary School.	95
Appendix VI:	Observations Checklist/Guide	96
Appendix VII:	Checklist For Subject Teachers	97
Appendix: VIII:	Questionnaire For Teachers Attitudes Toward The Usefullnes Of Available ICT Facilities in Schools. Put (V)	98
Appendix: IX:	Questionnaire For Student Attitudes Toward Usefullnes Of Available ICT Facilities in Schools. Put (V)	99

CHAPTER ONE

PROBLEM SETTING

1.1 Introduction

The chapter provides background of the research problem where key issues on the usage of the available ICT facilities in teaching and learning processes in secondary schools in Tanzania are discussed focusing on the ICT trends in Tanzanian context. It is planned into sections starting with background of the problem, statement of the research problem, objectives of the study, research questions, significance of the study, limitation of the study and organization of the problem.

1.2 The Background of the Problem

Information Communication Technology (ICTs) can be articulated as technological devices like computers, software, networks, satellite links, and related systems that allow people to access, analyze, create, exchange, and use data, information, and knowledge in ways that were almost conceivable (Barakabitze et al., 2019). Its usage can be traced back from the evolution of ICT in the museum galleries where the technology was used to design websites to provide links between galleries and users/online services (Parry & Sawyer, 2005).

Apart from using ICT in designing websites and links, many countries in the world including Tanzania adopted the technology in different sectors. Among the sectors which adopted ICT were agriculture, business, administration and military as well as education in order to have knowledge and skills to access information and other activities for the country development.

After independence in 1960s, the Tanzanian government provided radios among the ICT facilities (Hare, 2007) in primary and secondary schools to enable students to listen to education programs designed by the Ministry of education in collaboration with and broadcasted by Radio Tanzania, the state radio station. In 1965 the Tanzania government officially started to use ICT in its official activities by making the installation of the first mainframe computer to the Ministry of finance which was

used to keep records and other important information. Hare (2007) saw that, in 1974 the Tanzanian government issued an order to ban the use of ICT equipment like television, overhead projector, and computer whereby the private sectors as well as government sectors were prohibited to make any importation for computers and their related facilities. This order was lifted in 1984 and since then the country has been come up to use and adopt ICT. The banning of ICT facilities including computer and their related equipment in Tanzania lowered the quality of education and other social-economic developments (Hare, 2007). The action of the government to prohibit the use of ICT in the mid-1980s did not correspond to the changing market and technological conditions in the country. Hence, the government decided to establish new National Policy to safeguard the usage of ICT in various sectors for sustainable development (National Science and Technology Policy, 1996). The usage of ICT in education in 1995 focused on improvement of ICT to ensure the quality of education in all levels. It also governed all education policies and programs in the countries including the Education and Training Policy of 1995, the Primary Education and Development Plan (PEDP) 2002-2006, and the Secondary Education Development Plan (SEDP) 2004-2009 (URT, 2010).

In 2002 the government under the Ministry responsible for education with the support from the International Institute for Communications Development (IICD) put more efforts by conducting workshops for all stakeholders to raise awareness of the benefits and the potential gains in adopting ICT in the education sector. This in turn elevated ICT to a priority area in education planning. In 2003 the Ministry of education introduced the ICT policy for the basic education with the aim of using ICT policy in the basic education to ensure the education quality and relevance. The URT (2007) articulated that, the policy emphasized the development of infrastructure in the education system to enable the usage of ICT facilities in different school activities including the teaching and learning process.

According to Hare (2007) in 2005 the Tanzanian government collaborated with other organization like Tanzania Computers Literacy in Secondary Schools Trust Fund to initiate a project proposed to extend the usage of ICTs, especially the school online.

That enabled the ministry of education to use the ICT facilities to enhance critical thinking and good education delivery. The ministry started by implementing ICT in teachers' colleges by providing computer instruction to allow facilitators to utilize ICT facilities in their teaching process. The NGOs committed to provide and repair computers facilities to be used in secondary schools, and provide training to students and teachers on how to use facilities (Hare, 2007). Tutors technicians are trained to offer maintenance and installation services for both old and new computer facilities (Kotsik, 2003).

In the year 2007, the Ministry responsible for education introduced ICT policy to ensure application and uses of ICTs in basic education. According to URT (2007) ICT policy ensured accessibility, equitability and awareness of using ICTs in all level of education from primary school, secondary schools, and colleges. The ICT policy of 2007 declared the uses of ICT in education to allow teachers, educators, school managers and leaders to use ICT facilities efficiently to enhance effective teaching towards the quality education in the country. These policies paved the way for conducive environment in advancement of technology which has transformed the teaching technique to the active learning. The facilities are also used for transferring information, communication, to create learning material, searching of information for learning and presentation of subject contents to students (URT, 2007). The policy also explains the problems which faced the usage of ICT facilities in teaching and learning process in basic education in Tanzania. Some of these problems include insufficient number of qualified technical personnel and inadequacy of infrastructure. Others are inadequacy training and capacity building to teachers and administrators, lack of awareness and confidence, as well as insufficient of ICT resources in education sectors (URT, 2007).

The government promotes the usage of ICTs to implement several programs in secondary schools with the aim of employing technology in teaching and learning activities. Various ICT programs have been introduced in secondary schools like *Tanzania beyond tomorrow*, the *e-School Project* and the *ICT curriculum*. All these programs help teachers to establish learner centred approach since it strengthens

student's competitiveness. In ensuring and monitoring the provision of quality education in secondary schools in Morogoro Municipality and Mvomero District, the education officers have tended to encourage school administrators to use ICT facilities in education activities (Timu, 2016). However, the districts faced some challenges including inadequacy of ICT facilities to be integrated with curriculum activities in schools (Ngeze, 2017). For instance, the study conducted by Mafuru and Guirong (2011) shows that, some rural schools in Mvomero District use old typewriters and duplicating machines to facilitate academic activities due to absence of computers and other ICT peripherals.

Some studies conducted in Morogoro Municipality and Mvomero District have shown a need to motivate secondary school teachers on how to use their personal ICT facilities like laptops and smart phones in educational delivery because 77% possess either laptop or smart phones or both (Ngeze, 2017). Therefore, they should be provided with adequate skills and knowledge on how to involve learners from their basic knowledge on using computer facilities on finding various pedagogical roles. Unlike Morogoro Municipality, studies have shown that some secondary schools in Mvomero District have little exposure to digital environment due to inadequate facilitators. This is also due to absence of electricity to support the uses of ICT facilities and services like radio, television, smart phones, and internet networks and other related teaching and learning ICT media (Salum, 2013; Timu, 2016).

The infrastructural contextual differences in terms of facilities between urban and rural schools makes it imperative to make comparative analysis on the usage of the available ICT facilities in teaching and learning process in secondary schools in Morogoro Municipality and Mvomero Districts. The current study stems from limited literature on the usage of some ICT facilities in education context due to the perceptions, attitudes, willingness, and motivational environment to teachers and students. Many schools have a shortage of ICT equipments, unfriendly infrastructures as well as little knowledge, skills and awareness to teachers and students on usage of available ICT facilities in teaching and learning processes. Moreover, most of the teachers have personal smart phones and computers which can

be used in teaching and learning process. Similarly, students also have access to these devices at home from their parents and other relatives which can be useful in learning process. These can help facilitators and learners to manage educational reforms and improve their teaching and learning approaches by engaging learners to participate in teaching and learning activities (Kavisha, 2016; Mtitu, 2014; Murthy et al., 2012).

1.3 Statement of the Problem

The government of Tanzania under the Ministry responsible for education has put great effort to ensure provision of ICT facilities in schools, infrastructures, training to teachers and available ICT syllabus were provided. Other educational stakeholders include Tanzania Institute of Education (TIE), Tanzania Communication Regulation Authority (TCRA), United Nations (UN), UNICEF and Global e-Schools Community Initiative (GESCI) under programme called African Digital School Initiative (ADSI). The willingness and intrinsic motivation were among the problem facing teachers and students into usage of ICTs in teaching and learning process (Al-Mamun, Clement, & Habibu, (2012). Most of teachers and students did not use the available ICT facilities due to several factors such as lack of motivation, internet, electricity, as well as on-job training and awareness. Now days, teachers own smart phone and laptop but do not use them in teaching due to lack of awareness and willingness as well as intrinsic motivation rather than chatting, emailing and watching movies. Regardless of the efforts made by the government with other educational stakeholders to scale up the usage of ICT facilities in basic education, the secondary education still experience deprived implementation usage ICTs in teaching and learning process. This situation triggered the study to compare the usage of available ICT facilities in teaching and learning process in secondary schools between Morogoro Municipality and Mvomero District in Morogoro, Tanzania.

1.4 General Objective

The general objective of the study was to make a comparative analysis on the usage of the available ICT facilities in teaching and learning process between secondary schools in Morogoro Municipal and Mvomero District.

1.4.1 Specific Objectives

The study was guided by the four specific objectives namely to:

- i. To identify the available ICT facilities for teaching and learning process in secondary schools.
- ii. To find out the teachers and learners attitude towards the uses of available ICT facilities in teaching and learning process in secondary schools.
- iii. To identify opportunities gained by secondary schools in using the available ICT facilities in teaching and learning process.
- iv. To identify challenges facing secondary schools in using the available ICT facilities in teaching and learning process.

1.5 Research Questions

The study was guided by the four questions namely to:

- i. Which ICT facilities are currently available and employed in teaching and learning processes from the selected schools?
- ii. What are the teachers and learners' attitudes towards the uses of available ICT facilities in teaching and learning process in secondary schools?
- iii. What are the opportunities gained by secondary schools in using the available ICT facilities in teaching and learning process in secondary schools?
- iv. What are the challenges facing secondary schools in using the available ICT facilities in teaching and learning process in secondary schools?

1.6 Significance of the Study

This research compares the usage of available ICT facilities in teaching and learning process in Tanzania between selected schools in Morogoro Municipality and Mvomero District. The study notifies teachers and student's importance of using the available ICT facilities in their schools, hence initiated their readiness and attitude toward using it in effective way.

On other hand, the study informs policy makers, curriculum planners and implementers on how to plan well curricular for teacher's colleges and universities on the usage of available ICT tools in education. To the study also informs the responsible ministry of education to improve ICT infrastructures in schools in order to ensure easy accessibility of ICT services in teaching and learning activities; equitable distribution of ICT equipment, services and training to teachers. Lastly, the study is very important to other educational stakeholders for the development of their educational sector within and outside the country.

1.7 Scope of the Study

This study was conducted in Morogoro Region, involving eight secondary schools located in Morogoro Municipality and Mvomero District. The research involved national schools and Ward schools to compare accessibility, availability, perceptions, challenges and opportunities of the usage of existing ICT equipments.

Table 1.1: The targeted secondary schools from both districts

Study area	The selected secondary schools for the study			
Morogoro Municipality	Morogoro	Kihonda	Kilakala	Kolla Hill
Mvomero District	Mzumbe	Dakawa	Kipera	Mongola

Source: Researcher, 2020.

The above mentioned schools are among the secondary schools in Tanzania which received training from Global e-Schools and Communities Initiative (GESCI) under programme called African Digital School Initiative (ADSI). The heads of the school, teachers and students were visited as a source of data for the study. Municipal Education Officers and Ward Education Officers were also interviewed as education stakeholders in order to know the different experiences, attitudes and perceptions, including strategies used to involve school committee and parents on the usage of the available ICT facilities to be integrated in teaching and learning activities.

1.8 Limitations of the Study

Marshall and Rossman (1999) suggested that, there are no research activities without limitations. This study faced different challenges during data collection due to the outbreak of Covid-19 pandemic in Tanzania. The government of Tanzania decided to close all schools from kindergarten up to university levels in order to prevent the spread of the pandemic in the country. Honorable Majaliwa Kassim Majaliwa, the Prime minister of the Republic of Tanzania announced to close all schools and universities on 18th march until further notice. Hence the closure of the schools leads some changes in data collection forms and schedules. Some respondents were not ready to participate in the study and they did not even pick up phones. The other limitation was the unwillingness of respondents to give their response in time.

1.9 Organisation of the Study

The study is organised into six chapters, chapter one focuses on problem setting as discussed above. Chapter two contains literature review which includes both theoretical and empirical review as well as conceptual framework underpinning the study. Chapter three discusses the research methodology used during the study. Chapter four describes the presentations and analysis of the finding. Chapter five contains discussions of the research findings, and chapter six contains summary, conclusion, policy implications and recommendation, as well as recommendation for further studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature in relation to the usage of available ICT facilities in teaching and learning processes in secondary schools. The chapter covers the theoretical part, empirical part, research gap and conceptual framework.

2.2 Conceptualisation of keywords

This part presents the definition of key terms used in the study which revealed the all concept of the research includes the Information and Communication Technology (ICT), ICT integration in Education, ICT facilities, teaching and Learning process.

2.2.1 Information and Communication Technologies

According to Asafe (2014), Information Technology Communication is defined as the convergence of audio-visual, telephone and computer networks through a link system. It is a combination of all these elements, capped by a vision on how technology can help an organization to reach its goals. ICTs are used for communication and to transmit, store, create, share or exchange information. The forms of technology used are radio, television, video, projectors computer and network where by hardware and software are included in order to simplify teaching and learning process in schools (American Library Association, 1983; Ebijuwa, 2005; ToAnyakoha, 2005; URT, 2007).

The Information and Communications Technology (ICT) has also been explained as an umbrella term that includes any communication devices or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning (Khan, 2012). Therefore, radio, television, cellular phones, projector and computer are used in education to facilitate teaching and learning processes to be well achieved

in order to meet teachers and students objectives according to the curriculum contents.

2.2.2 ICT Usage in Education

The ICT usage in education refers to the uses of ICT facilities like computer, CDs, DVDs, projector, animation, television, and other software like word document, Google as well as Wikipedia in order to search teaching and learning materials and support teachers to have varieties teaching pedagogy and approaches (Simataa, 2015). This means that the ICT in teaching and learning companied with audio-visual, telephone and computer networks as a facilities to influence teachers and students to have teaching and learning recourses for knowledge and skills maximization in education process to reach educational goals.

2.2.3 ICT Facilities

ICT facilities are those technological tools which used to facilitate communication in education where by teachers and students integrate with to search information for their teaching and learning processes according to curriculum content to reach educational goals (González-Sanmamed, & Sangrà, 2010). The ICT tools used in educational context can be categorized into two major components includes software and hardware which are computer, Projector, Digital cameras, Printer, Photocopier, Tablets, Popplet, Pen Drive, Ipods, Ipads. Smart Phones, Webboards, Scanners, Microphones, interactive white board, DVDs and CDs, Radio, Television, Flash discs and video Games, Math problem solving software, Vocabulary software, Spelling software, and Microsoft publisher (Anthon, Gavifek, Kunjappan, & Ramasamy, 2016).

2.2.4 Concept of Teaching

According to Sequeira (2012) teaching is a set of events, outside the learners which are designed to support internal process of learning. Teaching is the process of attending to people's needs, experiences and feelings, and intervening so that they learn particular things, and go beyond the given. Teaching also is how to structure a lesson,

manage classes, assess for learning for learning and so on. Sometimes, as (Palmer, 1998).

2.2.5 Concept of Learning

The concept of learning is about a change: the change brought about by developing a new skill, understanding a scientific law, changing an attitude. The change is not merely incidental or natural in the way that our appearance changes as we get older. Learning is a relatively permanent change, usually brought about intentionally. When we attend a course, search through a book, or read a discussion paper, we set out to learn (Sequeira, 2012).

2.3 Theoretical Literature Review

A theory is a set of systematically interrelated constructs and propositions intended to explain and predict a phenomenon or behavior of interest, within certain boundary conditions and assumptions (Bhattacharjee, 2012). Theory also can be defined as a statement of relationships between units observed or approximated in the empirical world (Wacker, 1998). Constructivism theory is among the theories that guided the study due to its implication in learning activities and supported by Theory of Planned Behaviour. These theories explain how learning is taking place according to the interaction of environment as well as previous experience and individual behaviour shapes the intention of the person to perform certain activities.

2.3.1 Constructivism Learning Theory

According to Elliott et al. (2009), Constructivism theory believed that learners could construct their own knowledge and skills through the interaction of environment and previous experience. The theory was built upon the premise of a social construction of reality (Searle, 1995). John Dewey, Jean Piaget and Jerome Bruner are among the advocates of constructivists who believed that experience determined the learners' capability of understanding to construct meaning. Other constructivists like Vigotsky and Bandura added that the knowledge gained through experiences have to be accompanied by social interaction with environment including teachers and materials (Teater, 2015).

The main idea of constructivism is how human learning is constructed, where by learners build their new knowledge upon the previous learning experience. Hence, the prior knowledge influences what new or modified knowledge of an individual was constructed from new learning experiences (Phillips, 1995). Both Piaget and Vigotsky are constructivists who believe that children author their own knowledge (Santrock, 2009). Thus individuals use their own mental constructs to make sense of their experiences which emphasizes teachers to aid students to create their own understanding rather than lecturing. The theory therefore, put students at the centre during teaching and learning process so as to make learners to be critical thinkers through consultation and coaching.

The theory needs students to be exposed to the learning resources and constructs their own ideas through incorporation concerning the subject matter. It requires teachers to use different strategies to help students solving different problems in their subject contents. Constructivist teachers encourage students to constantly assess how the activity is helping them gain understanding. The theory therefore used in this study to explain how the usage of available ICT facilities helps teachers and students in teaching and learning process. The usage of available ICT facilities like computers, projectors, and TVs helps teachers and students to learn and teach different materials related to the relevant subjects. ICT facilities enable teachers to have different varieties of teaching methods like learner centered approach whereby students were given chance to learn themselves or under teacher's guidance.

This theory is in line with the same theory used in the study conducted by Mtindya (2017) to support the way ICT used among secondary school teachers in the teaching and learning process. According to Mtindya the theory supports the learner centered approach due to its emphasis on learning by doing as explained by Dewey. The theory is very useful for today's educationist where the country wants to move from the current state of economy to the middle economy of 2025. Mtindya added that in order to meet the education goals learners should be prepared to be

independent learners in teaching and learning process by focusing their needs which is between curriculum content and the teaching methods used.

Almasi, Kimaro and Machumu, (2018) also spoken that “constructivism view of ICT as a pedagogical tool requires the restructuring and reorganizing of traditional teacher and student relationship whereby collaboration and engagement take centre stage, and learner-centered seems to dominate the undertakings. Therefore, the uses of ICT facilities in schools stimulates the relationship and interaction between teachers and students in teaching and learning processes whereby students have access to learn independently or under teacher’s guidance. Therefore, the use of ICTs by students is meant to assist them to be more independent without depending from the teacher as a source of knowledge (Kishan, 2007).

2.3.2 Theory of Planned Behaviour

According to Ajzen (1991), Theory of Planned Behavior (TPB) focuses on the behavior change of an individual or group of people due to the attitudes and perception under social interaction. The theory was intended to explain all behaviors over which people have the ability to exert self-control. Ajzen and Fishbein (1980) assert that a human behavior have been influenced by own perceptions, attitudes and expectations. Cameron, Ginsburg, Mendez and Westhoff (2012) suggested the key component of TPB model is behavioral intent; behavioral intentions are influenced by the attitude about the likelihood that the behavior will have the expected outcome and the subjective evaluation of the risks and benefits of that outcome. The theory added that the behavioral achievement depends on both motivation (intention) and ability (behavioral control). Table 2.1 explains more on the influence of the Theory of Planned Behavior:

Table 2.1: The Influence of the Planned Behaviour Theory

Attitudes	This refers to the degree to which a person has a favourable or unfavourable evaluation of the behaviour of interest. It entails a consideration of the outcomes of performing the behaviour.
Behavioural intention	This refers to the motivational factors that influence a given behaviour where the stronger the intention to perform the behaviour, the more likely the behaviour will be performed.
Subjective norms	This refers to the belief about whether most people approve or disapprove of the behaviour. It relates to a person's beliefs about whether peers and people of importance to the person think he or she should engage in the behaviour.
Social norms	This refers to the customary codes of behaviour in a group or people or larger cultural context. Social norms are considered normative, or standard, in a group of people.
Perceived power	This refers to the perceived presence of factors that may facilitate or impede performance of behaviour. Perceived power contributes to a person's perceived behavioural control over each of those factors.
Perceived behavioural control	This refers to a person's perception of the ease or difficulty of performing the behaviour of interest. Perceived behavioural control varies across situations and actions, which results in a person having varying perceptions of behavioural control depending on the situation.

Source: Cameron, Ginsburg, Mendez and Westhoff (2012).

The theory is useful in this study due to its idea that an individual behavior shapes the intention of a person to perform a certain activities. The Theory of Planned Behavior represents the objective number two in this study on the teachers and students attitude towards the usage of available ICT facilities in teaching and learning process in secondary schools. Therefore, the usage of available ICT facilities in teaching and learning activities depend on the teacher's and student's behavior on how to find different materials for their wide understanding inside and outside the classroom. The theory was also used due to its general rules which state that, the stronger the intention to engage in behavior, the more likely should be its performance (Ajzen, 1991). The theory also based under the ground that, person has a decision to perform or not to perform which is relevant to this study which need teachers and students to change their behavior and use the available ICT facilities to increase their performance through interaction with teaching and learning material. Generally, Theory of Planed Behavior was used in this study to explain the teachers and students attitudes, behavioral intention, subject norms, social norms, perceived power and perceived behavioral control towards the usage of available ICT facilities in teaching and learning process in secondary schools.

Planned behavior theory is also supported by Ngeze (2017) who argued that the theory of planned behavior was adopted to explain the behavioral intention of lecturers to use technology or ICT in universities. The behavioral intention to use technology has an impact on how lectures are delivered to the student, and subsequently expose them to the latest and updated information about education. This reveals that, the usage of ICT facilities in teaching and learning process depend on the teacher's and student behavior and willingness to adopt technology to build active learning in the classroom.

2.4. ICT Policies in Tanzania

The government of Tanzania introduced two ICT policies. These are ICT policy of 2003 and ICT policy 2007 for basic education. The purpose of these policies was to ensure effective improvement of ICT accessibility, equity and quality of education in Tanzania. The Ministry of education believed that the integration of ICT in education will pave the way to the development of the nation economically, socially, politically and culturally. Therefore, through the uses of ICT facilities in education, teachers and students they can communicate and to transmit, store, create, share or exchange information.

2.4.1 ICT Policy 2003

The National ICT Policy 2003 is aligned to the following vision statement:

Tanzania is to become a hub of ICT Infrastructure and ICT solutions that enhance sustainable socio-economic development and accelerated poverty reduction both nationally and globally.

The overall mission of this Policy is:

To enhance nation-wide economic growth and social progress by encouraging beneficial ICT activities in all sectors through providing a conducive framework for investments in capacity building and in promoting multi-layered co-operation and knowledge sharing locally as well as globally.

Therefore, the ICT policy was introduced in order to ensure inter-connected world, knowledge and information are becoming corner stone's for the development of a society, as is the ability to communicate. The policy proved that few educational institutions have computer laboratories and other multi-media facilities. These facilities are more in private schools than in public schools. Even fewer of these facilities are linked to the Internet (URT, 2003). Due to several challenges like inadequate of ICT facilities and political change the Ministry of education introduced new ICT policy of 2007 for basic education.

2.4.2 ICT Policy 2007

In 2007, the United Republic of Tanzania introduced ICT policy to guide the integration of ICT in basic education. The policy covers Pre-primary, Primary, Secondary and Teacher Education, as well as non-formal and adult education. The policy expected to increase the number of quality teachers, through improved pre-service and in-service training and better provision of teaching and learning materials. The application of ICT policy and integration of ICT facilities in schools leads to the effectiveness, efficiency, accessibility, equity and quality of education sector in Tanzania (URT, 2007). The objectives of ICT policy (2007) for basic education are to promote the uses of ICT in education; to ensure the accessibility of ICT resources by teachers, students, and administrators. Some of challenges foreseen in this policy are inadequate infrastructure, insufficient numbers of qualified technical personnel, inadequate training and capacity development, Lack of awareness, Insufficient financial resources, and insufficient prioritization of ICT in the implementation of educational and development policies (URT, 2007).

2.5 Empirical Literature Review

Empirical literature review in this study focuses on research papers and articles done by different authors. The reviews categorises into parts according to the content and research objectives of this study.

Part one reviewed literature related to the uses of ICTs in teaching and learning processes; Part two include reviewed literature related to the perceptions and attitudes of teachers and students on usage of available ICT facilities in teaching and learning process; Part three include reviewed literature related to the opportunities and challenges facing teachers and students on the usage of ICT facilities in schools and the last part include reviewed literature related on availability of ICT facilities in schools. These literature reviewed helps to have wide knowledge and deep understanding on how the available ICT facilities were employed in selected secondary schools.

2.5.1 Uses of ICTs in Teaching and Learning Processes

Various literature and researches support the value of ICT on improving the quality of education by using it as a pedagogical tool, source of knowledge as well as teaching approach in schools. According to Hijalmarsson (2004), the ICT technology integration in education has been proven to have positive effects on teaching approaches due to its ability of motivating learners on their attitude towards the subject content. The uses of ICTs in classrooms help teachers to guide student to learn independent by searching, watching videos as well as engaging to e-learning platform for discussion. Kamugisha (2019) affirmed that, in order to motivate learners in teaching and learning process, teachers should prepare and integrate the available resources adequately. Furthermore, Kamugisha observed that students of the experimental school showed considerable change in performance in the post test compared to the students of the control school where teaching and learning material are inadequate.

Besides low ICT usage as a pedagogical tool in education delivery due to the illiteracy, unsupportive infrastructure, and lack of training, the successful utilization of ICTs in teaching and learning depends on adoption, development and transformation of ICT as pedagogical tool in schools toward learner centered environment (Almasi, Kimaro, & Machumu, 2018). Therefore, teachers and students should adopt new technology in order to cope with development of technology in the word. Chepkemoi and Wanyonyi (2017) emphasized that, the provision of ICT

facilities in schools is not enough to ensure effective integration of ICTs in teaching and learning. But, most of teachers did not know the benefit of integrating it in education activities. They suggested that in order to meet the Kenyan 2030 vision in education the adoption of ICT in education is inevitable.

Besides the adoption of ICT in education, the most important thing is the teacher's competence in using ICTs, perceptions, and how they organize materials in teaching and learning through ICT in schools. Lack of the teacher's competencies, inefficient support on the uses of basic ICT facilities and unsupported ICT environment influencing low level of ICT use in Tanzania is a threat to ICT use (Bada, Kalegele, Kihoza, & Zlotnikova, 2016). They also concluded that, mobile phones were not used in the study as the ICT facilities.

Critically, due to the development of science and technology, mobile phones is the one of ICT tools which has more access in preparation, organization, and presentation of content for teaching and learning in schools like computer. Generally, Kayombo and Mlyado (2016) revealed that there are gaps between ICT policy and implementation in the schools, the policy objectives did not implemented in effective way which lead to inadequacy of ICT facilities, insufficient ICT training to teachers, unsupportive infrastructure as well as electricity. They also recommended to provide ICT training to teachers, supply of computers and to improve ICT infrastructure in schools.

2.5.2 Perceptions in the use of ICT facilities in schools

The study sought to know different attitudes as well as perceptions reviewed from different education stakeholders on the usage of the available ICT facilities in teaching and learning processes in Tanzania. According to Mabula (2012), the ongoing trend in science teaching and learning strategies in Tanzanian schools should be re-visited and improved to attract many students in science education so as to prepare our own scientists for the development of the nation. This is because, currently both males and females teachers experience some difficulties in using ICT resources especially the online resources for promoting critical thinking to the

learners. This is because of inadequate knowledge or experience and the lower attitudes towards the use of ICT in teaching and learning activities. Therefore, teachers' attitudes have to be positive towards the use of educational technology that provides useful insight about the adoption and usage of ICT into teaching and learning processes

Diamantini & Mura (2013) stated that, the impact of ICT should be distinguished into two main perspectives. The first perspectives is how to integrate ICT technology in the educational strategies and the other area of perception is how ICT facilities are used by students in activities that interfere with the educational process. Wanjala (2013) observed that there is a perception among education stakeholders which show the ICT hardware and soft ware to be available in most schools but they are entirely not adequate for use in performing administrative tasks. The other study did show that both public and private schools the ICT usage is very low due to some challenges faced by schools like inadequate technical and psychological preparedness, resources and training (Mwangi, Nchunge, & Sakwa, 2012). The study conducted by Mia (2013) revealed that there is a strong perception on the poor usage of ICT facilities due to inadequate computer training provided among teachers. Hence, the usage of ICT is not satisfactory to all teachers' categories from administration to subject teachers. The schools should make some initiatives to improve the rate of ICT use among teachers like setup computer lab and reducing the cost of Internet connection and ICT devices.

Maholwana-Sotashe (2007) observed that, teachers from secondary schools perceive the integration of ICTs in the curriculum. It was observed from the study that, though teachers are aware on the benefit of using ICT in their teaching process, they still have not used effectively the available ICT facilities. For instance the finding from the study supports that the degree of ICT usage within the curriculum did not correspond directly with the availability of ICT facilities from the schools where the study is conducted. This means that the usage of ICT in teaching and learning should be effectively practiced by teachers and students basing on the available resources because some teachers were reluctant to employ the technology though they were

aware of the benefit of using ICTs in their teaching career. Some of respondents show the positive perception about the gadget ownership. Interestingly, the current study also discovered that there has been a mismatch between the positively perceived ownership of the ICT gadgets and the real day-to-day use as facilitative media for learning, in particular as useful aids for English language learning (Aydawati, & Suratno, 2016).

2.5.3 Challenges on the use of ICT Facilities in Schools

The challenges like inadequacy of ICT facilities in schools discourage teachers to use ICT facilities in their teaching process Mafang'ha (2016). Among the scarce resources mentioned by the study is the manpower with adequate computer skills. Therefore the school administrators and the government in general are advised to send teachers for in-job training. This can help teachers to use and integrate ICT facilities in teaching and learning resources so as to increase their readiness to use ICT facilities under given school environment (Mathevula, & Uwizeyimana, 2014). Alice (2014) argued that, teachers should be willing to work under the scarce ICT facilities because not all the instructional technology could be easily accessible for both teachers and students. The other challenge facing schools was the unfavorable environment for ICT use in teaching and learning processes and unwillingness of teachers in ICT use (Serah, 2010). The study added that, among the ICT facilities used in schools for teaching are computers, LCD projectors, TV, DVD's and speakers could work in conducive environment such as computer lab, reliable power supply and sufficient internet connectivity.

The use of ICT facilities like projectors and computers have a long lasting memory by visualizing the distance objects or places or material and build up a strong confidence on participating in different activities provided by the teacher in the classroom (Serah, 2010). The study conducted by Kumar (2016) added that, teachers have to use different techniques in order to create a live class.

2.5.4 Availability of ICT Facilities in Schools

Most of schools in Kenya were connected to power but suffered with lack of ICT facilities such as laptops, computers, whiteboards, CD-ROMs and anti-viruses which drawback the uses of ICT facilities in schools (Mwendwa, 2016). Malekani (2018) revealed unawareness of using ICT facilities and cause of low level of utilization of those tools in schools. He added that, inadequacy of ICT facilities in schools, lack of in service ICT training to teachers, as well as computers and Internet has not yet to be effectively tapped as one of the foremost resource in enhancing the learning and teaching activities in Tanzania's secondary schools. They suggested improving internet connection, in service training and provision of ICT tools in schools. There was highly needed of ICT facilities to be installed in classrooms, tutors and learners must be encouraged to use ICT facilities and provision of ICT training to teachers (Eniekenemi, & Joel, 2016).

2.5.5 Comparison between the Schools in the uses of ICT

The usage of ICT facilities vary from one school to another. This happens due to availability of ICT facilities, willingness of teachers and students to employ ICT tools in teaching and learning process, conducive ICT environment, power supply, internet, as well as teacher's knowledge, awareness and skills in preparation, organization and presentation of content in the classroom. Usage of ICT facilities in teaching and learning process increases performance in schools (Mwalongo, 2018; Lai, & Pratt, 2004). Schools differ in uses of ICT facilities due to the location, availability of facilities, number of skilled teacher's, infrastructure and power supply (Odeh et al., 2015).

Mndzebele (2013) argued that, there is difference in performance between students who are taught by the teacher who use ICT facilities in teaching and the students who taught by the teacher who use the past experience. The students taught by using ICT facilities performed better than those who taught through past experience. Hence, the usage of ICTs as a pedagogical tool in education played great role to the performance. Students should have ability to learn independently and be able to construct their own ideas under guidance from the teacher. With ICTs students

relates and assist each other, while becoming more independent without depending on teachers as solely sources of knowledge (Kishan, 2007). Siddiqui (2008) argued that, a computer is a tool for marking learner's discoverers and builders of knowledge, those schools where the internet is accessible, the gateway to information without frontiers, and the catalyst for teacher student dialogues beyond the walls of a single class or school. Automatically, ICTs enables teachers and learners to explore different sources of materials for teaching and learning activities.

2.6 Research Gap

The ICT policy in Tanzania, just like in other countries needs to align the technology to national economy and social goals. The policy needs ICT to match the social environment in which it is to be implemented (Bassi, 2016). The policy relies under the mission of providing a conducive framework for investments in capacity building, expanding and developing the teaching of ICT across formal and informal level of the national education system (URT, 2003) focusing on the country priorities. This includes improving the quality education to all children of which the government provides for free (URT, 2004; & Hennessy et al., 2010). The past studies have not adequately explained how ICT facilities could be used to make active learning process rather explains the importance of using ICT technology in education (URT, 2007); the importance of conducting manpower training among teachers to encourage ICT integration (Kafyulilo, 2010); importance of improving the school infrastructures to enhance the smooth use of ICT facilities (Unwin, 2005); as well as encouraging the administrators to make maintenance and renovate ICT facilities which can be used in curriculum implementation (Maholwana-Sotashe, 2007 & Mtindays, 2017).

Despite the government efforts of preparing 21st century teachers who have ability to use ICT facilities in teaching and learning process, some teachers are still not willing to use the technology due to several challenges. These challenges include teaching environment which is less supportive in terms of resources especially in government schools compared to private schools (Unwin, 2005). The availability of ICT facilities plays the great role of influencing teachers' willingness in using ICTs in teaching and

learning activities (Mtindya, 2017). Some reviewed literature show that, the willingness of some teachers to use ICTs in teaching pedagogy is contributed by their ICT knowledge which vary from one teacher to another or among schools (Buabeng-Andoh, 2012). Hence, teachers should be willing to use ICT facilities in their teaching activities by creating motivational learning environment to the learners (Yunus et al., 2013). Now days, most of teachers owning personal computers and smart phones make use of the devices in teaching activities rather than depending much on school facilities. Students also can use even parent laptops or smart phones for learning at home. For that reason, the study chose to explore the similarities and differences on the usage of the available ICT facilities in teaching and learning process in secondary schools selected from Morogoro Municipality and Mvomero District.

2.7 Conceptual Framework.

Punch (1998) describes conceptual frame work as a representation of main concepts or variables graphically or in narrative form, and their presumed relationship with each other. Katani (1999) argued that, conceptual framework combines facts together and provides a way forward towards obtaining the exact data for the intended study. Therefore, frame work is structure with ideas which show the work done of a particular project and can be reviewed by using diagrams or graphs (Huberman, 1994).

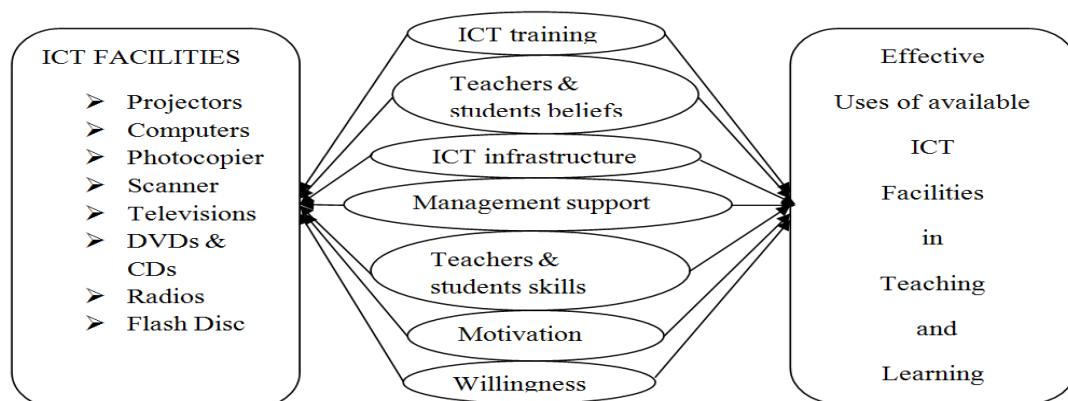


Figure 2.1: Conceptual framework

Source: Researcher, 2020

The above conceptual framework shows that, the usage of ICT facilities in teaching and learning process has an influence on preparation of teaching and learning materials. ICT facilities help teachers to prepare materials for teaching by using Audio-visual, charts, maps, pictures, PowerPoint, animation and graphics to ensure effectiveness in the classroom. During teaching and learning, ICT facilities like projector, audio-visual, maps, charts and pictures can be used to present the materials according to the curriculum content. Gandhar, & Sharma, (2011) argued that PowerPoint, animation, graphics can be utilized to enhance the learning of subject content. Computers are good for explaining complex processes. Computer-aided learning is not a replacement technology but a complementary tool. Computers are useful for teaching, problem solving and decision making skills...availability of open source software has enabled development of content management system and learning management system such as a Module.

Availability of ICT facilities in secondary schools can be useful when there are good ICT Infrastructures, Internet connection, Teachers' who have ICT skills and knowledge, availability and accessibility of ICT facilities, reliable electricity in classrooms, Students and teachers willingness, number of students, school management support and motivation, as well as teachers and students perceptions. Lack of financial resources, inadequate ICT facilities, lack of ICT teachers, and lack of internet connectivity, power instability and unsatisfactory teachers' remuneration hindered ICT effectiveness in schools (Ndibalema, 2014). The diagram shows that, the usage of available ICT facilities and some opportunities obtained in schools had an influence in effective teaching and learning process in secondary schools.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the systematic approach and procedures used in collection and analysis of data. The chapter shows how the whole research work was carried out. This includes the research design, area of the study, approach, targeted population, sample and sampling procedures, types and sources of data, data collection techniques and data analysis, ethical issues, validity and reliability of research instruments.

3.2 Research Approach

According to Grover (2015) an approach means the plans and procedure for research that encompass the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation. Kauzeni et al. (1993) adds that the research approach means the systematic procedures by which the study starts from the initial identification of the problem to the conclusion of the study. Additionally, research approach is an overall methodology of studying a research phenomenon to get the solution to the existing problem (Bist, 2014; Dawson, 2007). Therefore, approach includes all procedures which used in conducting research in systematic way for the purpose of gathering and analyzing information and to analyze all information in order to address existing problem in a particular area of the study.

The study used both qualitative and quantitative approach for the purpose of investigating and collecting information in the natural setting (Punch, 1998; Mlilo, 2016). The qualitative approach dominated the study over quantitative approach due to the nature of the data collected. Qualitative approach was used in order to understand the process, experience and individual inner feelings, opportunities and challenges, attitude as well as perceptions toward the usage of ICT facilities in teaching and learning process in secondary schools. Quantitative data were also

collected and used to extract number of available ICT facilities and demographic information which was later analysed using percentages and frequencies.

3.3 Research Design

Research design is the plan which involves all required elements in research work (Akhtar, 2016). According to Kothari (2004) research design refers to the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance of data with research purpose. In this study a multiple case study design was used. A Multiple case study was chosen because the study sought to compare selected secondary schools in Mvomero District and Morogoro Municipality to find out the usage of available ICT facilities in teaching and learning processes. A study that contains more than a single case and multiple form of enquiry (document review, questionnaire, observation, group discussion and interviews) was used. This is referred to as a multiple case study (Wahyuni, 2012; Yin, 1994). Therefore, the study applied a multiple case study design in order to come up with intensive and detailed information (Slight et al., 2011) from different selected secondary schools about the usage of ICT facilities in teaching and learning processes in Mvomero District and Morogoro Municipality.

3.4 Area of the Study

The study covered Morogoro urban and Mvomero District located in Morogoro Region in Tanzania. Morogoro Region lies between 5°50" and 10°0" to the south of the Equator and longitude 35°30" to East. Also region occupies a total of 72,939 square kilometers which is approximately 8.2 % of the total area of Tanzania mainland. Morogoro urban has occupied 260 square kilometers (URT, 1997). Morogoro municipal has 50 secondary schools, 23 are public and 27 are private schools. The Global Report on Human Settlement (2009) admits that, Morogoro urban is located at lower slopes of Uluguru Mountains, and the region is among of the fast growing urban cities which need well strategic plans in all aspects.

Mvomero District is among of the eight districts in Morogoro. It covers an area of 6,632.9 km² with a population of 312,109 people. It is bounded to the north by

the Tanga region, to the northeast by the Pwani region, to the east and southeast by Morogoro rural district and Morogoro urban district and to the west by Kilosa district. Mvomero District is administratively divided into 30 wards (Mkama, & Sulle, 2019).

Morogoro and Pwani was only region chosen by Global e-Schools and Communities Initiative (GESCI) in Tanzania. This is an international non-profit organization founded on the recommendation of the United Nations Task Force on Information Communication Technology (ICT). GESCI was established in 2003 at the first World Summit on the Information Society (Souter, 2006). GESCI established the project called African Digital Schools Initiative (ADSI) 2017 to 2020 for the purpose of creating digital schools of distinction through integration of ICTs in teaching and learning. There are 40 schools selected by the ADSI in those regions including government schools and private schools. Teachers were trained through seminars toward ICT use in teaching and learning. Morogoro region has been chosen in this study because many of its secondary schools involve in programme compared to Pwani region. Morogoro Municipality and Mvomero District also were chosen because varieties of secondary schools involved in programme.

In this district there were different varieties of government schools involved in the programme include the schools located in urban and rural areas, national schools and ward schools, boy's and girl's schools, ordinary and advanced level secondary schools as well as boarding and day schools. These helped the study to have varied and reliable data. The study also decided to compare government schools and not with private secondary schools because government schools were the most of secondary schools suffered with usage of ICT facilities in teaching and learning process. Eight secondary schools were selected from both district whereby four secondary schools from Morogoro Municipality which are Kilakala, Kihonda, Kolla Hill, and Morogoro secondary school; and Dakawa, Kipera, Mongola and Mzumbe secondary school from Mvomero District. Therefore, the results from this area of the study gave a full picture on how they are using the available ICT facilities in teaching and learning processes in their schools.

3.5 The Study Population

A population is the total collection of elements about which the researcher wishes to make some inferences (Cooper & Schindler, 2007). The study population includes all members of any well-defined class of people, events or objects from which a sample is drawn (Banerjee & Chaudhury, 2010). The reason for drawing a sample from the population is to obtain information concerning that population. Hence, it was necessary to include representatives across section of individuals in the population (Ary, Jacobs, & Sorensen, 2010).

The population in this study includes selected students, teachers, Education Officers (MMSEO & MVDSEO), Ward Education Officers (WEO), as well as heads of secondary schools in Morogoro Municipality and Mvomero District. The total numbers of participants used in this study were 97. Teachers were part of the study because they are implementers of curriculum at their work places and are the one who have trained to integrate ICT in classrooms. The MMSEO and MVDSEO involved in the study due to their managerial roles they have in implementing curriculum by supervising and ensuring the usage of the available ICTs in their schools. WEO's also supervise schools within their wards to ensure effective provision of education. Heads of schools were involved in the study because they are the leaders in their schools and ensure that all education activities are going in positive way including the usage of ICTs in classrooms (Kopweh, 2014). In addition, students as beneficiaries of that ICT program were important respondents to give out information on how available ICT facilities used in classrooms to enhance learning activities.

3.6 Sampling technique and Sample size

3.6.1 Sample size

The representative sample was drawn from study population of Morogoro Municipality and Mvomero District. Sampling units were personally contacted and interviewed and were chosen using statistical principles and techniques. In this study the sample size was 97, which was determined by the formula developed by Cochran (1977). Meanwhile Price (2005) proposed that minimum sample size of less than 100

respondents as enough to be used in social studies. The Regional Educational Officer (2020) said that, the population of teachers and students in Morogoro Municipal and Mvomero District were 40841. This comprised the District education officers, ward education officers, Head of schools, teachers, and students from government secondary schools. Therefore the sample size from this study was as follows;-

$$n = \frac{N}{N \times d^2 + 1}$$

Where; n = Sample Size

N = Total number of population = 40841

d = Error margin = 0.1015 (10.1%)

$n = 40841 / (40841 \times 0.1015^2 + 1) = 96.84 = 97$

$n = 97$

Based on mathematical calculation, the sample size was obtained as 97 respondents

3.6.2 Sampling techniques

Sampling techniques refer to the process of choosing a proper subset of the elements from the population (Verma, 2017) so that the sample can be used to draw inferences and make generalization basing on the population (Patton, 2002). The sampling technique provides opportunity to every student in the school to have equal chance of inclusion in the sample (Kothari, 2004). The study deliberately selects a particular section of the wider population to include in or exclude from the sample of the study (Alkassim, Eltikani, & Mussa, 2016). This study employed purposive sampling and random sampling techniques to select representative respondents. Tongco (2007) suggests that purposive sampling enables researcher chooses a sample based on their knowledge about the population and the study itself. Therefore, purposive Sampling was used in order to get schools which have ICT programme, teachers with skills and knowledge, as well as administrators like MMSEO, MVDSEO; WEO's and Head of schools due to their positions as respondents to give information about the uses of available ICT facilities in teaching and learning process.

3.7 Data Collection Methods

Methods of data collection are ways a researcher uses in collecting data (Nangusu, 2019). The study used different methods in gathering information because there is no single method that ensures the truthfulness of the problem, such that, there is a great possibility of distorting the reality of what the study intends to study (Ahmed, 2010; Hammarberg, Kirman, & Lacey, 2016). This study used primary and secondary data collection methods. The first-hand information was collected through observation, questionnaire, focus group discussion, and interview. Second hand information also was collected through documentary review.

3.7.1 Interview

An interview is a data collection method in which the required information is collected through asking oral questions (Ahmed, 2010; Babbies, 2010). Interviews in research are done with the intention of finding out the detailed information which cannot be observed. In this study the semi-structured interview was used to get the required information for the study, It ensured rich and detailed information concerning the study. MMSEO, MVDSEO, WEO, and heads of the selected school as well as subject teachers interviewed through semi structured interview. Semi-structured interview were used in order to get clarity (Downson, 2002). The study also employed face to face interview and interview through phones in order to obtain enough data from respondents required.

3.7.2 Focus Group Discussion

The focus group discussion is among of the research method in which respondents are given a specific theme to discuss (Nelson, 1996). In this type of the data collection technique, a number of people are asked to assemble together in groups to discuss an issue related to the research questions (Kabir, 2016). The aim of the focus group discussion is to facilitate interaction of selected respondents and come up with collective data rather than individual view (Cohen, 2007). This study involved students in a group of 5 and interviewed on their perceptions and attitudes towards the usage of available ICT facilities in teaching and learning process from 8 schools.

3.7.3 Observation

Creswell (2014) defines observation as the process of taking field notes on the behavior and activities of individuals at the research site. Observation gives room to collect information direct in the field which helps to discover many things and come up with full detailed through eye witness. Non participant observation is the one of the type of observation whereby the observer observes as a detached emissary without any attempt on his part to experience through participation what others feel (Kothari, 2004). This study employed non participant observation to observe important information on the accessibility and uses of ICT tools like computer, projector, smart phones and tablets in teaching and learning process. Moreover, observation allowed the chance to learn things about which participants would be unwilling to share their idea during data collection especially by using interview tool (Patton, 2002). Observation was done in classes to find out if teachers were using ICT facilities in teaching, and computer labs also were observed to see the uses of available ICT by teachers and students. Also the study observed the availability of ICT facilities in schools and its quality.

3.7.4 Questionnaire

A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondent (Abawi, 2017; Wegner, 1993). Kothari (1990) pointed that questionnaire is the quite popular method particularly in case of big enquires. The study used open ended questions. The reason behind the use of questionnaire in this study was to save time for those respondents who are too busy and have no time for interview. In this study questionnaire were used to measure the teachers and students attitude towards the usage of available ICT facilities in teaching and learning processes in secondary schools. The open ended questionnaires were provided to teachers and students in order to give out their attitudes and perceptions toward the usage of ICT facilities in teaching and learning.

3.7.5 Documentary Review

Documentary review refers to the analysis of documents in both printed and unprinted that contain information about the observable fact from the study (Bowen, 2009; Bailey, 1994). This method is useful because it helps in further expanding the answers, which are particularly important (Fraenkel & Wallen, 1993). In this research, different documents like scheme of works, lesson plans, timetable, students computer lab attendance, as well as various reports, workshops and seminar papers were reviewed. These reflected the usage of available ICT facilities in teaching and learning process.

3.8 Data Analysis

Yin (2005) describes that, data analysis refers to searching, inspecting, and transforming the data in order to obtain the useful information. Data analysis is the mechanism used to summarize large number of collected data into small with meaning (Kawulich, 2004). Among the method for data analysis is the content analysis which involves systematic classification, coding and identifying themes or patterns (Kothari, (2004). Therefore, qualitative data were analysed by using content analysis whereby themes and coding were identified and processed. Content analysis was used to quantify qualitative information by sorting data and comparing different pieces of information to summarize it into useful information. Quantitative data also were analysed by using Statistical Package for Social Sciences (SPSS) by putting numerical data to the programme and be presented in the form of frequency tables, graphs, and charts in order to show distribution of data obtained.

3.9 Validity and Reliability

Reliability when applied in research, it describes the stability and consistence of results. Otherwise, validity shows the accuracy and appropriateness of the data which were intended to be extracted (Kumar, 2011). Validity refers to the extent to which a test measures what is set to be measured, while on the other hand, reliability refers to a measurement that supplies consistent results (Raudeliuniene, 2018).

The validity and reliability of this study were ensured through the use of multiple data collection tools. The study involved the use of more than one method of data collection, namely, observation, questionnaire, focus group discussion and interview to collect the same data under a single phenomenon.

Therefore, the technique permits the researcher to combine strength and correct some of the deficiencies of some sources of data. This technique helped to overcome the problem of relying on only one method while at the same time increasing the validity of the data. Similarly, the study adopted the standard questionnaire used by previous studies on the topic of ICT use in education integration and use in TCs.

3.10 Ethical Considerations

The researcher observed ethical matters in order to consider social status as long as the research touches individuals lives (Dawson, 2007). Attention was paid to ethical issues during the whole process of collecting data and observed the codes of conduct. Dooly, Moore, and Vallejo (2017) articulate that, researchers are themselves responsible for the ethical conduct of their research and they have to take care of all the ethical issues at every stage of the research process.

Before data collection, researcher received the permit letter from Mzumbe University for data collection and sent it to Regional Administrative Secretary for the permission of data collection to their specific districts. Regional Administrative Secretary also provided a permit letter addressed to District Commissioner to allow for data collection in their areas. The District Commissioner also provided a permit and addressed it to the District Executive Director, allowing the researcher to conduct research in their required schools. These are the systematic procedures which build awareness and clear doubt to all officials and respondents for data collection in their areas. The study assured confidentiality, privacy and anonymity by protecting all participants and giving a due consideration to the information (Jensen, 2002). Respondents were told that, this study is for academic purpose only and that the information will be kept in secret.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS OF FINDINGS

4.1 Introduction

This chapter presents the findings of the study on usage of the available ICT facilities in teaching and learning process in Tanzania. The study makes a comparative analysis of secondary schools in two districts from Morogoro region, namely; Mvomero District Council and Morogoro Municipal Council. The analysis of data in the study was guided by a single main objective and three specific objectives. The main objective is to make a comparative analysis on the usage of the available ICT facilities in teaching and learning process. The specific objectives are; to identify the availability of ICT facilities employed in teaching and learning process; to find out the teacher and learners' attitudes towards the uses of ICT facilities in teaching and learning process and; to identify opportunities and challenges faced by secondary schools in integrating ICT facilities in teaching and learning process in secondary schools. The chapter has been organized into several sections which cover the attributes of the respondents and findings based on research objectives.

It should be noted that, abbreviations names in data analysis have been used to ensure confidentiality and anonymity. Some of these are shown in table 4.1 and appendix 1.

Table 4.1: Anonymous names for respondents

MM	Morogoro Municipality	MMS1	Morogoro Municipality School one	MMST1	First School Teacher in Morogoro Municipality
				MMSS1	First School Student in Morogoro Municipality School
				MMSH1	Headmaster of the first school in Morogoro Municipality
		MMS2	Morogoro Municipality School two	MMST2	Second School Teacher in Morogoro Municipality
				MMSS2	Second School Student in Morogoro Municipality
				MMSH2	Headmaster of the second school in Morogoro Municipality
MV	Mvomero	MVS1	Mvomero School one	MVST1	First School Teacher in Mvomero
				MVSS1	First School Student in Mvomero
				MVSH1	Headmaster of the first school in Mvomero
		MVS2	Mvomero School two	MVST2	Second School Teacher in Mvomero
				MVSS2	Second School Student in Mvomero
				MVSH2	Headmaster of the second school in Mvomero

Source: Researcher, 2020

The above table of anonymous in this analysis has been interpreted as follows. MM and MV represents Morogoro Municipality and Mvomero District respectively as area of the study. MMS1, MMS2, MVS1 and MVS2 means the first school in Morogoro Municipality, the second school in Morogoro Municipality, the first school in Mvomero District and the second school in Mvomero District respectively. Likewise, the MMST1 is the first teacher respondent from the first school in Morogoro Municipality while MVST1 is the first teacher respondent from the first school in Mvomero District council. MMSH1, MMSH2 and MVSH1, MVSH2 represents the headmaster of secondary school in Morogoro Municipality and Mvomero District council.

4.2 Attributes of Respondents

The respondents recruited for this study are diverse in terms of sex, education level and working experiences for teachers and educational officers. The study uses different attributes to reveal the specific category or area which brings impacts to the usage of ICT facilities in teaching and learning process.

4.2.1 Sex of the Respondents

The details on Sex of respondent are summarized in figure 4.1 to indicate distribution of respondent based on their sex. To be clearer, the sex distribution is presented in pie-chart with percentage distribution in Figure 4.1.

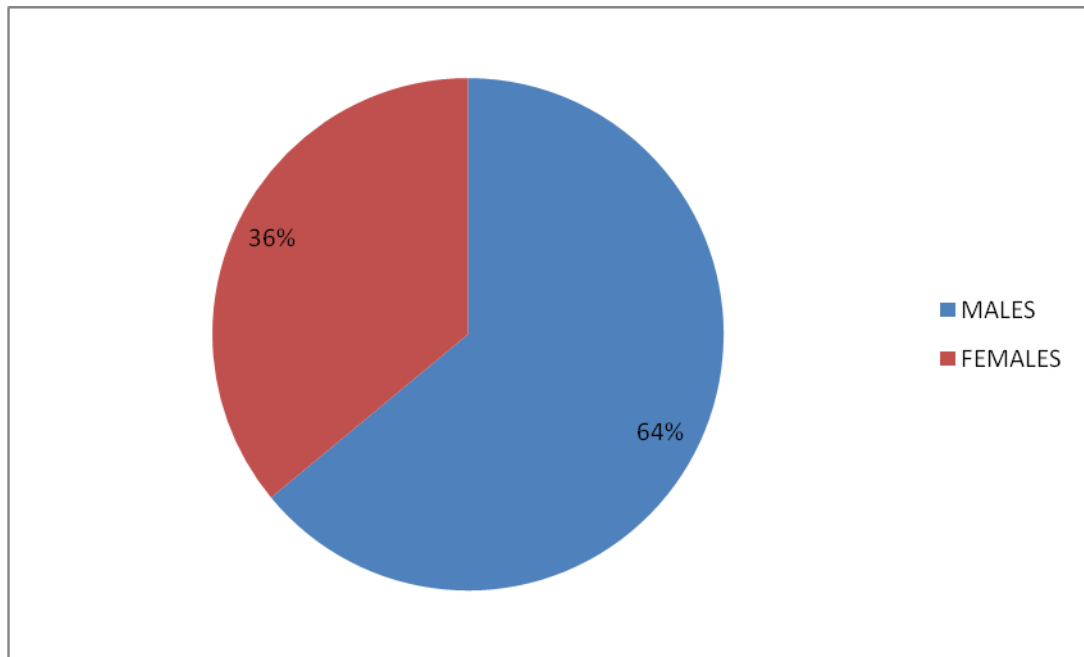


Figure 4.1: Sex

Source: Researcher, 2020

The data collected shows that, 64% equivalent to 61 respondents were males and 36% equivalent to 36 were female. The figure indicates that, males form the majority over the females. This implies that males were engaged much in usage of available ICT facilities in teaching and learning process compared to females.

4.2.2 Education Level

In this study, education of the respondent was captured and categorized into four groups including ordinary secondary education, Advance secondary education, Diploma education, First degree education and Doctorate (PhD). The distribution of education level is presented in Figure 4.2

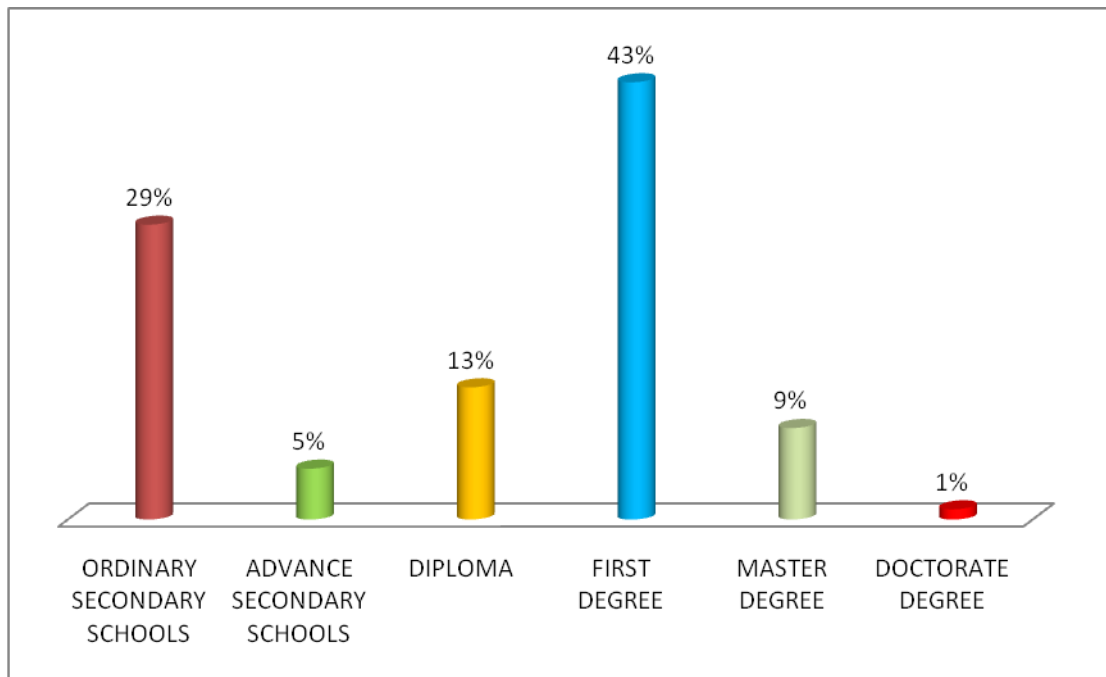


Figure 4.2: Education level of the respondents

Source: Researcher, 2020

Data from interviewed respondents indicate that, 27 (29%) respondents hold ordinary secondary education; 13(13%) respondents hold advanced certificate of secondary education; 5 (5%) respondents are diploma holders, 42 (43%) are bachelor degree holders and; 9 (9%) are master's degree holders and 1 respondent equivalent to 1% holds PhD. This study used education level of the respondents in order to know the diversity of experience in usage of available ICT facilities in teaching and learning.

4.2.3: Age Group of Respondents

The study categorized respondent into the following age groups; 11 to 20, 21 to 40 and 41 to 60. The data collected shows that, the respondents who involved in the study were captured as indicated in Figure 4.3.

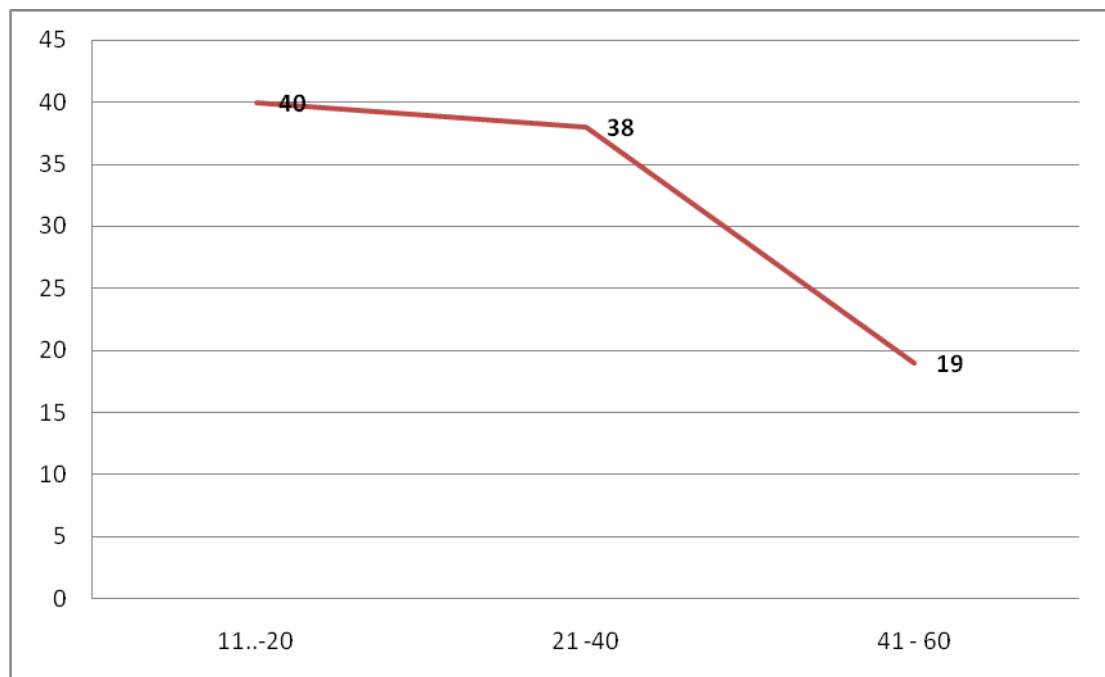


Figure 4.3: Age Group of Respondents

Source: Researcher, 2020

The data revealed that, 40 respondents aged between 11 and 20 years (41.2%) are the students; 38 (39.1%) respondent of age group of 21-40 are teachers; 19 (19.6%) are teachers and educational officers. Age group was used in this study in order to gain different experience according to age of the respondent in usage of available ICT facilities in teaching and learning process.

4.2.4 Occupation/Positions of Respondents

The respondents who were involved in this study had different occupations/positions in the education system as shown in figure 4.4.

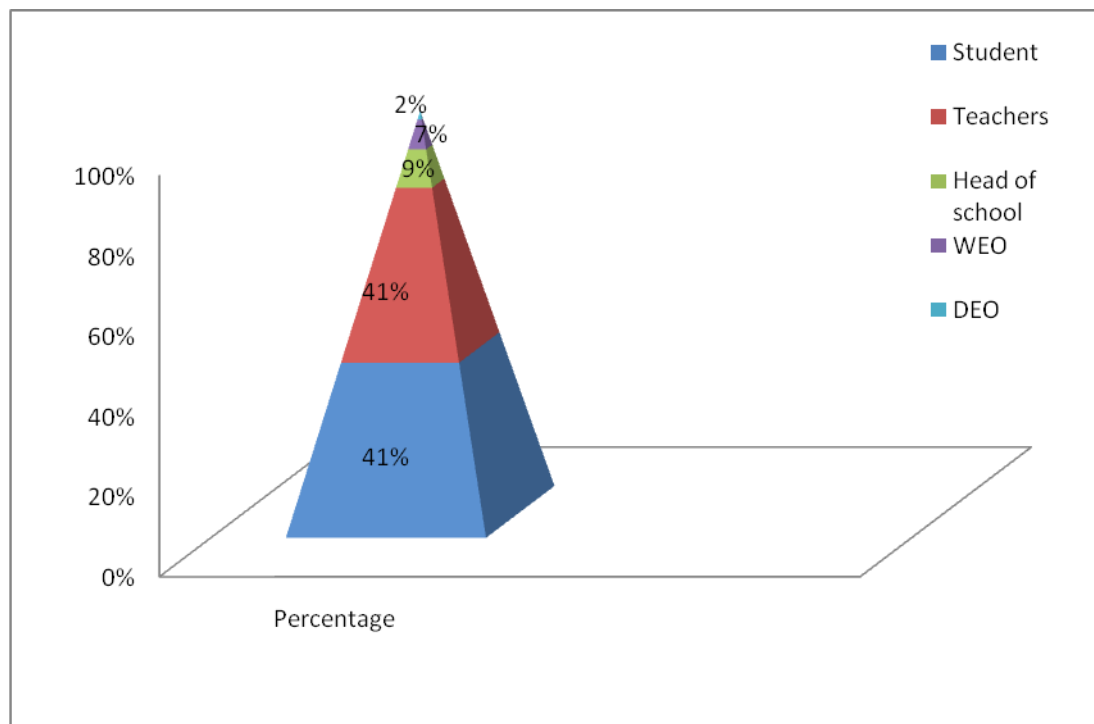


Figure 4.4: The pyramid of the occupation of respondents

Source: Researcher, 2020

According to table 4.2 and figure 4.4, 41% of respondents are students; 41% are teachers, 9% are head of schools, 7% are Ward education officers and 2% are District education officers. The data shows that, the occupation of respondents in the education system was pyramidal like structure, whereby at the top are few people with higher education and longer experience compared to the bottom whose education and experiences is low. However, the majority of people are students and teachers.

4.3 The level of ICT Facilities availability in Mvomero and Morogoro Districts

In this section the study sought to identify the availability of ICT facilities employed in teaching and learning processes in secondary schools.

4.3.1 The level of ICT Facilities availability in Morogoro Municipal chools

The data collected shows that, all researched schools in Morogoro municipal have ICT facilities though in different numbers as shown under the table 4.3.

Table 4.2: The Number of Available ICT facilities from Morogoro schools

The available ICT facilities	MMS1	MMS2	MMS3	MMS4
Presence of computer	16	39	12	30
Computer lab	1	1	1	1
Printer	2	3	2	1
Scanner	-	-	-	-
Photocopier	1	2	3	1
Television	2	2	1	1
Loudspeaker	2	4	3	1
White board	1	2	2	-
Projector	3	8	3	2

Source: Researcher, 2020

The data collected in table 4.3 shows that, the small number of computer found in Morogoro Municipality is in MMS3 School. This has only 12 computers compared to MMS2 School which has 39 computers. The difference of 27 computers was due to the reason that MMS2 School has got some more computers from the government after performing better in ICT lesson for several years and improvement of teaching and learning environment as well as school infrastructures including power which support ICT integration in classroom.

The findings also show that, all schools had computer labs which consist of a single room with few computers. This does not satisfy the number of students available in schools or per single stream. For instance in MMS1 and MMS4 schools have an average number in a single class of more than 80 students per a single stream while the numbers of computers are 16 and 30 respectively.

The data further shows that, the number of printers, photocopiers, projectors and white boards range from 1 to 3, where by one of the school (MMS4) had no white board for projection of learning material through projector. The respondents added that, subject teachers tend to project their material on the class walls. However, some class walls are not white enough to show clear vision of some objects aimed to be projected.

The findings regarding the available ICT facilities was that, all schools had TVs but only MMS2 teachers are using it in teaching and learning process. Other schools' teachers were not using them as teaching facilities. TVs were only fixed in staff offices for news broad casting for staff members. Hence, both teachers and students have to be educated on how to use TVs as one of ICT facilities that could be used in teaching and learning process rather than only using the television for watching videos and some news which are not part of school curriculum content.

Table 4.3: Availability of ICT services available in Morogoro Municipal schools

ICT services in schools	MMS1	MMS2	MMS3	MMS4
School website	×	√	√	×
Electricity	√	√	√	√
School email	×	√	√	×
Interment connectivity	×	√	√	×

Source: Researcher, 2020

Table 4.4 shows that, some schools (MMS1 and MMS4) in Morogoro municipal council had electricity in their buildings and other ICT services like school website, school e-mail and internet connectivity. The respondents in those schools claimed that the absence of some ICT services like internet connectivity led to the failure of downloading material and teaching aids that are crucial in teaching and learning.

Some schools like MMS3 were lamenting on the improper data usage among teachers, as said by some of the respondents;

Though our school has internet connectivitybut some of us are not using the available data for teaching and learning activities...are using for their own interest like downloading WhatsApp and YouTube videos and other social networks...(MMSH3)

Students should be monitored when they are using computer lab because most of them use it to download music and chatting though face book rather than searching material...this is misuse of internet service (MMSH1)

The misuse of data leads to the failure of some teachers and students who needed the data for preparing and searching of learning material. Therefore there should be limitations for those who misuse the data through their phones or computers.

4.3.2 Availability of ICT facilities in selected secondary schools in Mvomero

The data collected shows that, all researched schools in Mvomero District had ICT facilities but number of facilities varies from one school to another.

Table 4.4: The available ICT facilities observed in Mvomero District secondary school

ICT Facilities	Selected schools			
	MVS1	MVS2	MVS3	MVS4
Presence of computer	34	35	5	2
Computer lab	1	1	-	-
Printer	3	3	1	-
Scanner	1	2	-	-
Photocopier	2	3	1	1
TV	4	3	-	-
Loudspeaker	13	4	-	-
White board	2	2	-	-
Projector	3	4	-	-
Total	63	57	7	4

Source: Researcher, 2020

The collected data shown in the table 4.5 explains that, Mvomero District council possesses varying number of ICT facilities for its secondary schools. For instance, it was observed that there is a difference of 32 computers between MVS1 School which has 34 computers compared to MVS4 School which had 2 computers. The data also shows that, some schools in Mvomero District council had no some of ICT facilities like computer lab, TV, Loudspeakers, whiteboards and projectors (MVS3 and MVS4). They also possess single photocopier and single printer compared to other Mvomero school like MVS1 and MVS2 that had 3 printers each.

Table 4.6 shows the availability of ICT services in selected secondary schools in Mvomero District where by the variation of ICT services were presented.

Table 4.5: The availability of ICT services in Mvomero secondary schools

ICT services	Selected Schools			
	MVS1	MVS2	MVS3	MVS4
School website	√	√	×	×
School email	√	√	×	×
Electricity	√	√	×	×
Interment connectivity	√	√	×	×

Source: Researcher, 2020

The findings show that, MVS1 and MVS2 had all required ICT services while MVS3 and MVS4 had no ICT facilities like website, electricity, and school email internet connectivity. Most of teachers were using their own internet bundles for searching teaching and learning materials. Some respondents (MVS3 and MVS4) also claimed that absence of electricity services has some impacts in integrating ICT facilities in their lessons because lack of power hinders even the use of their own computers and other ICT facilities.

4.3.3 Comparison of available ICT facilities between selected secondary schools in Morogoro Municipal and Mvomero District.

The following figure 4.5 shows the comparison of available ICT facilities between selected secondary schools in Morogoro Municipal and Mvomero District. The available ICT facilities were higher in Morogoro Municipal compared to Mvomero District.

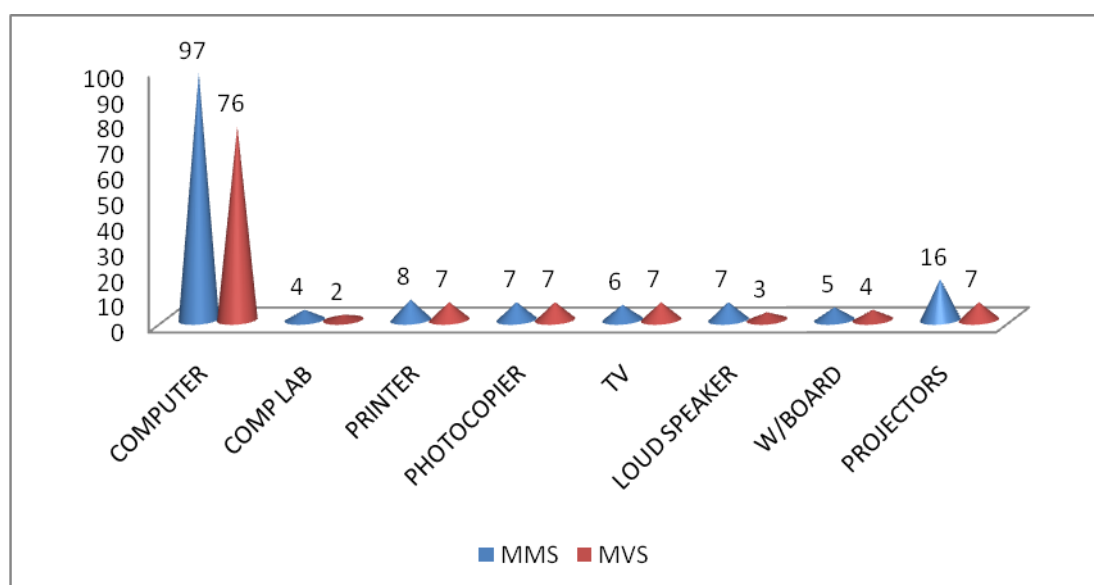


Figure 4.5 The available ICT facilities between MMS & MVS schools

Source: Researcher, 2020.

The above data represented in figure 4.5 as collected from the field shows that, both Morogoro municipal and Mvomero District had many computer (173) compared to other ICT facilities; followed by projectors (23), printers (15), photocopiers (13),

TVs (13), loud speakers (10), white boards (9) and computer labs (6). The data also shows that, the number of ICT facilities in Morogoro municipal exceeds the number of ICT facilities in Mvomero District by 27. The findings further revealed that, the number of TV in Mvomero is larger (7) compared to number of TV from Morogoro municipal (6). Other differences are as shown in table 4.8;

The ICT facilities in Mvomero District are fewer compared to Morogoro Municipal council. In case of number of ICT facilities, Morogoro Municipal had many ICT facilities (150) compared to Mvomero district (123) as shown in the figure 4.5 and table 4.7.

Table 4.6: Differences in ICT facilities between the two districts

ICT facilities	Morogoro Municipal	Mvomero District	Differences
Computer	97	76	21
Computer lab	04	02	02
Printers	08	07	01
Photocopier	07	07	00
TV	06	07	-1
Loud Speaker	07	13	-6
White board	05	04	01
Projector	16	07	09
Total	150	123	27

Source: Researcher, 2020

Table 4.7 shows the comparative analysis of the ICT facilities observed in all selected secondary schools in Morogoro Municipality and Mvomero District. A total of 97 computers were found in MMS while 76 computers were found in MVS. This represents the difference of 21 computers. The number of computer lab for MMS was 4 compared to 2 from MVS, which represents the difference of 2. The number of photocopier in MMS and MVS was 7, TVs in MMS were 6 while in MVS were 7, which represents the difference of 1. Otherwise, the findings show 8 printers from MMS while in MVS are 7, which represents the difference of 1. Loud speaker found in MMS were 7 while in MVS were 13 which represents the difference of 6, White board in MMS were 5 while in MVS were 4 which represents the difference of 1, and 16 projectors were found in MMS while in MVS were 7 which represents the difference of 9. The findings revealed that MMS is more equipped with ICT facilities than MVS.

4.4 Attitudes in usage of ICT facilities in teaching and learning

An attitude is a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related (Allport, 1935). The study focused on the attitudes of respondents towards the use of available ICT facilities in teaching and learning process. Questionnaire was used to collect information about the attitudes of teachers toward the use of ICT facilities in schools.

4.4.1 Teachers' attitudes towards the use of available ICT facilities

One of the areas of interest of the researcher in this study was to find out the attitudes of teachers toward the usage of available ICT facilities in teaching and learning process. The aim was to investigate the perceptions of the teachers toward the ICT use because each respondent can have a different perception, either positive or negative. The use of ICT in teaching and learning process differ from one school to another school due to the accessibility, knowledge and skills as well as school infrastructure. The usage of ICT facilities in education also depends on the intrinsic motivation of the teachers through their attitude.

The result of the study revealed that, most of teachers had positive attitudes toward the use of available ICT facilities in teaching and learning. Teachers argued that the use of ICT in teaching and learning had positive outcome to both teachers and students. This is mainly due to its accessibility of subject contents, flexibility when using ICT to facilitate teaching techniques and they are comfortable when using technology. For instance, MMSEO and MVDEO said that, they saw positive attitude toward ICT use in schools as quoted below;

"My teachers perceive it positive because they are using the ICT facilities they have in their schools effectively" (MMSEO)

"Teachers have positive perception toward the uses of ICT facilities in schools. Most of them use projectors in teaching process" (MVDEO)

Some of teachers said that, they do use ICT facilities because their students conceived to increase understanding;

I feel comfortable using ICT in teaching because my students understand well the concepts due to videos and animation I use to display for them to see the actual mechanism of digestion system (MMST11)

Myself am so happy using ICT facilities in my class because my students attracted and enjoying the lesson and they are so attentive to listen and discussing what I have presented to them (MVST29)

The increase of understanding among students was associated with the use of audio-visual aids during teaching and learning process. MVST1 posits that; “uses of videos and animation increases students understanding the subject matter”.

Other respondents said that, they felt so comfortable of using ICT in teaching and learning due to the accessibility of teaching material which was already prepared and relevant to the subject contents, as quoted below;

When i use ICT facilities in my teaching, i feel more comfortable because most of my subject content already prepared and stored in my flash, its simplify my work whereby i use to teach my students in any time and they enjoying lesson (MMST16)

In showing their positive attitudes, respondents added that, ICT facilities improves the teaching way from traditional (teacher centered) to modern way of teaching (student centered) whereby both teachers and students will be able to interact with the technology in searching learning material;

ICT facilities are very useful than traditional teaching because ICT facilities simplifies teaching activities while in class or out of the class compared to traditional teaching. By using ICT facilities its makes easy for searching different materials and teaching aids. ICT facilities also help me to keep my notes in softcopy and stopped to write notes on the chalkboard like traditional teachers (MMST4, MMST8, MVST21 and MVST27)

They also said that, the usage of ICT facilities brought positive interaction among learners who shared their views on the subject content;

Usage of ICT facilities in teaching and learning stimulates student discussion in the class and out of the class because they have access to interact with different materials related to subject matter through videos and audios directed by the teacher (MVST23and MMST13).

Some of them said;

The use of ICT facilities in my school influencing students to be able to interact themselves in searching different materials related to the subject matter because in our computer lab there is internet connection and soft copy materials whereby most of teachers stored a lot of materials to make them easy to access (MMST2, MVST31 and MVST33)

The respondents also explained their positive attitudes on using ICT facilities in teaching and learning process as the reliable tool for preparing assessment criteria and tools for students, as some of them said,

The school ICT facilities are used in typing, printing and photocopying examination, creating and storing student continuous assessment as well as teachers and students particulars (MVST22 and MVST40)

Even the schools which had inadequate ICT facilities, teachers use their personal ICT tools to prepare teaching material and assessment tools; *“Most of teachers use personal laptops to type their examinations and smart phones for searching materials”*.

Teachers also said that, the use of ICT facilities in teaching and learning had many opportunities in their responsibilities. ICT training improved teacher’s knowledge and skills. Some respondents acknowledged that through past trainings they have ability to create their own teaching aids (both visual and audio-visual). They further added that before they went to the training they used the facilities only to display some slides instead of using the facilities for interacting learners to the subject content; *“ICT facilities help to prepare teaching aids like animations, charts, pictures as well as videos which supports lesson to be understandable” (MVST10)*.

The respondents explained that, the use of ICT lead them to store their lesson plans, scheme of works and lesson notice in computer hard discs instead of having hard copies which was not easy to update. The storage material could also be transferred and stored to other computers or phones where students could easily accessed the material for further reading and referencing. For instance, one of the respondents

(MMS1 and MVS1) said, they used to store some videos for English subject (Literature in English videos) and students watched videos in their own time apart from teaching and analyzing the books (plays) in the classrooms.

The usage of ICT facilities influences teachers to have different teaching pedagogy so as to make learners to be active. For instance, some teachers said to use web quest which makes learners to find answers from the internet during the lesson after being provided with some questions and internet address where they could find some answers. Hence, ICT facilities enabled teachers to employ learner centered approach in which students were fully integrated to the curriculum content.

Apart from the positive attitude, some teachers revealed a negative attitude in using ICT facilities in their daily school activities. Some respondents claimed that, the usage of ICT facilities in teaching and learning had negative influence because it consumes much time in its preparation of teaching and learning materials; it needs skills in preparation and presentation of materials; it is not conducive to our current school environment; and that the uses of ICT encouraged teachers to be lazy. Other teachers believed that sometimes the internet connectivity was too low and when the teacher had only a single period, teachers blame to use some minutes in only making connection to the internet;

ICT facilities are not useful in teaching and learning in classroom because will waste my time when starting to connect computer and projector while the period itself covers 40 minutes only (MMST15)

The data collected also revealed other negative attitudes in the use of ICT in teaching and learning among teachers to be caused by inadequate ICT skills that lead to poor preparation in interacting learners;

Traditional teaching is more useful because teachers are able to demonstrate in the class effectively and students are very active in class, but the uses of ICT makes student to be dormant and watching how slide are changing without even take note (MMST19)

The respondents added that much time was needed to prepare lesson to be taught through ICT compared to normal preparation; *“I can’t use ICT facilities in teaching because need more time to prepare contents”* (MVST37)

The uses of ICT facilities encourage laziness to some teachers who looked online material as adequate source that complemented their subjects’ books. Hence, they use to copy some material related to their subject content before printing and regards the material as legal sources to cover the curriculum content(s).

Uses of ICT facilities create laziness to teachers because they feel has done each and every thing after prepared the materials, and most of them they copy Google materials and YouTube videos without considering the related environment where was recorded and real environment where students are..(MVST26)

Negative attitude from teachers was due to unsupportive infrastructure which discourages some teachers to integrate ICT in teaching and learning process. For instance some respondents claimed that their school environment had no support in integrating ICT facilities compared to urban schools; *“...the teachers who live in cities are benefited of using ICT in teaching because they have each and everything, but for us in rural areasooh....not well improved”* (MVST34)

They also added that the poor school environment leads to their less interaction of ICT facilities in teaching and learning; *“I cannot use ICT facilities in teaching while the school has not even electricity”* (MVST30)

Therefore, the above explanations and quotations on the negative attitudes of some teachers from different schools towards the integration of ICT in teaching and learning show that their negative attitudes was due to some challenges they face like inadequate time for preparation, skills and inadequate ICT infrastructure that influence their laziness.

4.4.2 Students’ attitudes in usage of available ICT facilities in learning

The findings revealed that, even students had both positive and negative attitudes towards the usage of ICT facilities learning process. Perceptions of student were

categorized into two groups started with positive attitudes and followed by negative attitudes.

The findings shows that students had positive attitudes toward the use of ICTs in learning process due to the ability of technology in providing different sources of material related to the subject topic studied in classrooms. Some of the students said; *“I feel comfortable using ICT facilities because it helps me to learn different things and do my homework in a good way”* (MMSS 2 and MVSS23)

“The uses of ICTs make me more knowledgeable because i use to download different materials related to subject matter” (MMSS4 and MVSS26)

Hence, students use computers available in schools to search for different material under the guidance of teachers and share their ideas in groups as well as classroom discussions. Apart from searching subject material from different sources the respondents were also asked whether the use of ICT helped them to different concepts in particular subject’s contents. Some students agreed the ICT facilities to be a helpful tool in enhancing easy understanding of subjects concepts, especially when teachers use their creativity in preparing supportive videos and animations which gave clear information of the targeted concept; *“The uses of ICT facilities in learning make us understanding more the subject content effectively because we learn by seeing”* (MMSS6, MMSS13 and MVSS25)

Another person said; *“The uses of videos and animation help me to understand well the subject because I see how real situation is related to content”* (MMSS18).

Some of the respondents gave further information of using ICT facilities like cellular phones while at home for reading purposes. The students acknowledged that, their parents gave smart phones and allowed them to search material to find answers for their take home assignments. In responding to the questions of whether the school allowed them to use phones in schools for the matter of learning, some of them argued that they have to be allowed to use phones in schools to enhance access to material. They also emphasized that; the type of phone to be used in school must be smart phones with good access and display; *“Smart phones will be more helpful in*

searching different subject content in our own time and its will support self studies” (MVSS27)

The students’ comfortability in using ICT in learning led them to suggest for all subject teachers to use ICT in teaching process. They also indicated to enjoy when their teacher use ICT in teaching and learning as they have said; *“I think all teachers should use ICT facilities in teaching because we real enjoy the lesson” (MMSS 12).*

They also gave their suggestions on students to be trained more on how to integrate ICT in their learning process in both school and home environment; *“I suggest that students should have training on how to use the available ICT facilities for our self learning in school and even outside the school” (MMSS2)*

Therefore, the above findings show the positive attitude expressed by students towards the use of ICT facilities in education context. Generally, students directly benefited from using ICT facilities due to the ability of ICT tools in enhancing the availability of different sources of information of the subject topic. Hence, they suggested teachers of all subjects to use ICTs in teaching as well as the school administrator to allow students to use smart-phones for searching learning materials.

On the other side of the coin, the findings also revealed the negative attitudes of the students on the uses of ICT facilities due to the unsupportive technological environment, such as inadequate electricity; *“..in our school we are not comfortable in using ICT because there is no electricity...” (MVSS36)*

Other respondents added that, they had inadequate ICT facilities to be used by both teachers and students all the time. For instance, one of the selected school acknowledge to have some few computers (16) which were inadequate to accommodate more than 70 students from a single stream especially when searching for important information for assignments. One respondent lamented that: *“We are not comfortable because there are no enough ICT facilities to enhance learning” (MMSS31)*

In other schools, there was no even a single computer to be used by students. The school possessed only two computers which are used for administrative purpose, according to one respondent, who stated that: *“In our school we are not comfortable in using ICT and computers are there for office use only”* (MVSS38)

The negative attitude of some respondents emerged to be caused by teachers who did not strategically integrate ICT facilities as a supporting tool in teaching but as the model of presenting material through power point; *“..because most of teachers uses power point by bulleting points only will make had to understand the concept and easy to forget it....”* (MMSS4)

The negative attitude was also shown by some students when asked whether they should be allowed to use phones in schools for learning purpose. The response to the question shows that, they should not be allowed to stay or use phone because some of them already possess the gadgets for personal entertainment and chartings in social Media; *“Smart phones are not useful to us as students because it can influence us to charts instead of learning”* (MMSS5)

Others said that, among the social media which they use to interact with are Instagram and Youtube where some current videos and pictures of famous people including musicians are available; *“When am allowed to use smart phone, I can open Instagram account to see new artist stories every day”* (MMSS7)

The negative attitude of respondents was also caused by the cost of some portable ICT facilities which was suitable for learning like smartphone, tablets and personal computers; *“It is very costly to use as well as to own smart phones because its need internet bundle while others comes from poor family so we can’t afford it”* (MVSS9)

The above findings on the negative attitudes of students on the integration of ICT in teaching and learning process shows that improper integration of ICT facilities in teaching, inadequate ICT facilities, unsupportive technological environment and ignorance of students on the importance of using ICT facilities like smartphone in learning were among the cause for some students to create negative attitudes.

4.5 Challenges in Integrating ICT Facilities to Teaching and Learning

The study revealed some challenges where by selected secondary schools (MMS1, MMS2, MMS3, MMS4, MVS1, MVS2, MVS3, and MVS4) in Mororgoro Municipality and Mvomero District. The challenges include inadequate ICT facilities, instability of power supply, rigidity of some teachers in integrating ICT in curriculum pedagogy, and inadequate ICT knowledge and skills,

4.5.1 Inadequacy of ICT Facilities

The study investigated ICT facilities such as computers, scanner, printers, photocopier, TVs, loudspeakers, white board and projectors as shown in appendix 1. The study used the mentioned facilities as reference because they were commonly used by teachers in daily school activities including teaching and learning process. Hence the study revealed that, all the investigated schools were claiming for inadequacy of ICT facilities with relation to the number of teachers and students available in their schools. For instance the studied schools seem to have more than 60 students in one stream except MMS2 school which had 35-40 students. But the available computers in schools ranged from 2 to 39 as shown under the figure 4.6;

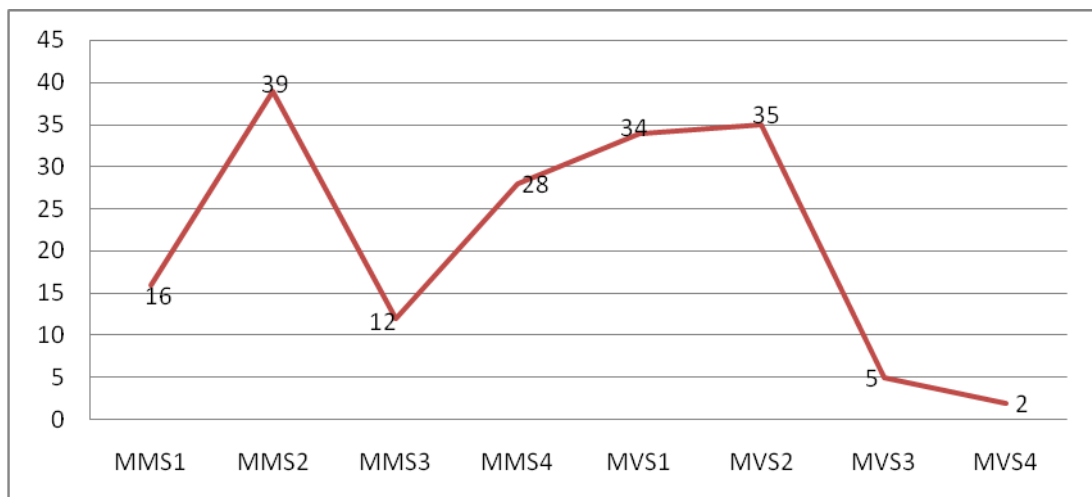


Figure 4.6: Distribution of computers in selected secondary schools

Source: Researcher, 2020

Figure 4.6 above indicates that, the challenges on the lack of ICT facilities especially computers differ from one school to another. For instance MVS4 School had only

two (2) computers which were mainly used for administrative purpose. According to the respondents from MVS4 school teachers were not able to use even their own personal computers due to the absence of electricity whereby the school uses generator to supply power to the head of school office only when there was an important or official document to be typed or printed. The school had also a single photocopier machine which was bought purposely for duplicating examination papers and some text books which were inadequate.

Furthermore, the findings revealed that, the challenges of inadequate ICT facilities made schools to lack of some important ICT services like the school website (MVS3 & MVS4) where the school community (parents, students and teachers) could access some important information and announcements. The challenges were also contributing to the risk of some official information due to the absence of school e-mail whereby some schools (MMS1, MVS3 & MVS4) use personal mails of the head of school or any other teacher to send some school documents needed to district education office, region or NECTA.

The MMSEO and MVSDEO are aware of the inadequacy of ICT facilities in schools. They said that most of schools suffer lack of ICT facilities in teaching and learning, which hinder the effective usage of ICT in education.

ICT facilities in my schools were not enough...most of my schools they suffered with scarcity of computers and projectors. For example MVS & MVS4 they do not even a single projector (MVSDEO).

The inadequacy of ICT facilities is among the problem facing my schools. The facilities we have do not accommodate all teachers and students... (MMSEO)

4.5.2 Instability of Power supply

Another challenge faced by ICT users in secondary schools is inadequate power supply in some secondary schools. The study through observation checklist shows that the power supply seem to be unstable in Mvomero schools (MVS3 & MVS4) in which the schools use generators to access the power in few hours of the day which were also cost full in terms of fuel. Inadequate power supply was said to be

associated by the unsupportive technological environment (infrastructure). It was also noticed that some schools including MMS3 and MVS2 had many classes which had no electricity. The schools (MVS3 & MVS4) did not have computer lab for smooth storing of ICT facilities. Hence, majority of respondents 60% agreed that their school environment had poor support in uses of ICT facilities in teaching.

4.5.3 Inadequate ICT Knowledge and skills

The researcher was eager to find out whether all secondary school teachers had adequate skills and knowledge of employing ICT facilities in teaching and learning process. The data as collected from heads of schools as among of the study respondents shows that only few teachers have ICT knowledge and skills as they had been sent to training as shown in table 4.8

Table 4.7: The number of ICT trained teachers in selected secondary schools

Schools	MMS1	MMS2	MMS3	MMS4	MVS1	MVS2	MVS3	MVS4
ICT trained teachers	14	14	10	10	10	14	05	02

Source: Researcher, 2020

The collected data from the table 4.8 above shows that, the number of secondary school teachers who have been sent to ICT training for the consecutive three years (2017/2020) from the five selected secondary schools were 75. According to MVDSEO the four selected schools had approximately of more than four hundred (400) teachers. Hence, the numbers of teachers who undergo ICT training on how to use ICT facilities in teaching and learning process were few compared to number of teachers in schools. For instance the head of MMS1 School had 106 but only 14 teachers were undergo ICT training which is equivalent to 13%. Therefore, majority 87% believed to have little skills of using the available ICT facilities in teaching. Other schools like MVS4 only two (2) teachers were taken for training. Respondents added that the criteria for choosing teachers for training were bias due to the reason that only those who possess computer and had little ICT knowledge were given priority to attend the training.

4.5.4 Rigidity of some Teachers to Integrate ICT in Curriculum Pedagogy

Another challenge was the rigidity of some teachers to use ICT tools. This was clearly shown from schools which had large number of ICT facilities but the integration of the technology was too low (MMS1, MMS2, MMS4, MVS1 & MVS2). Some respondents added that majority of teachers possessed the first degree, and in many university courses the undergraduates were taught on the basic knowledge of information and communication technology (ICT) but they did not want to apply their knowledge in using the limited ICT facilities available in their schools;

Some of us had ICT knowledge from different universities ...but we did not want to take trouble because the preparation of lesson material through ICT needs much efforts and time (MMST11)

Some of respondents claimed that, some of their fellow teachers were not ready to use ICT facilities in teaching due to their rigidity in using traditional method of teaching (lecturing). They also did not bother to create teaching aids through computer by regarding the whole process as wastage of time. They further added that the use of computer in teaching might delay the completion of syllabus compared to traditional way (lecturing method). They said, “*I use to present mathematics on the blackboard...for instance quadratic equations which need demonstration, stage by stage by involving students...*” (MVST22)

Old teachers in our school are the most who does not use ICT facilities in classroom because they believed on tradition way of teaching and said that ICTs are for young people... (MMST2 and MVST25)

The above quotations show that some teachers were rigid due to the nature of their subjects (mathematics). Hence, the challenges of integrating ICT facilities were associated with the availability of facilities, environment, ICT knowledge and ability of integrating the technology to the teaching pedagogy.

4.6 Opportunities of using ICT Facilities in Teaching and Learning

The study revealed different opportunities gained by the teachers and students due to the uses of available ICT facilities in schools. The uses of ICT facilities in teaching and learning bring more changes to teachers and students. Most of them enjoyed teaching with slides, animations, and videos related with curriculum content. The same, students also enjoy the lesson when they saw real picture or videos. The result found the opportunities like storing materials, varieties of teaching methods, simplifies works to teachers, and led scholarship opportunity.

4.6.1 ICT facilities help teachers to prepare and storing teaching materials

The use of ICT facilities helped teachers to get opportunities of storing some important school information. The data collected shows that, some important information stored were students scores, continuous assessments, number of teachers, school timetables, minutes of school meetings, discipline records, school mission, school vision, teachers and non teachers roster as well as workers attendance. Some of teachers said:

I used computer to store my teaching documents like notes, and attendance list. Also I use to edit my learning materials in order to add or to remove outdated materials for improvements (MMST6)

Another respondent highlighted that; “My computer helps me to prepare notes, teaching aids, animations and videos. These helps me to support teaching and learning process in my class” (MVST23, & 25)

I used my computer and flash to store different administration documents like names of teachers, students and letters. Also used to send and receive different emails from local government and to register students for national examinations (MMSH1, 2. and 4; MVSH5. and 6)

When i use ICT facilities in my teaching and learning i feel more comfortable because most of my subject content already prepared and stored in my flash so it's make me easy to teach my students in any time and they enjoying my lesson (MMS5)

The above quotations reveal the felt importance of ICT integration in schools, whereby most of teachers they realized that ICT facilities performed different task as you like. They use to search different teaching materials in order to be competent and to help students to have notes for learning.

4.6.2 ICT facilities help teachers to apply varieties of teaching methods

ICT facilities enabled teachers to employ different teaching methods like learner centered approach in which students were fully integrated to the curriculum content. For instance, some teachers used web quest in order to influence learners to find answers from the internet during the lesson after being provided some questions and internet address where they could find some answers. Some of teachers said:

The use of ICT facilities helps me to use different techniques in teaching and students understand well my lesson. For example I use to give students questions then they use available computers in lab to search for materials in order to answer questions (MVST27)

I have forgotten to use chalk to write notes, it is traditional way of teaching...now I use projector to display animations then students they can discuss what they see (MMS17)

In my class I have students with ear impairment...so I like to use video related to subject matter in order to make them understand the lesson (MMST 1)

The above quotations reveal the way teachers interact with ICTs to change different teaching methods to ensure their students understood the lesson effective. The use of visual-aids material in teaching and learning as pedagogical tool helps some of students who had ear impairments to understand the content because they see what is displayed. So the ICT facilities like projectors were used to display some visual aids related to the subject content like diagrams which gave chance to understand the concept taught by teachers.

4.6.3 Uses of ICT facilities help student to have scholarship opportunity

The data collected from the selected secondary schools revealed that students were among the group having different opportunities due to the integration of ICT facilities including having ICT training in some schools (MMS1 & MMS2). Due to

ICT knowledge and skills, some students from some schools were granted scholarship for short courses and degree in China because they were able to use school ICT facilities to fill different scholarship application forms (MMS2).

ICT in my school helps some students especially form six to apply different scholarships and finally three students last year 2018 have got scholarship to study in china (MMSH2)

The quotation above shows that, the ICT facilities in schools help students to do different things through their knowledge and skills. Some of students joined Chinese language online courses which tend to use school internet for studying.

4.6.4 Uses of ICT facilities and students' interaction with learning materials

Other opportunities gained by students include the interaction with material related to their subject contents through different sources. The different sources mentioned by respondents were including NECTA for past papers, goggle book Wikipedia, and e-library administered by Tanzania Institute of Education (TIE), where by all secondary books were stored and allowing teachers and students to read online. The respondents added that the interaction with material was not only ending in school hours but even to their homes through their parent's phones (MMS2, MMS3 & MMS4) *"The use of ICT equipments has enabled us to download various books and read for ourselves"* (MMSS 8 & MVSS 25)

The quotation above proves the importance of ICT facilities in schools which help students to have wide knowledge in search and download different learning resources. These resources help them for their independent study according to the subject content.

The use of visual-aids material in teaching and learning was also an opportunity revealed by the study that gained by some students. This was due to the reason that some schools (MMS1) had some students who had ear impairments. So the ICT facilities like projectors and TVs were used to display some visual aids related to the subject content like diagrams which gave chance to understand the concept taught by teachers:

Teaching with audiovisual facilities influence more understanding in our class...even the students who have ear impairment were able to see and enjoyed the lesson...(MMSS8)

4.7 Summary of the chapter

The chapter has shown that, both male and female teachers from selected secondary schools (MMS1, MMS2, MMS3, MMS4, MVS1, MVS2, MVS3, and MVS4) were using computer facilities in teaching. Males indicated more interest in using the technology compared to females. The findings also revealed that, some teachers tend to use their personal ICT facilities like computers and phones as well as school facilities in preparation of teaching aids and presentation. The findings have shown that, students enjoyed much benefits compared to other stakeholders in the use of ICT facilities in teaching and learning. This is mainly because the focus was to increase students' understanding and performance.

Some schools did not use some of ICT facilities like TVs which were available due to inadequate ICT skills and reluctance of some teachers to carry the facilities to classrooms. The challenge of some teachers' reluctance in using some ICT facilities was in line with the absence of some ICT services to some schools like unstable internet connectivity which hinder searching of online material to facilitate subject contents.

Similarly importantly, teachers and students had expressed their attitudes towards the use of ICT facilities in teaching and learning. They had both positive and negative attitudes which were influenced by the presence of ICT facilities and technological environment which either support or did not support the integration process. Both respondents acknowledged having opportunities due to the integration of ICT facilities in teaching and learning like adding their ICT knowledge through training, scholarship to some students, and facilitation of communication, keeping records as well as preparation of assessment and evaluation tools.

Finally respondents expressed their feelings of the challenges faced by teachers and students in using ICT facilities in teaching and learning. Such challenges relate to inadequate of ICT facilities, power supply and rigidity of some teachers to use ICT facilities with teaching pedagogy as they relied on traditional way of teaching (lecturing).

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 Introduction

The discussion of the research findings is based on the objective to find out and compare the usage of ICT facilities in teaching and learning process among secondary schools in Morogoro Municipality and Mvomero Districts. The discussion is also guided by the four specific objectives; to identify the available ICT facilities, teachers and students' attitudes, opportunities as well as challenges facing teachers and students in the uses of ICT facilities in education context. The study also captures the personal information of the respondents mainly through questionnaire and group discussion.

The chapter offers a discussion and interpretation of the findings presented in chapter four in connection to the literature. The discussion is done with reference to the Constructivism Theory and companied with the Planned Behavior Theory. Those theories explain the behavioral change due to the interaction of environment where by the learner could construct his or her own idea. Chaudhary (2018) argued that ICTs by their nature are tools that encourage and support independent learning. Always learning theories in daily life play great role on contributing to the quality of e-learning by providing a framework that guide the implementation and development of effective and appropriate teaching and learning processes (Oliver, 2001). The usage of available ICT facilities in schools goes hand in hand with intrinsic behavior of the teachers and students, knowledge and skills, as well as conducive technological environment of the school whereby teachers and students can interact with and come up with positive integration of ICT facilities in teaching and learning process.

5.2 Demographic Information

The study revealed the importance of demographic characteristics such as age, Sex, education level, and occupation of the respondents. In the context of this study; these attributes shows the peoples experience in usage of available ICT facilities in teaching and learning process. For example, with regard to sex, in this study male teachers were observed to be more confident than female because large number of males was observed using ICT facilities in teaching and learning compared to female. There are also evidences from previous studies such as Mwunda (2014) who proved that male teachers are more competent than female counterparts in the uses of ICTs in teaching and learning process. Al-Dera and Mahdi (2013) commented that, there is a difference between male and female teachers in using ICT in language teaching. Female teachers reported less use of ICT in their instruction than male teachers.

Similar experiences were revealed based on age of respondents where the aged ones expressed reluctance in using ICT facilities compared to young teachers. Majority of the teachers who were born before computers may not have the passion with the ICT use compared to the cohort born in the middle of technological advancement in term of ICT usage and devices

Apart from age, education level and occupation of respondents are other important attributes examined in this study. The study included the respondents with ordinary education level, advanced education level; Diploma education level; University degree level, Master's Degree Education level and Doctorate level. The varying levels of education suggest a diversity of experience, and awareness into uses of ICT facilities in teaching and learning activities. This proved that the usage of ICT facilities in schools depends on the level of knowledge and skills of actors toward the uses of ICT facilities in teaching and learning process.

5.3 Availability of ICT Facilities

The study observed the existence of ICT facilities in all schools. However, the availability of ICT facilities varied across the schools in Morogoro Municipality and Mvomero District. The study revealed that, national schools are relatively well equipped with ICT facilities compared to the ward schools in the region. This also applied in urban schools whereby experienced more ICT facilities than rural schools due to the availability of infrastructures and accessibility of ICT services like internet and electricity. This implied that, urban and national schools were more supported compared to rural and ward schools due to the good infrastructure, location and accessibility of internet. This proves that, the Government and other Non-Governmental Organizations put more efforts onto the national schools than ward schools as well as urban schools than rural schools in provision of ICT facilities.

Moreover, the shortage of ICT facilities in schools leads to poor usage of ICTs in teaching and learning process. This study revealed that, most teachers and students were not using ICT facilities not because they do not have the skills and knowledge but because of limited ICT resources in schools. Some of schools have only two computers like MVS3 and MVS4. These computers are used for administrative purpose like keeping records, typing and printing exams. The shortage of ICT equipment is a result of irregular maintenance which leads to the destruction of equipments in schools. The study observed that, a number of computers, printers and photocopy machines as well as projectors were defective.

This situation indicates that, there was minimal supervision in schools which discouraged the usage of available ICT facilities due to the shortage tools. Similar findings were reported by Mwendwa (2016) that most of schools in Kenya were connected to power but suffered lack of ICT facilities such as laptops, computers, whiteboards, CD-ROMs and anti-viruses which drawback the uses of ICT in schools. Similarly, Eniekenemi and Joel (2016) proved a high need of ICT facilities to be installed in classrooms. Therefore, schools need more ICT facilities to ensure effective integration in teaching and learning process. The study proved that, teachers

in rural areas were not using the available ICT facilities in teaching and learning because of a small number of facilities in their schools.

This implies that, the usage of ICT facilities in teaching and learning depends on the availability and accessibility of the ICT tools in schools.

Availability of ICT facilities motivates teachers as well as students to use ICT facilities in their daily education activities. The findings proved that, preparation of learning materials for effective teaching and learning process depends on the availability of ICT facilities in schools. The study slightly differs from that of Chepkemai and Wanyonyi (2017) which observed that, the provision of ICT facilities in schools was not enough to ensure effective integration of ICTs in teaching and learning. The study contrasts Maholwana-Sotashe (2007) argument that, teachers have not used the available ICT facilities effectively. This proves that both awareness on the benefit in ICT use and availability of ICT resources in schools influences effective use of ICT facilities in teaching and learning process. From that point teachers and students have to know the benefit of using the available ICT facilities for effective teaching and learning.

The researcher observed the presence TVs which were not used in teaching and learning. They used them for watching news, music and sports only. Other schools integrated teaching and learning by deploying the use of movies and animation related to curriculum content. These findings concur with Kamugisha (2019) who affirmed that, teachers must prepare and integrate the available resources adequately to motivate learners in teaching and learning process. Therefore, awareness is very important thing in influencing teachers and students to integrate the use of available of ICT tools like TVs and radios in teaching and learning activities. Nevertheless, more effort also are needed to provide equal ICT facilities in schools in both rural and urban areas to motivate teachers as well as students for effective integration of ICTs as pedagogical tool in teaching and learning process.

The study revealed a shortage of ICT services like electricity and internet which hindered the uses of available ICT facilities in teaching and learning process. Majority of schools especially in rural areas suffer lack of electricity and internet services.

Some of schools used generators to supply electricity but in short hours which did not satisfy teachers and students usage of available ICT facilities in teaching and learning process. To run generators in schools was very expensive due to low capitation grants received from government.

5.4 Teachers and learners' attitude towards the uses of available ICT facilities

This study revealed a positive attitude of teachers and students in using the available ICT facilities in teaching and learning process. Majority of teachers and students demonstrated their willingness to use the available ICT facilities in teaching and learning process. For example, the study observed some teachers were waiting projectors from other teachers who have used them in classes. The study in line with AL-Mmun, Clement and Habibu, (2012) whose findings revealed that teachers had a strong desire to use ICT facilities into Teaching-learning process even though with difficulties. It has been proved that, despite the shortage of ICT tools in their schools, some of teachers tend to use even their own laptops and smart phones for searching, storing, typing, as well as preparing some teaching and learning materials. The findings prove that, large number of male teachers and male students were more interested in integration of ICT in teaching and learning than female. This has been evident from some studies such as Gandhi and Lynch (2015) which found that male teachers had positive perceptions than the female teachers. In addition, males were more willing and open to use ICT in their classes as compared to female teachers. Otherwise, male teachers in the researched schools were more interested in using ICT in teaching compared to the females. This comparison reflects the low participation of female to use the available ICT facilities either due to fear or because they were not given priorities in training opportunity. The study revealed that, most of teachers are interested to use ICTs, but have little knowledge. This makes them inferior to integrate the technology.

The most important thing in this study is the behavioral change of teachers and students who were reluctant in using ICT facilities in teaching and learning activities. Through provision of seminars some of teachers changed in attitudes and engaged in using ICTs in teaching and learning process. The introduction of ICT subject in some of schools played a great role in changing student's attitudes toward the use of ICT facilities in learning. The students are motivated to learn independently through online materials by using the available ICT equipment they have in their schools. The study revealed that in-job training and seminars are very useful in changing people's mindset into positive attitudes towards the effectiveness of using ICTs in education.

These results are consistent with previous research findings of Wanjala (2013) who observed that, teachers are happy and appreciate ICT considering that, with it work has been made faster and easier. The attitudes of teachers and students could change if there is provision of in-service training to encourage them to use ICTs and build confidence to them. The study revealed that, trained teachers organised seminars in their schools in order to share ICT knowledge and skills with other teachers in order to build confidence to them. Finally, large number of teachers has been influenced to use ICT facilities in education activities despite the inadequacy of tools. They used their own smart phones for searching and preparing teaching and learning resources.

5.5 Opportunities of using ICT facilities in teaching and learning

The study revealed some opportunities conceived by the teachers, students, Head of the schools, and Education officers in integrating ICT facilities in their daily activities. Education officers like Morogoro Municipal Secondary Educational Officer, Mvomero District Secondary Education Officers. Ward Education Officers and Head of schools were using ICT facilities for administrative purposes while teachers and students are using them for teaching and learning processes. Some of those facilities include desktops, laptops, printer, scanner, projector, flash disc, and writable CDs. ICTs help teachers to simplify their works, identify and apply a variety of teaching methods.

5.5.1 ICT facilities help teachers to prepare and store teaching materials

The ICT policy for basic education (2007) argued that, the usage of ICT in education will empower learners, teachers, educators, managers and leaders to use ICT judiciously and effectively for expanding learning opportunities and ensuring educational quality and relevance. These findings revealed that an ICT facility simplifies work in teaching and learning process. The finding are also supported by the study of Kisanjara, Mangula, & Noy (2014), who found that the main areas of ICT application in teaching and learning process are creating the teaching aid like visual graphics, charts and drawings, carrying out power point presentation, use of search engines to find educational resources that support teaching and downloading resources which are useful for teaching in subject area. Some of these include the use of scanner or digital camera to import graphics, photos and text for presentation; the use of computer to prepare scheme of work and lesson plan and the use of word processor (writer), database (base), presentation (Impress) and spreadsheets (calc) into subject area curriculum. The findings imply that, teachers create animations, notes, teaching aids and videos which can be used in several times and for a long-time according to the curriculum content. Also stored materials are easily edited either by adding new things or removing outdated content for improvement. The uses of ICT facilities enabled teachers and students to perform their task more easily and quickly compared to those who using hand writing.

5.5.2 Uses of ICT facilities to support teaching methods

The findings revealed that, the integration of ICT facilities in schools influenced many teachers to apply different method of teaching. Teachers are using pictures, animations as well as videos related to curriculum content to ensure their students understand the lesson effectively. The findings discovered the activeness of students in class once they see real pictures and videos displayed either through projectors or television to describe the contents prepared by the teacher. By using those ICT tools in teaching and learning, students enjoy the lesson at the same time understand the content of the lesson effectively. Technology also influences and supports what is being learned in schools and makes changes to the way students learn (Chaudhary,

2018). The shift from content-centered curricula to competency-based curricula is associated with a shift from teacher-centered to student-centered forms of delivery.

5.5.3 Uses of ICT facilities and students' scholarship opportunity

The findings revealed that, the use of ICT facilities in schools has made some students to secure scholarship opportunity to study abroad. Students do use ICT knowledge and skills they have to apply scholarship online. Others have obtained scholarship to study abroad. One of the respondents argued that;

In my school, the previous form six students were used the available computers to fill scholarship online application form and finally they got opportunity to study abroad (MMSH2)

This proves that usage of available ICT facilities in schools helps students to do different tasks to satisfy their needs. Students use ICT facilities to search different materials for their own study. But sometimes ICTs help them to do home works in effective way because they have access to read online books from different websites and search engine. This makes them to be more knowledgeable. The results are in line with the research conducted by Ghavifekr, and Rosdy (2015) that the integration of ICT in classroom is getting more important as it helps students to enhance their collaborative learning skills and develop transversal skills that stimulate social skills, problem solving, self-reliance, responsibility and the capacity for reflection and initiative.

According to the constructivism theory of learning, students can construct their own ideas through interaction with environment. This widens what they have in their minds. This is proved by Bada (2015) who articulated that, an important restriction of education is that, teachers cannot simply transmit knowledge to students. They need to actively construct knowledge in their own minds, that is, they discover and transform information, check new information against old, and revise rules when they longer apply. The constructivist view of learning considers the learner as an active agent in the process of knowledge acquisition. The findings proved that, the uses of available ICT facilities in schools influenced learners to learn themselves as well as teachers to apply different teaching pedagogy like learner centered approach.

5.6 Challenges of using ICT in teaching and learning process

The findings revealed some challenges facing teachers and students in a course of using the available ICT facilities in their schools. Those challenges include inadequacy of ICT equipments, lack of internet and electricity in schools, unsupportive ICT environment in schools, and little support from the administrators.

5.6.1 Inadequacy of ICT equipments

Inadequacy of ICT equipment is the major problem highlighted by many respondents interviewed from all schools. Through observation, the inadequacy of ICT facilities varies from one school to another. It has been found that the number of ICT equipment in schools does not match the number of teachers and students. Many teachers complained that they cannot use the available ICT facilities because they do not match their number. Some of schools like MVS3 and MVS4 have only two computers which were used for administrative activities.

The findings revealed that, the shortage of ICT facilities in schools compromise the effective use of ICT tools in teaching and learning process. The present findings concur with the study conducted by Malekani (2018) who proved that, inadequacy of ICT facilities in schools, lack of in service ICT training to teachers, as well as computers and Internet has not yet to be effectively tapped as one of the foremost resource in enhancing the learning and teaching activities in Tanzania's secondary schools. Mtindya (2017) also argued that, inadequacy of ICT facilities demoralizes teachers from engaging in ICT practices.

5.6.2 Lack of internet and electricity in schools

Accessibility of internet and lack of electricity in schools are the major problems facing the integration of available ICT facilities in schools. The findings proved the problem of internet and electricity in secondary schools which hindered the ICT usage in teaching and learning. The most interesting aspect is that, some of schools especially in rural areas are not connected with electricity. They use generators when they want to use computer for education activities. This hinders the effectiveness of ICT integration in schools, and discourages teachers who have passion in using their

own laptops in teaching and learning process. Swarts & Wachira (2010) proved that although indicators show rapid growth in the Tanzanian ICT infrastructure, communication facilities were available mainly in the urban areas leaving the rural areas where the majority of Tanzanians stayed. In this regard, the main challenge for the Government is to ensure availability of electricity and internet services in both urban and rural schools.

5.6.3 Unsupportive ICT environment in schools

The findings have also shown that unsupportive ICT environment in schools cause unwillingness of teachers and students to integrate the use of ICT facilities in teaching and learning process. This was also revealed by Ngeze (2017), who commented that, most schools do not have ICT infrastructure in place. The results have shown that, computer labs did not accommodate all students because number of computers does not match with number of students. The findings observed that one computer was used by two up to three students. This makes students' uncomfortable use the available ICT facilities in learning.

5.6.4 Shortage of in-service training to teachers

Mwalongo (2011) argued that, teachers who had received some form of computer training displayed more use ICT in various areas than those who did not receive any training. The findings revealed that most teachers have not received on job training for the uses of ICT facilities in teaching and learning. According to the responses from teachers, the findings have shown that, few teachers have got in-service training from Africa Digital Schools Initiatives (ADSI) under Global e-Schools and Communities Initiative (GESCI). Others use their knowledge from university and colleges during their studies. The study proved that there is small number of teachers who received seminars and in-job training concerning the integration of ICT facilities in education. Most of teachers were not engaged in training which makes them unconfident to integrate the available ICT facilities in classroom. The researcher observed the importance of in-job training to teachers as to obtain knowledge and skills which trigger positive attitude of teachers toward ICT use in teaching activities. Vankatesh et al. (2000) narrate that, individuals' perception on the usage technology

is the most important determinant of behavior change to adopt new technology. The findings concur with the study by Ngeze (2017), that teachers are ready to use ICT in their teaching and learning activities if and only if they have the skills and knowledge to do so. Most of the secondary school teachers (77.0%) now possess either a laptop or a smart phone or both. Most of interviewed teachers and students strongly agreed that uses of ICT facilities made it easy for them to do their education activities.

5.7 Summary of chapter five

The chapter has reviewed the findings presented in chapter four and offered a discussion based on research questions and objectives. The usage of available facilities in secondary schools is conceived positively. Many schools have ICT facilities like computers, projectors, scanners, printers and photocopier for education activities.

The study observed some variations of ICT facilities in schools whereby the urban and national schools had large number of equipments compared to rural and ward schools. These proved that the government and NGOs preferred national and urban school in provision of ICT tools compared to the schools located in rural areas as well as ward schools. Some schools in rural areas had two computers while other schools in urban have up to thirty nine (39) computers. These discouraged teachers in rural areas to integrate with ICT facilities in teaching and learning process.

The study revealed positive attitudes and perceptions of the teachers and students. Many teachers are willing to use ICT facilities in teaching despite the shortage of equipments. They used even their personal devices like laptops and smart phones for searching and storing different teaching materials. Students also enjoyed the lessons and became active in the class due to the uses of videos, animations, and pictures to describe the content of the lesson.

The study also revealed some opportunities secured by the teachers and students toward the uses of ICT facilities in teaching and learning process. ICTs helped teachers to do their work easily; they agreed that ICT tools helped them to create animations, charts, searching teaching materials, and downloading videos for teaching process. ICTs also helped teachers to secure different teaching methodology to ensure activeness in their class. ICTs also helped students to read independently and other students do use ICTs to apply online scholarships.

Apart from the opportunities of using ICT facilities, respondents also indicated some experience of challenges. These include inadequacy of ICT equipments, unsupported ICT infrastructures, and lack of in-job training, problem of internet and connection of electricity. The study revealed that, most of teachers and students had been demoralized and lost confidence for the use of ICTs in schools because of the difficulties they faced. The study also proved that, large number of teachers had not been trained to use ICT facilities in teaching and learning. This is likely to compromise the use of ICT in teaching and learning process.

CHAPTER SIX

SUMMARY AND CONCUSSION

6.1 Introduction

This chapter provides the summary of the study, policy implication, conclusion and recommendations of the study. The summary presents the brief explanation of the work from chapter one up to chapter five which reflects the overviews of using available ICT facilities in teaching and learning in secondary schools. The conclusion and recommendation also provide the action to be taken to promote ICT application in secondary schools. The chapter lastly closes by areas for further studies.

6.2 The summary of the study

The study was set to examine the usage of the available ICT facilities in teaching and learning process in Tanzania. A comparative analysis was made between secondary schools in Mororgoro Municipality and Mvomero District. The study is driven by four objectives; to identify the availability of ICT facilities employed in teaching and learning process in secondary schools; to find out teachers and learners attitudes towards the use of ICT facilities in teaching and learning process and; to identify opportunities and challenges facing secondary schools in using ICT facilities in teaching and learning process. The study covered eight secondary schools, whereby four schools are from Morogoro Municipality and other four schools from Mvomero District.

The study was guided by Constructivism Learning and supported by Theory of Planned Behavior. These theories believed on the ability of learners to construct their own idea through previous experience and interaction with environment whereby changes in learner's attitude were inevitable. The study employed qualitative and quantitative approach so as to speculate inner feelings, perceptions and attitudes of the teachers and students on the usage of available ICT facilities in teaching and learning process. The multiple case study design was also employed in the study to come up with intensive data that shows the usage of ICT facilities in secondary

schools. The study involved a total of 97 respondents who were selected through purposive and random sampling techniques. The selected sample was investigated via interview, focus group discussion, documentary review observation and questionnaire. The findings also revealed that teachers and students were more active when using ICT facilities as a teaching and learning tools. The ICT facilities have great impact on students in terms of effectiveness of the available ICT facilities through their performance.

In case of the availability of ICT facilities in secondary schools, both districts had inadequate ICT facilities employed in teaching and learning. Inadequacy of the ICT facilities varies from school to school though the urban school (Morogoro Municipal schools) had high number of facilities compared to rural schools (Mvomero District schools). The study also observed the school with less ICT facilities to have less implementation of ICT facilities in teaching and learning compared to schools with a good number of ICT facilities.

The data collected have shown that the availability of ICT facilities in schools, supportive school environment and the prior ICT knowledge among teachers and students determined the attitudes on the use of ICT facilities in teaching and learning. For instance, the respondents who were coming from schools with a good number of ICT facilities showed positive attitudes towards the usage of ICT facilities in teaching and learning process. The respondents added that, ICT facilities were used in different ways to facilitate learning such as searching of online material, preparation of teaching aids, presentation and storage of some important students or school information. The uses of ICT facilities in teaching was further regarded as a fruitless due to some challenge in their school environment or nature of the school leadership because some school leaders had no interests of using ICT.

6.3 Conclusion

The study focussed on the usage of ICT facilities in teaching and learning process. A comparative analysis was done in terms of accessibility, attitudes, opportunities and challenges faced teachers and students toward the uses of available ICT facilities in selected secondary schools between Morogoro Municipality and Mvomero District.

The study revealed variation of adequacy of ICT facilities among schools. Most of urban schools are relatively equipped compared to rural schools. This proves that the urban schools received more ICT equipments from Governments and NGOs compared to rural schools due to the improvement of infrastructures like roads, electricity and accessibility of internet in urban areas. Most of schools in rural areas suffered non-conducive infrastructure and environment, which led to less provision of ICT facilities. This also revealed in national schools and ward schools. National schools experienced adequacy of ICT facilities compared to ward schools due to the availability of infrastructures and accessibility of ICT services like internet and electricity.

The positive attitudes among teachers and students have an implication to ICT policy implementation. Students also indicated some response toward integration of available ICT facilities by searching and downloading different learning materials in their computer labs for learning activities. However, the negative attitude was associated with nature of subject among other factors for integrating ICTs in teaching and learning.

It can be concluded that, regardless of the attitudes driven by infrastructural and contextual factors, ICT tools are very useful to both students and teachers to enhance teaching and learning processes. The applications of ICTs are increasing in all level of education, especially in secondary schools. Users' expectations have increased due to developments in technologies. However, it is inefficiently implemented in some urban and rural schools which suggest a gap between ICT policy and practice. Most of teachers are not aware of the existing policy and they not prepared. Teachers' training in ICT knowledge and skills were not made in accordance with the requirement of the ICT policy objectives. Therefore, it is difficult to put the ICT policy objectives into practice based on the insufficient training some teachers received and problem of electricity as well as inadequacy of facilities in schools.

6.4 Policy implications and recommendations

Information and Communications Technology (ICT) came into effective use since the end of the 20th Century. It has led to multiple convergences of content, computing, telecommunications and broadcasting. They have brought about changes in different sectors including education. Some of the changes relate to increased capacity of ICT in education by introducing computers to be used in schools. The introduction of ICT aimed to increase ability of teachers to integrate the technology (URT, 2003).

The development of ICT capacity of teachers is also emphasized by the policy to reduce the gap between those who are able and unable to participate in using the digital devices (computers & projectors) to increase the activeness and understanding capacity of learners in schools. This is in line with the 2014 Education and Training Policy which was designed to address the existing challenges on the use of new technologies in teaching and learning. The policy needs the use of technology to overcome inadequate learning material, clarity of the subject content, unreliable assessment tools, and the media of instructions and storage of school information. Both ICT policy and free education policy recommend ICT facilities to be integrated in all activities especially in education sectors.

The study recommends for various in-job training to teachers in order to impart knowledge and skills toward the uses of ICT facilities in classroom. In-job training increases morality, awareness and confidence to teachers on the uses of available ICT facilities in preparing, creating and storing teaching materials. The Government and NGOs should provide training to all teachers for effective use of ICT facilities in teaching and learning process.

The study recommends the need to build positive attitude to teachers and students on the use of ICT facilities in teaching and learning. Motivation is one of the key factors which encourage the integration of available ICT facilities in teaching and learning process. Motivation could be the provision of in service training to teachers, free internet, and provision of ICT facilities like flash disc as well as writable CDs. The

findings proved that there is the need of all education officers like REO's, DSEO's, WEO's and Head of schools to ensure effective monitoring and evaluation to secure the uses of available ICT facilities in schools.

The government should make sure that every school is connected to electricity to produce human resources with expertise in technology. Both rural and urban secondary school teachers and students should be encouraged to integrate ICT due to the role it is perceived to play on the current dynamics of curriculum in education. The Government and NGOs should provide enough ICT facilities to all schools without considering their localities either urban or rural schools. There should be equal distribution of ICT facilities to ensure effective integration in classroom. Improvement of school infrastructure should be done in all schools to support the integration of available ICT facilities in positive way.

The findings discovered that, teachers and students need to have supportive environment in order to support teaching and learning activities with ICT. Some facilities include computers, projectors, reliable electricity and access of internet. Obvious learning environment with equipped ICT tools will motivate teachers and students for integration of ICT facilities in teaching and learning activities. Swartz, and Wachira (2010) concluded that, ICT in Education should be situated not only within the education policy and strategy but also within the broader national development strategy. These sectoral and national policies and strategies coupled with strong government commitment and understanding of the role of ICT and Education are the basis for the existence of conducive and enabling environment under which ICT can flourish and be put to use to contribute to socio-economic development. Monitoring and evaluation in educational sector are very important to ensure effective implementation of available ICT facilities in teaching and learning process in secondary schools. The District Education Officers, Ward Education Officers and Head of schools should be more active to ensure all available ICT facilities are used in effective way in teaching and learning process.

6.5 Recommendations for further studies

Given the findings of this study, further studies could contribute to improved use of ICT facilities in schools. Expansion of the study area and sample size may be useful and the future researcher may come up with wide range of results. The study should be conducted to find out the reasons for the government to provide more ICT facilities and improvement of supportive ICT infrastructure in national schools compared to ward schools (community schools). Other studies may be conducted to find out the reasons for teachers rigidity in using TVs in teaching and learning.

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APPENDICES

APPENDIX I:

ANONYMOUS NAMES FOR RESPONDENTS' CONFIDENTIALITY

MM	Mororgoro Municipality	MMS1	Mororgoro Municipality School one	MMST1	First School Teacher in Mororgoro Municipality
				MMSS1	First School Student in Mororgoro Municipality School
				MMSH1	Headmaster of the first school in Mororgoro Municipality
		MMS2	Mororgoro Municipality School two	MMST2	Second School Teacher in Mororgoro Municipality
				MMSS2	Second School Student in Mororgoro Municipality
				MMSH2	Headmaster of the second school in Mororgoro Municipality
MV	Mvomero	MVS1	Mvomero School one	MVST1	First School Teacher in Mvomero
				MVSS1	First School Student in Mvomero
				MVSH1	Headmaster of the first school in Mvomero
		MVS2	Mvomero School two	MVST2	Second School Teacher in Mvomero
				MVSS2	Second School Student in Mvomero
				MVSH2	Headmaster of the second school in Mvomero

APPENDIX II

INTERVIEW GUIDE FOR MSEO

This study basically focuses on *Comparative analysis on the Usage of the available ICT facilities in Teaching and Learning process in Tanzania*. Please I would like to owe your participation in this interview and all answers will remain confidential and purposefully for the study.

Age.....

Position.....

Date.....

Sex.....

1. In your experience, are there any schools using ICT facilities in teaching and learning?
2. How do you support your schools in using ICT facilities in teaching and learning processes?
3. Which criteria did you use to select the current schools which were involved in ICT training program?
4. What are the governments' intentions for initiating ICT programmed in secondary schools?
5. On your opinion how do teachers perceive the use of ICT facilities in teaching and learning process?
6. In your experience, what are the challenges towards ICT integration in your secondary schools?
7. In your experience, what do you think need to be done to improve the situation in secondary schools so that ICT will be empowered for all teachers?
8. In your experience, how the use of ICT facilities in schools affects students' performance?

APPENDIX III

INTERVIEW GUIDE FOR HEADS OF SCHOOLS

This study basically focuses on *Comparative analysis on the Usage of the available ICT facilities in Teaching and Learning process in Tanzania*. Please I would like to owe your participation in this interview and all answers will remain confidential and purposefully for the study.

Age.....

Level of education.....

Date.....

Sex.....

1. In your experience, are there any ICT training provided to teachers and students?
2. Which criteria do you use to select teachers to be involved in ICT training programmes?
3. How many teachers hence attended ICT training in your schools?
4. On your opinion how teachers perceive the use of ICT facilities in teaching and learning process?
5. In your experience, are there any students have ICT knowledge on using ICT facilities in learning process?
6. In your experience, do you think the uses of ICT facilities in schools will affect students' performance? And why?
7. According to your experience, what are the challenges towards ICT integration in your school?
8. In your experience, what do you think need to be done to improve the situation in secondary schools so that ICT will be empowered for all teachers?

APPENDIX IV

INTERVIEW GUIDE FOR SUBJECT TEACHERS

This study basically focuses on *Comparative analysis on the Usage of the available ICT facilities in Teaching and Learning process in Tanzania*. Please I would like to owe your participation in this interview and all answers will remain confidential and purposefully for the study.

Age.....

Level of education.....

Working experience.....

School name.....

Ward.....

Date.....Sex.....

1. Have ever attended any training or a course related to ICT integration in teaching?
2. Which ICT sources do you enjoy in your carrier through your mobile phones (interment, e-mail, database, animation, preparing notes, searching for materials, etc)?
3. Which kind of ICT facilities do you prefer most in teaching process?
4. What is the quality of available facilities in your institution?
5. What is the perception of students towards ICT use as a tool for enhancing teaching and learning in classroom?
6. How do you help your students to use ICT facilities in searching online material for your subject content?
7. What is the quality of available ICT facilities in the institutions?
8. On your opinion, what should be done to improve ICT integration in teaching and learning in your school?
9. What do you think if students can be allowed to own smart phones for their learning activities?
10. Which challenges do you face on using ICT in teaching and learning?

11. In your experience, how the use of ICT facilities in schools affects students' performance?

APPENDIX V

INTERVIEW GUIDE FOR A FOCUSED GROUP DISCUSSION TO STUDENT'S IN SECONDARY SCHOOL.

This study basically focuses on *Comparative analysis on the Usage of the available ICT facilities in Teaching and Learning process in Tanzania*. Please I would like to owe your participation in this group discussion and all answers will remain confidential and purposefully for the study.

Name of school.....

District.....

Number of participants

Male	Female	Total

Level.....

Date.....

1. What do you understand by the term ICT?
2. Do you have smart phone or computer at your home?
3. If yes, how do you use it?
4. Do teachers come with ICT facilities in your classes during the lesson?
5. Are there some ICT skills and orientations which you obtained in school setting?
6. How does ICT use by teachers influence your ability on searching online learning material?
7. What are your opinions about the use of ICT by teachers in teaching and learning processes?
8. What do you think need to be done to improve ICT use to raise performance?

APPENDIX VI

OBSERVATIONS CHECKLIST/GUIDE

This study basically focuses on *Comparative analysis on the Usage of the available ICT facilities in Teaching and Learning process in Tanzania*. Please I would like to owe your participation in observation and all detail will remain confidential and purposefully for the study.

Name of school.....

District.....

Date.....

S/N	AREA OF OBSERVATION	REMARKS
1	Presence of computers	
2	Quality of computer labs (size, number, networks, & electricity)	
3	Computer lab students attendance	
4	Types and availability of ICT services provided	
5	Presence of Projectors	
6	Presence of Printers	
7	Presence of Television / Audiovisual	
8	E-boards	
9	School website	
10	Flash disc	
11	Loudspeaker	
12	Scanner	

APPENDIX VII

CHECKLIST FOR SUBJECT TEACHERS

This study basically focuses on *Comparative analysis on the Usage of the available ICT facilities in Teaching and Learning processes in Tanzania*. Please I would like to owe your participation in this checklist and detail will remain confidential and purposefully for the study.

1	Assistance from Government bodies ()
2	Assistance from NGOs ()
3	Availability of ICT facilities and infrastructures CDs () Computer for office () Computer lab () DVDs () E-books () Electricity () Interment () Learning App () PowerPoint () Projector () Smart boards () Smart phone () Social media () Teaching software () Public address () Scanner () Loudspeaker () Laptop ()

APPENDIX: VIII

**QUESTIONNAIRE FOR TEACHERS ATTITUDES TOWARD THE
USEFULLNES OF AVAILABLE ICT FACILITIES IN SCHOOLS. Put (V)**

Questions		Strong disagree	Disagree	Not sure	Agree	Strong agree
1	Are you comfortable using ICT in teaching and learning?					
2	Do you think there is an advantage in using ICT facilities in teaching and learning processes?					
3	Do you think ICT will provide new teaching ways?					
4	Do you think ICT usage will change the students' way of learning?					
5	Do you think ICT facilities are more useful than traditional teaching ways?					
6	Do you think students should be allowed to use smart phones for learning in school?					
7	Do you think the usage of ICTs helps learners understanding concepts effectively?					
8	Do you think school environment is very supportive to ICT use?					
9	The use of ICT facilities increased the ability of learners to interact themselves and materials?					
10	I use videos, animation, and power point in teaching students					
11	Do you think the use of ICT in teaching and learning will increase school performance?					
12	Your smart phone helps you in searching teaching materials?					

APPENDIX: IX

QUESTIONNAIRE FOR STUDENT ATTITUDES TOWARD USEFULNES

OF AVAILABLE ICT FACILITIES IN SCHOOLS. Put (V)

Questions		Strong disagree	Disagree	Not sure	Agree	Strong agree
1	Are you comfortable using ICT facilities in your learning process?					
2	Do you think there is an advantage in using ICT facilities in your learning processes?					
4	Do you think ICT will provide new learning styles?					
5	Do you think ICT facilities usage will change your understanding in class?					
6	Do you think ICT facilities are more useful in learning?					
7	Do you think students should be allowed to use smart phones for learning in school?					
8	Do you think the usage of ICT helps you in understanding concepts effectively?					
9	Do you think school environment is very supportive to ICT use?					
10	Do you think the uses of ICT in teaching and learning will increase your performance?					