

**PRACTICES AND PERCEPTIONS OF STAKEHOLDERS ABOUT
THE IMPLEMENTATION OF ICT IN GOVERNMENT SECONDARY
SCHOOLS OF DIRE DAWA ADMINISTRATION**

MA THESIS

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NOVEMBER, 2017

HARAMAYA UNIVERSITY, HARAMAYA

**Practices and Perceptions of Stakeholders about the Implementation of
ICT in Government Secondary Schools of**

Dire Dawa Administration

**A Thesis Submitted to the Postgraduate Program Directorate
College of Education and Behavioral Sciences, Department of Educational
Planning and Management**

HARAMAYA UNIVERSITY

**In Partial Fulfillment of the Requirements for the Degree of
Master of Arts in Educational Leadership**

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NOVEMBER, 2017

HARAMAYA UNIVERSITY, HARAMAYA

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DEDICATION

To all individuals who are always kind and fond of others.

STATEMENT OF THE AUTHOR

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical and technical principles of scholarship in the preparation, data collection, data analysis and compilation of this thesis. Any scholarly matter that included in the thesis has been recognized through citation.

The thesis is submitted in partial fulfillment of the requirements for a Master of Art in Educational Leadership degree at the Haramaya University. The thesis is deposited in the Haramaya University Library and is made available to borrowers under the rule of Library. I solemnly declare that this thesis has not been submitted to any other institution any were for the award of any academic degree, diploma or certificate.

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BIOGRAPHICAL SKETCH

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ACKNOWLEDGEMENT

First of all, I would like to thank Ministry of Education, DireDawa Education bureau and Haramaya University for giving me the opportunity to study. I would like to express my heartfelt appreciation and gratitude to my major advisor Dr. Bahar Adem and co-advisor, Dr. Garkebo Basha for their constructive advice and unreserved support during the whole process of the study. My special thanks also go to my friend Ato Elias Kebede Regasa for his encouragement during my work.

I would also like to thank all instructors and administrative staff in the College of Education and Behavioral Sciences for their unreserved support. I am thankful for all research participants who gave me their unreserved time and support during the data collection process.

ABBREVIATIONS AND ACRONYMS

CTTC	Cyber Teacher Training Centre.
DDA	Dire Dawa Administration.
ETP	Education and Training Policy.
GEQIP	General Education Quality Improvement Package.
ICT	Information Communication Technology.
IMS	Information Management System.
MoE	Ministry of Education.
PSTA	Parents Student Teachers Association.
TGE	Transitional Government of Ethiopia.
TL	Transformational Leadership.
VAT	Value-Added Tax .

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PRACTICES AND PERCEPTIONS OF STAKEHOLDERS ABOUT THE IMPLEMENTATION OF ICT IN GOVERNMENT SECONDARY SCHOOLS OF DIRE DAWA ADMINISTRATION

FIKADU SENBETA

ABSTRACT

The purpose of this study was to investigate secondary school stakeholders practices and perceptions on implementing Information and Communication Technologies (ICT) in government secondary schools of Dire Dawa city Administration. Descriptive survey design was employed in conducting this study. For this study, both primary and secondary sources of data were used. The total population of this study consisted of 388 teachers, 9 principals, 2 ICT experts and 9 student council heads in government secondary schools of Dire Dawa Administration. Accordingly, 134 teachers were selected by simple random sampling and 9 principals, 2 ICT experts and 9 student council heads were taken purposively hence a total of 154 sample subjects were selected in the study. Among various data collecting instruments, questionnaire and interview were used to generate the necessary information. Statistical package for social science version 20 software was employed to analyze the data by frequency, percentage, and mean. The study findings indicate that the stakeholders practices and perceptions on implementing Information and Communication Technologies (ICT) in government secondary schools of Dire Dawa city Administration is low. The sources of the problems are lack of ICT infrastructure, lack of qualified teachers, finance, lack of adequate training of ICT, lack of technical and maintenance, lack of time for in-servicing staff on ICT and less attention and restrictive administration practices. The results of this research suggest the decision makers should give high responsiveness for the implementation of ICT by improving the current funding, monitoring and evaluation system and on teachers development; this include preparation of annual ICT training, inviting high level experts for lectures, support ICT teachers to pursue their higher level education. It is recommended that special attention should be given for the infrastructure development to meet the national and regional education goals.

1. INTRODUCTION

This study was conducted to investigate secondary school stakeholders practice and perceptions on implementing Information and Communication Technologies (ICT) in secondary schools of Dire Dawa administration. In this chapter, the researcher presents the background of the study, the statement of the problem, the research questions, and objective of the study, the significance of the study, delimitation of the study and operational definition of key terms.

1.1. Background of the Study

Schools are the formal agencies of education where the future citizens are shaped and developed through the process of teaching and learning. So, schools need to help all students to develop their potentials to the fullest level. This requires the effectiveness and commitment of the stakeholders particularly school leaders and teachers . Schools must improve their basic functions of teaching and learning process that aims at helping and empowering all students to raise their broad outcomes through instructional improvement with the help of information communication technology (ICT).

To achieve these expected outcomes, there is a need to have well-organized information communication technology utilization to assure improved educational instructional and to have professionally motivated principals. The relevance and quality education can be provided for the learners by engaging a well-trained and professionally developed principals at all levels of education that are capable of utilizing, promoting and expanding ICT. According to the current context of Ethiopia, quality education is depend on several issues, among others educational planning, leadership, teacher's professional competence, instructional supervision, ICT utilization and classroom teaching-learning situation are the common ones (MoE, 2008). Schools are within the dynamic and changing social system. Teachers and other staff personnel's continually face new and challenging situation every time. Thus, teachers have great need to get appropriate information support to become professionally competent. Effective learning of students is promoted through the provision of effective communication channels to teachers.

In supporting the above idea, Chanyalew (2005), stated that ICT is important in promoting principals professional practice as it frequently designed to collect interpret, modify, and disseminate information and accordingly to update and improve various classroom techniques and teacher skills. Similarly, MoE (2008) illustrated the role of ICT as it should not be used as a discrete subject but as a dynamic means in the teaching and learning process aiming at a more effective implementation of the school curriculum and developing of skills such as problem solving, decision making, communication and information handling.

According to the MoE (2008), in the last ten years, substantial quantitative achievements have been made in education mainly students' enrollment and expansion of schools. Although quantitative progress has been made, the quality of education being offered is not to the desired level. The issue of quality of education is important as that of quantitative expansion. There is a great debate among educationalists at all levels about the quality of education. According to the MoE (2004), the Ethiopian government has now shifted its attention to improve quality education. It has started quality education initiative called GEQIP of 2008. Some of its programs are school improvement program and expansion of information communication technology, which is the focus of this study.

The integration of ICT program in school is believed to bolster the quality of school leadership and instruction via fostering various pedagogies. Specifically, research evidence shows that principals and teachers' use of ICT to sustain students' attention, increase the meaningfulness of abstract concepts, encourage deep processing, and boosts class performance through increased content acquisition .Most importantly, it is argued that the advent of information and communication technology calls for modification of principals', students' and teachers' roles as it triggers a shift from manual paper based to digital modes of leadership and instruction (Neo, 2007) and causes teachers to confront their established beliefs about instruction (Earle,2002). For these reasons, the current study will try to assess the practice and perception of secondary school stakeholders in the process of implementing ICT program and suggest the possible recommendation against the weakness and short coming that may be found. According to ESDP IV Percentage of secondary schools with access to computer-assisted Instruction were 6% and Percentage of secondary schools equipped with internet to access digital education resources were 28%.

1.2. Statement of the Problem

The Ethiopian Education and Training Policy (ETP) promises to intensify the integration of ICT in school curriculum (TGE, 1994). In view of that, the ETP states that: "...due attention will be given to the supply, distribution and utilization of educational materials, educational technology and facilities." Furthermore, the recently introduced GEQIP clearly stipulates a separate ICT integration and implementation program (MoE, 2007). This view more indicates to facilitate the integration of ICT in schools. However, there is little or no empirical evidence exists related to principal's role, in particular in the process of integrating ICT in Ethiopian school system.

The limited studies conducted in the late 1990s do not provide sufficient evidence since a lot has changed over the past decade partly due to the rapid expansion of primary and secondary education in Ethiopia (MoE, 2009). Thus, updated empirical evidence is necessary to inform policy makers, curriculum experts and other stakeholders. Although there are some local research evidence that investigate the practice and perception of teachers on ICT, they all focus on teachers and students only and their classroom ICT related activities. For instance Aminu (2012), indicates that teachers are less concerned about ICT and have wrong perception about it. They usually perceive ICT as the only concern of educational officers. Hiwot(2013), indicate that the practices and challenges of ICT as a subject, ICT and pedagogical use in government preparatory schools found in Dire Dawa administration council is at premature stage. This study might bridge the research gap that have not given due attention to schools stakeholders and their ICT practice and understanding. The researcher came across a number of challenges that affect the successful implementation of ICT in many schools. Some challenges are observed because it might be the gap of our curriculum in negating the integration of ICT in Mathematics, Science English, and other subjects; unreliable access for schools to hardware, software, technical support and infrastructure. A further challenge might also lies in the need to motivate principals and others to use ICT, and to see its value for teaching and learning. It is expected to give support to teachers in providing them with materials, and in guiding them in accessing them with up to date training. Therefore, the researcher was struck by the lack of technological expertise, and set out to conducting and to make contribution towards promoting the use of ICT in Government secondary schools of DDA. Another compelling reason for the

researcher to carry out this study is to contribute towards the limited literature in the area of ICT implementation in secondary schools. As it is stated in MoE, (2007) Ethiopia, like other developing countries, is challenged by a lack of qualified personnel to lead the promotion of ICT. I hope this research will help to some extent in order to alleviate these problems.

In short, there is limited responsibility of stakeholders in facilitating ICT. They are using only for secretarial and plasma transmission purpose, and some of them perceive ICT only as the knowledge of basic computer application like office package. Therefore, this research will focus on assessing the practice and perception of school stakeholders in implementing ICT as school improvement program. In order to investigate this, the following four research questions were answered in the study.

1.3. Research Questions

In this part of the study the main questions of the research will be raised. Thus the following are the main questions of the study to be investigated.

1. To what extent ICT materials are available in government secondary schools of DDA?
2. What are the practices of ICT program implementation by stakeholders in Government secondary schools of DDA?
3. What are the perceptions of school stakeholders about the implementation of ICT in Government secondary schools of DDA?
4. What are the challenges of ICT implementation in Government secondary schools of DDA?

1.4 Objective of the Study

In this section both general and specific objective will be stated shortly.

1.4.1. General Objective

The overall objective of this study is to assess the current practice and perception of stakeholders in Dire Dawa secondary schools in the process of utilizing and facilitating ICT.

1.4.2. Specific Objectives

The specific objectives of the study were to:

1. Examine the current status of ICT materials in Government secondary schools of DDA.
2. Investigate the practice of school stakeholders in implementing ICT program in Government secondary schools of DDA.
3. Analyze the perceptions of school stakeholders in implementing ICT program in Government secondary schools of DDA.
4. Identify challenges that affect the implementation of ICT in Government secondary schools of DDA.

1.5. Significance of the Study

The findings of the study may have significance in the following ways. Primarily, it provide information for DDA Education Officials and other education sector officials on the status of ICT materials in secondary schools. Secondly, it reveals School stakeholders practice and their perception on ICT and helps them to contribute their share to improve the implementation of ICT for school leadership. Thirdly, it might show the major obstacles on the implementation of ICT and seeks solutions for the identified barriers. And also it may serve as a starting point for other researchers who are interested to do their research in this area

1.6. Delimitation of the Study

The study was directed to investigate the practice and perceptions of ICT implementation in government secondary schools of DDA. Accordingly, the study was delimited to DDA, the findings and conclusions reflect the real situation of nine government secondary schools. To make the high population manageable, the study focused on secondary schools (9-10). In addition to this, the study be delimited to the practice, perception and challenges of ICT implementation in government secondary schools of DDA. The participants of the study are delimited to teachers, school principals, ICT experts and student council heads. Due to the above reasons, the researcher has been made the study manageable, practical and attainable within the time and available resources.

1.7. Limitations of the Study

There were no literature references regarding local context of Ethiopia in the library of Haramaya University. Hence, the researcher was forced to depend much on foreign books and journals. Besides, unwillingness of a few respondents to fill the questioner and return back on time. However, the researcher had done all the possible efforts to complete this study successfully.

1.8. Organization of the study

The study is organized in to five chapters. The first chapter includes the introduction, Statement of the problem, objective of the study, signification of the study, delimitation of the study, organization of the study and the second chapter include that literature review, the third chapter have the methodology and chapter four contains data presentation and analysis chapter five included summaries, conclusion and recommendation of the study.

1.9. Operational Definition of key Terms

Challenges: problems that face ICT implementation in the government secondary schools of Dire Dawa administration.

ICT access: - Refers to the availability of ICT hardware and software in a school.

ICT implementation: - refer to considering the facilitation and use of ICT as a regular task and instrument that facilitate both educational and managerial skills.

ICT: - Refers to technologies that assist in manipulating and exchanging both digitalized and non-digitalized information using both hardware and software.

ICT literacy: - Refers to principals and other staffs' knowledge and application about ICT in school leadership functions.

Perception: - refers to belief or opinion, often held by many people and based on appearance” (Plante and Beattie, 2004).

Practices: - Teaching and learning of ICT as a subject of teaching and adapting more practical and likely to lead to success in schools.

Secondary Schools: - refers to grade 9-10 government schools.

Stakeholders: refers to the principals, teachers, ICT experts of Dire Dawa education bureau and student council heads of government Secondary schools of DDA.

2. REVIEW OF RELATED LITERATURE

This chapter states; the concepts of ICT and then, reviews the various related literature on studies particularly secondary school ICT implementation, practice, perception and challenges will be reviewed.

2.1. The Concept of ICT

Pernia (2008) defines ICT as technologies used to communicate in order to create, manage and distribute information. She adds that a broad definition of ICTs includes computers, the internet, telephone, television, radio and audio-visual equipment. She further explains that ICT is any device and application used to access, manage, integrate, evaluate, accurate and communicate information and knowledge. Digital technology is included in this definition as services and applications used for communication and information processing functions associated with these devices.

According to (MoE, 2008) ICT is seen as a combination of Information Technology (IT) and telecommunications. The document further explains that IT is the electronic-display, processing and storage of information, but not necessarily the transmission of the information. Onunga and Shah (2005) further argue that digital technology reflects hardware and software products, communication tools and products with services used to transmit information. The term is meant to be as inclusive as possible to reflect the breadth of hardware, software and infrastructure that make up ICT (Pernia, 2008). Chemwa and Mburu (2007) also consider ICT as hardware includes electricity infrastructure, desktop computer, laptop computer, CD drive, printer, scanner, telephone (mobile or landline) and projector. Onunga and Shah (2005) define software as detailed instructions called programmers and data that enable the hardware to perform its tasks at high speed. They further classify computer software as system and application software. They outline that system software, which manages computer operations, includes the operating system of the computer, a compiler that translates programs and utility programs such as back up. In addition, the authors mention that application software handles the needs of the end user to solve specific problems; examples include software packages that can be used in school administration and related tasks. Ferrigan (2007) gives examples of ICT application software as word processing, spreadsheets, databases, e-mail, the Internet and

presentation software, which enhance the quality of leader-worker interactions. In this study, ICT is therefore defined as a combination of ICT infrastructure which includes hardware and application software and networks that connect them.

2.2. The Need to and Rationale for ICT in Education

It is necessary to know the rationale before beginning to use computers in schools and classrooms. There is little or no point in providing computers in schools unless such a rationale has been completed. With the increasing availability of computer hardware it is important that teachers do not become engrossed in the machine but focus rather on their primary role as educators. Teachers need to extend their imaginations with the awareness that as developments in computer technology occur they will be able to achieve more of their goals. Since the 1960's the computer has been heralded, by some, as the solution to many problems in education. Many early computer scientists saw the possibility of the computer replacing teachers in schools. However these pictures of students sitting behind computer terminals for much of the day have largely not occurred in mainstream schools and most would not like this to be realized.

There are three main rationales for ICT in schools: one concerns the organizational productivity of the school, and the other two focus on the needs of students: technological literacy and support for their learning. The latter two rationales are supported by the recent Australian report raising the Standards. On average, students who used computer-based instruction scored at the 64th percentile on tests of achievement compared to students in the control conditions without computers who scored at the 50th percentile. West Virginia's Basic Skills/Computer Education program was more cost effective in improving student achievement than (1) class size reduction from 35 to 20 students, (2) increasing instructional time, and (3) cross age tutoring programs. Differences in attainment associated with the greater use of ICT were clearly present in more than a third of all comparisons made between pupils' expected and actual scores.(Becta, 2002)Given the right conditions for access and use, significant gains in student learning a rerecorded with ICT .

2.3. ICT in Schools

The Impact of ICT has been promoted as a way of making education more effective. Recently, researchers have shown that ICT supports and promotes teaching and learning activities . Importantly, ICT offers “new ways of teaching and learning that are underpinned by constructivist theories of learning and constitute a shift from a teacher-centered pedagogy in its worst form characterized by memorization and rote learning to one that is learner-centered” (Tinio, 2002). Thus, ICT is perceived as a valuable education tool. However, the role of the teacher or facilitator is also critical and cannot be ignored. Osborne and Hennessy (2003) emphasize the role of the teacher; they state that a significant role is played by the teacher as they create the conditions for effective ICT. Therefore, ICT is considered as tool that creates and causes change in the practices and behaviors of both teachers and students. While some people view the use of ICT in education in negative ways (Trucano, 2008; Yelland, 2001), and it is also perceived as a positive influence by many in the global education field.

Further, ICT has potential advantages which assist the world to develop, to decrease the technological gap between the developed and emerging countries, and to reduce poverty, as well as to facilitate communication and knowledge sharing (Kelles-Viitanen, Tinio 2003; The World Bank, 2008). In education, ICT is seen as a valuable tool to enhance student engagement and to transform conventional teaching and learning methods Balanskat *et al.*(2007). According to Punie, *et al.*, (2008), ICT helps to motivate students by initiating new methods of teaching. For example, ICT can help students with special educational needs, simulate a range of scientific phenomena, develop problem-solving capabilities, develop research skills, and interpret and organize information. For example, students can learn about chemical reactions through multimedia images and animations (Mumtaz, 2000). ICT makes use of a combination of information and communication methods and, as a result, helps students to learn faster.

The strength of ICT is that it makes use of text, images, motion and, sometimes, sounds, to engage the learner and transform traditional teaching approaches (Selinger, 2000). Moreover, through networking, ICT uses information repeatedly, while also increasing the learner’s chance to participate in real world events (Baumgartner, *et al.*, 2001). For these reasons, ICT

offers great advantages for students, and teachers; it also facilitates management processes, such as meetings and training sessions (Haddad,*et al.*, 2006). The use of ICT positively increases the motivation and performance levels of students (Alharbi, 2012; The World Bank, 2008; Tinio, 2003). Change is also seen as a positive ICT influence on the behavior and skills of the students. Further, ICT also helps in the training of teachers and instructors. For example, the Cyber Teacher Training Centre (CTTC), developed in Korea, provides many effective online vocational training programs for teachers (Baek*et al.*, 2001). The training programs help teachers think creatively and learn new ideas for teaching their students.

The use of ICT also saves time, as teachers can avoid the time required to initiate and attend face-to-face meetings (Jung, *et al.*, 2010). In order to reap the benefits of ICT, it is essential for teachers to be technologically literate. Thus, they need to be able to use computers, the Internet, websites, networking and software programs. While ICT is about enhancing teaching, learning, and administrative processes, it also provides a forum for communicating and interacting socially, thinking critically, and building a lifelong learning culture (Creighton, *et al.*, 2006). Nevertheless, ICT implementation in schools requires much effort for successful integration. Embedding ICT requires both behavioral and practical amendments which can be challenging for educators.

2.4. ICT in School Education in the Developing World

In the developing world, ICTs are used largely to increase access to and improve the relevance and quality of education. ICTs have demonstrated potential to increase the options, access, participation, and achievement for all students. The unprecedented speed and general availability of diverse and relevant information due to ICT, extends educational opportunities to the marginalized and exposed groups, among the other disadvantaged. ICT in the developing world have the potential to enhance the education experience for children who: live in rural and remote-rural locations, have special learning needs, have physical disabilities constraining their access to schools, have dropped out and or have kept themselves out of school for various reasons, aim for excellence and fail to get satisfied in the current system. Teachers and learners in the developing world are no longer only dependent on physical media such as printed textbooks which are often times outdated. With today's technology, one even

has the ability to access experts, professionals and leaders in their fields of interest, around the world at any given time.

2.5. ICT in School Education in the Developed World

In the developed countries and the urban elites of advanced economies, 21 century education integrates technologies, engaging students in ways which were not previously possible, creating new learning and teaching possibilities, enhancing achievement and extending interactions with local and global communities. Students live in a world that has seen an information explosion and significant and rapid social and economic changes.

2.6. ICT and the Ethiopian Education System

Education is one of the fundamental pillars for ensuring sustainable and fast economic development and that is why the Federal Government of Ethiopia gives so much emphasis not only to expand it but also to ensure the quality they offer. Tremendous progress had been made in the education sector of Ethiopia since the new Education and Training Policies (ETP) of the country were put in place in 1994. Within the framework of the packages (GEQIP), a key recommendation of the education sector Annual Review Meeting (ARM) is that Ministry of Education and Development Partners (MEDPs) work together to implement General Education Quality Improvement Program (GEQIP) through a pooled funding mechanism (ARM, 2007). The proposed program will support the implementation of the six components of the GEQIP (2008), namely; Teacher Development Program (TDP) including English Language Quality Improvement Program (ELQIP), Curriculum, Text books and Assessment including Inspection, Management and Administration Program (MAP) with an EMIS sub-component, School Improvement Program (SIP) with a school grant sub-component, Information Communications Technology (ICT) component, and Civics and Ethical Education (MoE, 2008).

A secondary schools ICT curriculum should contribute to the building up of teams of professionals with these new competencies (AminuTeha, 2012). The use of ICT cuts across all aspects of economic and social life. Technological developments in ICT are very rapid. Technology quickly becomes obsolete requiring new skills and knowledge to be mastered frequently. Adaptation is only possible when based on a sound understanding of the principles

and concepts of ICT were noted in ICT in Education by (John Daniel, 2002). Specifically, the curriculum materials which the students learn in the school and the methodology underpinning in it are the foremost factors, mentioned by many researchers affecting the students' school experience. The implication of this assertion is that the provision of different curriculum materials and/or the use of different ways of learning for two groups of students can result in differences in the students' school experiences (Getnet, 2008).

2.6.1. ICT in Education Policy of Ethiopia

The importance the Government of Ethiopia has placed on education for national development is evident from the urgency with which the transitional government adopted the Education and Training Policy in 1994. This document outlined the mission and goals for the education system of Ethiopia to achieve the present and future national economic and social development goals. It has been the foundation of all the sector policies that have followed, including the Education Sector Development Program I and II and the ICT in Education Implementation Strategy and Action Plan. The ICT in Education Implementation Strategy and its corresponding Action Plan are components of a wider Ethiopian national electronic-education initiative. This initiative forms one of the pillars of the ICT for Development 2010 Plan. The strategy is built on three main streams such as Ethiopian National School Net Initiative, the National ICTs in Higher Education Initiative and the National ICT Education, Training and Awareness Initiative.

These three streams form the basis for the implementation of the strategy across the education sector. The National School Net initiative, for instance, is aimed at the deployment and the exploitation of ICTs to facilitate the teaching and learning process within primary, secondary, technical and vocational schools. The ICTs in Higher Education Initiative focuses on deploying ICTs within the universities, colleges, and research institutions. And, finally, the National ICT Education, training and awareness initiative promotes ICT awareness and literacy, lifelong and adult education, and distance and virtual education and learning. The strategy also identifies strategic goals and draws up a program and activities for each initiative. Both the national ICT 2010 Plan and the ICT in Education Implementation Strategy recognize ICT as an enabler for widening access to education for the Ethiopian population, for

supporting literacy education, and for facilitating educational delivery and training at all levels (Hare , 2007).

2.6.2. ICT in Ethiopian Schools

With the existing infrastructure, there are obvious challenges to the proposed strategy. For instance, the strategy envisages the practices of ICT into the learning, teaching, and administration of the school system through education information management systems. But with only 40% of schools in Ethiopia having computers, this may be a daunting task. And of the schools that do have computers, most of them are in Addis Ababa, thereby creating a major rural-urban divide should the strategy be implemented within the current context (Harry Hare, 2007). A related challenge is that most schools have limited or low access to the Internet. Those schools that are connected generally use e-mail only and it is available only to the administration.

Access to ICTs by teachers is also limited, especially to computers and the internet, which makes it difficult to assume that educators can integrate ICT into their teaching. These challenges notwithstanding, the Ministry of Education, through the ICT in Education Implementation Strategy, has drawn up an action plan that consists of programs and initiatives. These programmes include the formation of a National Task Force for ICT in Education and a Secretariat under the Ministry of Education that will coordinate the activities.

To address the connectivity challenges, the Ethiopian Telecommunication Corporation, with assistance from the government, the World Bank, the African Development Bank and the International Monetary Fund (IMF) has established a state of the art multimedia broadband backbone infrastructure with a core nucleus of 4,000 kilometers of optical fiber. It is this same network that has provided a backbone for the first phase of the School-Net initiative. Classrooms in schools are equipped with plasma screens and receive lessons via video broadcast for eight hours a day by satellite TV with content from the Educational Media Agency. 10 local area networks have also been established in schools, which have also received computers from the project (Hare , 2007).

2.6.3. Current ICT Initiatives and Projects

Woreda-net Initiative: This is a major electronic-government initiative that connects all 600 of Ethiopia's local councils (woredas) to 11 regional capitals through internet telephone and video-conferencing. Half the links are by cable, and half by satellite the initiative also provides connectivity to the School-net, health and the soon to be launched Agri-net. Woreda-net is implemented by the Ethiopia Telecommunication Agency with funding from the World Bank and the African Development Bank through the Ministry of Capacity Building (ICT for Development, 2006).

The joint initiative by the Ministry of Education and UNDP is probably the most visible project in the country with a total of 181 schools equipped with a minimum of 15 networked computers per lab all connected to the Internet. An additional 15 schools were to be equipped with computers and a printer by the end of February 2007. There are new programs around this initiative in the planning stages, including creating an extranet that will connect the schools (ICT for Development, 2006).

2.7. Perceptions of School Stakeholders on ICT Implementation

Perceptions about ICT in schools reflect on many things. Perception is defined as a "belief or option, often held by many people and based on appearance" (Plante and Beattie, 2004). However, this researcher view perceptions as referring to school principals' beliefs, emotions, attitudes and opinions towards ICT implementation in teaching and learning process. For example, school principals' perceptions are essential in the ICT implementation of teaching and learning activities in schools. From the definition, we can note the value of perception as it creates a connection from information to knowledge from one's individual perspective using emotions and opinions in a teaching and learning environment.

Perception is crucial for determining an individual's knowledge of the subject at hand. It is in agreement with Plante and Beattie (2004) who further argued that perception allows for various interpretations of information. Another important factor about perception is that school principals' attitudes can affect the ICT implementation of teaching and learning environment. Han, (2002) has observed that, it is important to realize that the school principals' existing

attitudes, skills and working habits will have a great influence on their acceptance, style of implementation and outcome regarding educational computing.

School principals' attitudes towards teachers and ICT integration differ. Literature indicates that school principals have the capacity to influence, motivate and encourage teachers in the use of ICT in schools Han, (2002). The researcher is in agreement with Davies, (2005) who studied how short-term improvement can become strategically sustainable, and pointed out those school principals should show interest in ICT and be enthusiastic about it. In support of this argument, findings of studies Foskett *et al.*,(2009) confirmed that it was important for school principals to continuously motivate teachers towards ICT implementation. On the contrary, negative comments and opinions of school principals, as well as limited knowledge, could lead to teachers' low motivation. This coincides with the opinions of Fosket *et al.*,(2009) that low motivation may demote and hamper the functioning of a school as well as the attainment of ICT objectives and opportunities for development. However, it is indicated that school principals who seem to have negative attitudes could ICT implementation process Lumby *et al.*, (2003). Research shows that school principals who are knowledgeable about ICT and have the positive attitude seem to have right perception that could lead school principals to create appropriate opportunities for ICT implementation (Akbaba *et al.*, 2007). Therefore, it is imperative for school principals to have the right combination of knowledge and attitude to make their beliefs a reality to effectively implement ICT in schools.

2.8. Perceptions of teachers towards ICT in schools

Research shows that if teachers perceive ICT programs are either satisfying their own needs or their students' needs, it is likely they would implement it in school. Research suggests that teachers' adequacy, skills, and attitudes influence successful implementation of ICT in schools. If teachers' perceptions are positive toward use of ICT, then they can easily provide useful insight about its implementation.

A study by Simonson (2008) revealed that teachers' skills, perception and attitudes were related to their use of ICT in teaching and learning. The more skilled teachers were in ICT, the more likely they were to use it in classroom. Further study by Drent & Meelissen (2008)

revealed that positive attitude, personal entrepreneurship and computer experience had a direct positive influence on adoption and use of ICT by teachers.

A similar study by Huang & Liaw, (2008) shown that teachers' skills, attitudes and perceptions influenced their acceptance of the usefulness of ICT and its implementation in schools. A survey by EU School net in 2010 (cited by Andoh, 2012) involving teachers' use of Acer net books in six European Union countries, revealed that a large number of participants perceived use of net book had positive impact on their learning, elicited interest, promoted individualized learning and helped to lengthen study beyond school day. However, a study by Korte and Husing, (2007) suggested that small number of teachers perceived benefits of ICT in schools were not clearly identified. Some teachers viewed ICT as waste of time and expensive. A report by (Becta, 2008) on a survey of UK teachers (cited in Andoh, 2012) revealed that teachers' positivity about possible contributions of ICT in schools, was moderated as they became rather unsure and sometimes doubtful about specific and current advantages of it.

Woodrow, (2002) points that for successful transformation of school practice; teachers need to develop positive Attitudes toward innovations. Van Braak, Tondeur, and Valcke, (2008) argued that positive computer attitudes by teachers are expected to foster implementation of ICT in schools. Further study by Teo (2012) on teachers' attitudes towards computer use in Singapore, found that teachers were more positive about their attitude towards computers and intention to use them, than the helpfulness of computer towards teaching and learning. These studies reveal that teacher's skills, perceptions, and attitudes influence adoption and use of ICT in schools.

2.9. The Role of School stakeholders in ICT Implementation

The implementation of ICT refers to enhancement and extension of teaching and learning across a wide range of subject areas has proved challenging to many schools, and understanding the issues regarding encouragement, support and infrastructures required to achieve this has proved to be complex. However, there are some schools where almost all staff have adapted ICT use into their working practices, adapting existing approaches to

teaching and learning and developing new ones. In other schools with apparently similar desire for ICT to be used, and similar resourcing, only pockets of limited ICT use has been achieved (Ainelyet *al.*, 2008).

The educational potential of information and communications technology will not be realized without the support of school leaders, specifically the principal (Schiller, 2003). Principals play various roles such as change agent, lifelong learner, main supporter, and resource provider in relation to ICT implementation in schools (Han, 2002). If principals want to lead effectively their school in technology integration, they should accept technology and realize the role that technology can play in the teaching-learning process. In fact, “it is difficult to imagine a leader who does not use technology trying to convince teachers that it is important” (Cafolla and Knee, 1995). Therefore, principals need to understand the capacities of the new technologies, to have a personal proficiency in their use, and be able to promote a school culture which encourages exploration of new techniques in teaching, learning and management (Schiller, 2003).

2.9.1. As a change agent

A change agent is a person whose role includes the responsibility of initiating and facilitating change or a professional whose major function is the advocacy of innovations into practice (Adam, 2005). Effective implementation of an innovation is dependent to a considerable degree upon the active intervention of key personnel in change agent roles; their roles are crucial because school improvement program require time and effort for effective change (Wangoet *al.*, 2009) explains that there is a considerable increase in knowledge and innovations which have had an impact on education. He elaborates that education policy makers will have to combine the knowledge of individual schools with an understanding of administrative and managerial factors and skills so as to influence the process of change. According to the regulations of the MOE (2004), the roles of a secondary school principal in Ethiopia are outlined as:

2.9.2. Implementation of the approved curriculum and ICT

The ministry of education outlines that a secondary school principal is responsible for giving the school direction to offer the approved curriculum, for periodically checking students' exercise books, projects and practical work to confirm the exact situation in the classroom and for teaching lessons. In addition, the principal convenes regular staff meetings, holds information meetings with school personnel and ensures adequate preparation of students for school tests and national examinations. The above state principals tasks and responsibilities will be more achievable whenever they are practiced and administered with the help of ICT.

2.9.3. Management and control of School Finances

A principal is responsible for all revenue and expenditure plans, transactions, and books of accounts and records although there other supportive nonacademic staffs. In addition, the principal of a school outlines all supported payments from school budget and funds, checks regular keeping of school account books in accordance with accounting instructions for educational institutions. The principal also initiates income generating projects and adheres to stores procurement procedures in acquiring sufficient school supplies. The principal also ensures custody of, constant reference to and familiarity with account and legal documents. All these things are unthinkable in the actual context unless they are assisted with ICT.

2.9.4. Management and motivation of human resources in the school

According to the new regulations of the TSC, principals are responsible for delegation of responsibilities and duties to school personnel's. They also welcome and induct new teaching and non-teaching staff, as well as supervise, appraise and report on the performance of school personnel. Since teachers and non-teaching staff require in-service training for continual learning, a principal has the responsibility of creating an environment for staff training and development. These training and induction programs needs to conducted with help of ICT equipment like computer, projector etc.

2.10. Challenges of Implementing ICT

National Council for Science and Technology (2010) stated that while ICT continues to advance in western and Asian countries, African countries still experience a lag in its implementation, and that continues to widen the digital and knowledge divides. In a recent

study by Kiptalam (2010), observed that access to ICT facilities is a major challenge facing most African countries, with a ratio of 1 computer to 150 students against the ratio of 1:15 students in the developed countries.

The lack of effective training is another barrier to effective use of ICT among teachers (Hennessy, 2005; Binginlas, 2009). Sicilia (as cited in Binginlas, 2009) stated that teachers want to learn new ICT tools and approaches but the lack of opportunities for professional development hindered them from integrating technology in their teaching. The problem of not sufficiently prepared and confident to make full use of ICT in classroom arises because of the inadequate or inappropriate training given to the teachers.

Several researches reported that the lack of access to resources also discourages and limits teachers from integrating new technologies into education (Binginlas,2009). Becta publication, “Primary Schools-ICT and Standards” in 2003 presented strong evidence that schools which were well resourced in ICT tended to achieve better academically than schools with unsatisfactory levels of ICT. Hence, the lack of good ICT resources in schools prevents teachers from utilizing ICT in teaching to improve students’ performance. Research studies indicated several reasons for the lack of accessibility. Teacher complained about the difficulties to always have access to ICT materials or hardware and software because most of these were shared with other teachers (Binginlas, 2009).

2.10.1. Challenges in Teaching and Learning of ICT

In recent years, some researches indicated that there is a discrepancy between what is required of the national curriculum and what is practiced in the classrooms. Cuban (2001) claimed the underused of ICT by teachers despite the high level of installation. The act of integrating ICT into classroom is a complex process and one that may encounter a number of difficulties albeit the potential of ICT to enhance teaching and learning.

One of the most crucial measures to tackle the barriers is through a collaboration and dialogue between education policy makers and teachers to understand challenges faced by teachers and give appropriate supports (Hennessy 2005). Teachers who are the key players in integration should have more say in designing and implementing development plans for using ICT within their schools and for defining the role of ICT within subject curricula. Lack of teacher

competence is also another barrier closely related to teacher confidence. Newhouse (2009) stated that many teachers lacked the knowledge and skills to use computers and were not enthusiastic about the changes and integration of bringing computers into their classroom practice.

2.11. Factors that Affect the Effective Implementation of ICT

Research studies in the past decade have shown that ICT is an effective means for widening educational opportunities, but most Principals and teachers neither use technology as an instructional delivery system nor integrate technology into their curriculum. Studies reveal a number of factors might influence principals' decisions to use and facilitate ICT in school. The factors are interrelated. The success of the implementation of ICT is not dependent on the availability or absence of one individual factor, but is determined through a dynamic process involving a set of interrelated factors. However, it is important for teacher trainers and policy makers to understand the factors affecting effectiveness and cost-effectiveness of different approaches to ICT use in teacher training. The themes listed below have been commonly identified as key factors that influence principals' practice of ICT.

2.11.1. Education level

According to (Veenhof *et al*, 2005) observe that an individual may master certain skills, for example the ability to produce tables and graphs using spreadsheet software. Since ICT skills are associated with the process of continuous learning, learners often incorporate several methods to learn necessary computer skills, either formally or informally and seldom rely on only one method of learning Borghans *et al.*,(2004).

Formal methods include courses sponsored by one employer, while less formal methods may include help from colleagues or family, the use of manuals and books, observing others, or self-teaching through trial and error. To same as Veenhof *et al.*,(2005) observe that individuals with less than upper-secondary education are significantly less likely to use computers for a range of purposes and this pattern is most pronounced in Italy and Bermuda. In addition, scales that measure individuals' use of computers and the Internet and attitudes toward computers, tend to increase with the literacy proficiency of individuals Borghans *et al*, (2004).

2.11.2. Level of ICT training

The confidence and competence of principals in the use of ICT are key determinants of the effective use of ICT in administrative duties. Markauskaite (2005) reveals that many school principals have low levels of confidence and competence to enable them to make effective use of ICT in school leadership. School principals not only need formal training, but also sustained and ongoing support from their colleagues to help them learn how best to integrate technology into their administrative duties (Amara, 2006). However, (Selwood *et al.*, 2003) add that one of the main difficulties concerning the diffusion of innovative ICT-based administrative practices in schools is finding ways to engage school administrators in using the new technologies effectively. The level of ICT training measured low among secondary school staff in schools of West England.

2.11.3. Period of experience with ICT

Kirsch and Lennon (2005) show that there is no statistically direct relationship between the ICT skills of more experienced workers and the less experienced workers. In Spain, familiarity with computers and years of experience with ICT correlate positively with levels of institutional management (Selwood *et al.*, 2003)

2.11.4. Financial constraints

Waema, (2002) points out that duties and taxes are levied on ICT products while value-added tax (VAT) is levied on ICT services, making both expensive. Although many governments raise revenue through taxes, the investment in ICT literacy of school leaders in Sub Saharan countries is minimal. He adds that at the same time, many public tertiary institutions charge market rates for all forms of training, including ICT, thus making the training unaffordable to most people. He also observes that government is still one of the key agencies that funds ICT human resource development, making ICT literacy training a difficult task. Of concern, is the high current cost of communication due to high telecommunication tariffs in most countries like Ethiopia.

2.11.5. Lack of ICT infrastructure

The ICT options paper in East African countries indicates that one of the main challenges facing ICT literacy development is limited access and the degree of disparity in infrastructure, especially electricity and telecommunications that exists between rural and urban areas in

Kenya (MoE, 2005). The report continues that getting computers into schools is relatively easy; keeping them working is a greater challenge. A myriad of problems ranging from electrical spikes, to viruses, dust, heat, and normal wear and tear can bring activity in a developing country computer lab to a screeching halt. Pernia (2008) reports that South Korea's problems in ICT literacy development revolve around issues of ICT infrastructure maintenance and best usage of ICT facilities like selection of what should be transmitted on the information superhighway. Many countries globally, lack adequate human capacity in ICT and this is even more critical in African countries (Waibodhi, 2002) and in China where there is a shortage of ICT-skilled people (Pernia, 2008). Waema (2002) raises doubts about the skills of personnel in ICT literacy training in the education sector, where, for example in Kenya, schools employ poorly trained ICT staff.

2.11.6. Inappropriate ICT training curricula

According to Waema (2002), curricula providing ICT training to people in developing countries face challenges. Most curricula are oriented towards teaching the technical aspects of the technology and ignore the social and organizational aspects of ICT. Consequently the graduates who eventually become leaders lack organizational and management skills and are therefore inadequately prepared to deal with the complexity of analysis, design and implementation of ICT in educational organizations. Programs for training ICT professionals are copied from economically developed countries with little modification to reflect the realities of industrial and development in individual countries. These training programs need to be adapted to the local environment to reflect, among other things, the application environment, availability of resources and capabilities of existing training institutions, and the curricula are rarely modified. In some situations, they are still geared towards producing people with specific skills that do not match the demand of school organization or reflect changes in technology. Training curricula and programs for ICT professionals should change in anticipation of changes in ICT. The programs should be dynamic enough to accommodate emerging concepts such as the Internet technology.

2.12. Strategies in managing the use of ICT

Concerning strategies Becta (2000), identified key activities that help us in managing ICT. Managing the use of school ICT is challenging and it requires perseverance from every

member of an organization. With the large amount of money spent by the government the school leader must work in concert with the government's policy in managing and integrating ICT in education. The following are suggested strategies help to design a functional solution in managing school ICT.

2.12.1. Develop a school ICT policy

In achieving the integration of ICT and technological solution, the school leader must have a proper ICT school policy. The policy is a blue print for the school to design and manage ICT program for teachers and students in a systematic and progressive manner. As suggested by Becta (2000), the school ICT policy should consist of objectives, rationale, curriculum audit and goals. The Education Technology Department also has come out with a guide line of managing technology in schools; it should be an important reference to all school leaders.

2.12.2. Learn the technology

The school leaders' command of technology is important. Leaders who are computer literate are more aware of his staff member's needs. Learning the basics of word processing, spreadsheets, presentation software, using web page and the Internet are prerequisite to boost their computer skills. Leaders can form a collaborative network and seek knowledge and training from State Education Resource Center. In order to stay ahead and becoming a competitive person, keeping abreast with the latest technology such as wireless technology and so forth are pertinent for the school leaders. With the vast amount of information and materials around will leave the school leaders nothing less than being a well-informed technology person.

2.12.3. Involving others in the process

In implementing technology successfully, all staff should be encouraged to participate in the implementation process. Early and extensive participation in a change should be part of the implementation. Participation gives those involved a sense of control over the change activity. All teachers should be encouraged to share their technical and pedagogical methods and working in teams in integrating ICT into teaching and learning.

2.12.4. Fostering smart partnership

Having a clear vision for technology is essential in order to make wise decision in integrating and managing ICT in schools. In gaining ICT expertise and fund raising, leaders can foster smart partnership with the community, public and corporate sector. Resourceful leaders should explore many avenues for acquiring technology resources in order to increase accessibility and equity of ICT among the students.

2.12.5. Plan a training program for teachers

In planning for an ICT training program for teachers, the first step is motivating them to learn new knowledge and gaining new skills and competencies. To acquire new knowledge and skills in ICT, the schools should:-Set up a team which consists of teachers with varying skills and competencies were acquiring new inputs from other experts such as teachers from other schools. Implement a mentoring system to help teachers with minimum skills in ICT and Provided opportunities for teachers to pursue ICT training at any teacher's training colleges or universities which offer an in service short courses within one to three months. Evaluating and supervising ICT using teacher in teaching and learning are significant roles that have to be played by the school leaders. These will ensure the skills and competencies of the teachers are met as have been targeted in the school's documented policy.

2.12.6. Benchmarking other Schools

As the use of new technologies is increasing, the school should anticipate and prepare for an ongoing change. In doing so, leaders can exchange information with other schools, be it in pedagogical methods or managerial styles. They can benchmark schools that have good reputation for having an established ICT system in teaching and learning or using ICT effectively in school management. This will broaden knowledge and ideas in integrating ICT in schools.

3. RESEARCH DESIGN AND METHODOLOGY

This chapter includes description of study area, the general methodology, the research design, types of data sources, sampling techniques, Procedure of data collection and methods of data analysis have been thoroughly discussed.

3.1. Description of the Study Area

This study was conducted in nine government secondary schools of Dire Dawa Administration. Dire Dawa administration which is located in eastern part of Ethiopia, 515 km away from the capital city of Addis Ababa along the Addis Ababa-Djibouti rail way road. According to DireDawa government charter proclamation no.416/2004 the administration geographically shares boundary with Oromia Regional State in Western and north eastern and with Somali regional state in the south. Dire Dawa Administration does not have zone and woreda, instead it is structured with 9 kebeles in urban and 4 clusters in rural areas were hierarchies next to the Bureaus. The study will be conducted at nine Government Secondary Schools, which are found in Dire Dawa administrative region. There are 10 government secondary schools in Dire Dawa. Two of them are found in rural and eight of them are in urban among these three of them are 9-12grade level and the rest seven schools are 9-10 grade levels.

3.2. Research Design

Among the various research methods, descriptive survey design was employed to collect necessary information for assessing the existing practices and perceptions of school stakeholders about the Implementation of ICT in Government Secondary Schools of Dire Dawa administration. According to Sharma (2000), descriptive survey research design makes objective description of the status of phenomenon at particular time without value judgment and with no effort to describe what underlies to happen the way. It is used to identify facts such as privilege, opinion, knowledge, practice the progress made toward envisioned educational goals and school success without judgments. Therefore, descriptive survey method employed in this study, the reason for this method is it enables to obtain current information about a problem as a snap shot basis. In addition, both quantitative and qualitative approach was employed to conduct the study. The reason for this approach, as Creswell (2003) stated,

the data collection involved gathering both numerical information as well as text. Therefore, final data represents both quantitative and qualitative information

3.3. Sources of Data

3.3.1. Primary Source

The data was gathered through questionnaire and interviews from relevant respondent's school principals, teachers, ICT experts and student council heads. These participants were selected as a source of primary data because they were assumed to have relevant and better information and experience pertaining to the practices and perception of ICT implementation in their schools.

3.3.2. Secondary Source of data

The secondary source of data for this study are collected from national policy documents, school documents related to ICT plan, utilization, challenges encountered, and reports.

3.4. Target Population, Sample size and Sampling Techniques

3.4.1. Population and Sample Size

The total population of this study was 404 subjects consisted of all principals, teachers, ICT experts and student council heads in government secondary schools of DireDawa Administration. Nine government secondary schools were selected by using purposive sampling, from 10 government secondary schools (9-10th). Accordingly, a sample of 134 teachers were selected from the sample schools by simple random sampling which constitute 35% of secondary school teachers. A sample of 9 principals, 2 ICT experts and 9 Student council heads were selected by availability sampling to constitute 100% of the population. Hence, the total sample of the study were 154 participants. Thus, the researcher believes that the number of sample designed was representing the population of the study and it is assumed to be manageable for the research operation.

3.4.2. Sampling techniques

Today ICT is a backbone in Education system. Hence, this study involved those people who were stakeholders directly related with education sector. These included school principals, teachers, ICT experts and student council heads under this study by using availability sampling techniques. The nine government secondary schools of DireDawa Administration

would be purposively selected. Sample schools among the ten secondary schools from urban and rural areas to explore and identify the practice and perception of ICT implementation of stakeholders. As Best and Kahm (2004) assert, since the method of sample selection is more important than size the simple random sampling technique is used to give equal opportunity for choice for the subject of the study.

Table: 1 Summary of Population, Sample and Sampling Techniques

Target groups	Population Size	Sample Size	Percent	Sample Techniques
Principal	9	9	100%	available
Teachers	388	134	35%	Simple random
Student council heads	9	9	100%	available
ICT experts	2	2	100%	available
Total	404	154		

Table 1 show, among the nine selected schools, all 134 (35%) teachers, 9 (100%) School principals, 2(100%) ICT experts from Dire Dawa education bureau and 9(100%) student council heads. Thus, the total of 154 respondents would be taken from the sample schools by using simple random sampling and available sampling method.

3.5. Data Collection Instruments

Among various data collecting instruments questionnaire and interview were used to collect the necessary information by the researcher. In addition, unstructured interview was conducted with principals, ICT experts and Student council heads.

3.5.1. Questionnaire

Questionnaire would be used commonly to gather data for descriptive survey. In order to gather the appropriate information about current practice and perception of school based ICT in Dire Dawa Administration. Questionnaire would be administered for teachers in light of the literature that have been reviewed. All of the questionnaires be prepared in English as the researcher believes that they could understand the questions. Questionnaires were structured with closed and open ended type. Accordingly, the weight 5 point likert scale items be prepared for respondents. In addition, helps the respondents to choose one option from the given scales that best aligns with their views. In addition to this, open-ended questions were employed in order to give opportunity to express their feelings, perceptions, problems and

intensions related to the school based ICT practice and implementation in the schools. The questionnaire was composed of four parts. The first part of the questionnaire consisted of 11 items regarding The Status of ICT Implementation. The second part consisted of 12 items regarding Practice of ICT Implementation. The third part consisted of 14 items regarding perception about ICT Implementation. Finally, the last part was composed of 22 items regarding the Challenges of ICT Implementation.

In order to make correction and maintain the reliability of the questionnaire, the researcher pilot tested draft of the questionnaire before conducting the final study. Greasley (2008) stated that sound measurement must meet the tests of reliability and validity. Due to this, draft of questionnaire was distributed to 30 teachers. Then, the internal consistency of questionnaire was tested by using Cronbach's alpha. Based on this, 0.79 reliability coefficient was obtained and most of the items were reliable. However, three pieces of a questionnaire from the teachers were not returned. The number of the questionnaire returned was sufficient enough to continue the study. In terms of face validity; the items of the questionnaires checked and rechecked by advisors and language experts. The items that seem vague for the respondents were modified and rephrased. Then, the researcher administered the questionnaire to the respondents.

3.5.2. Interview guide

An interview is defined as a specialized form of communication between people for specific purpose associated with some agreed subject matter (Anderson, 2005). It permits greater depth of response which is not possible through any other means. Thus, the purpose of the interview will be to collect more supplementary opinion, so as to stabilize the questionnaire response. With this in mind, interview was conducted with 9 principals, 9 student council heads and 2 ICT experts. 10 semi structure items would be prepared for the above respondents. The reason behind the semi-structured interview items are the advantages of flexibility in which new questions could be forwarded during the interview based on the responses of the interview. The interview was conducted in Amharic and the collected data were categorized based on similarities of responses and then it would be presented in written form.

3.6. Procedures of Data Collection

The research design and methodology used in this study is drawn based on the methods and designs discussed in the preceding sections. The study try to incorporate different data obtained from primary and secondary sources. In order to gather these data various instruments were used that have been designed to collect both qualitative and quantitative data. In this research, primary data source was collected through questionnaire. Finally, the questionnaires were distributed to the respondents by the researcher, of course with the help of some colleagues and principals of the schools. The researcher gives sufficient orientation on how to distribute and collect the questionnaire and other related issues for his assistances. Prior contacts were also making with the respondents to ensure their willingness to participate in the study and to maximize the return rate of the questionnaires. Then after, using time schedule for each school the questionnaire collected from the respondents of sample schools. The interview was carried out by the researcher as per the guide line of interview administration and procedures at the work places of the subjects.

3.7. Methods of Data Analysis

Both quantitative and qualitative data analysis methods were used in the study. Quantitative data which were collected through questionnaire from teachers were organized, tabulated and described quantitatively, using frequency, percentage and mean. The data gathered through interviews were analyzed qualitatively. The analysis of both quantitative and qualitative data was undertaken. Descriptive statistical were used such categories as organizing, coding, and tabulating. The respondents were categorized based on their similarity for the quantitative data and frequencies were tallied and computed using percentages. All of the data were analyzed using the statistical package for social sciences (SPSS,version 20) computer program software. Further, data gathered through questionnaire were presented in tables and analyzed using descriptive statistics such as percentages, frequencies and means for each item and grand mean was used to express the total value of categories. Qualitative data analysis basically involves verbal argumentations and explanations. Therefore, data collected through open-ended questionnaires and interview was analyzed qualitatively by narration to complement the main data. Finally, the results were summarized and meaningful interpretations of result were made to draw conclusions and implications.

3.8 Ethical Considerations

Participants in the study were voluntary and no incentive was offered in exchange of their participation. To ensure data integrity, the researcher is the only individual permitted to gather, read, classify and code data collected in the study. After the quantitative data have been collected and analyzed it followed up by qualitative data of interview and document analysis. Informants were selected by convenience sampling for the qualitative portion of the study. In the early days of August 2016, the informants contacted face to face and asked to participate in the study. Interviews were conducted in person at their respective working places. All interviews were held in the convenient time according the informants willingness. The interviewees would give sufficient time to preview the questions and consent information prior to the interviews.

4. RESULTS AND DISCUSSIONS

This chapter deals with presentation, analysis and interpretation of the data gathered from respondents. Hence, both the quantitative and qualitative analyses of data were incorporated in to this chapter. The quantitative data were supported by the qualitative data which include data gathered through, interviews as well as documents review. This chapter consists of five major parts. The first section deals with the demographic characteristics of the respondents, second section presents the analysis and interpretation of the availability of ICT materials, third practices of ICT implementing program, fourth the perceptions of School Stakeholders in the implementation of ICT and the last section deals with the challenges of ICT implementation.

Further, based on the sampling procedure described in chapter three of this study, among 134 teacher respondents, 130 (97.01%) were appropriately filled the questionnaires and collected. The remaining 4(2.99%) teacher respondents were not returned the questionnaires, and hence rejected before the analysis.

4.1 Demographic Characteristics of Respondents

All groups of respondents were examined in terms of their sex, age, level of education and work experiences for teachers in sample schools also reported. Therefore, the distribution would be regarded as unbiased, since respondents were drowning from diverse and appropriate posts. To give complete picture about the characteristics of respondents and related analysis and interpretation, the data obtained are presented as follows.

Table: 2 Demographic Characteristics of Respondents

Variables	Variable category	Students		Teachers	
		Frequency	Percent	Frequency	Percent
Sex	Male	5	62.5	102	78.5
	Female	3	37.5	28	21.5
	Total	8	100	130	100
Age	14-20	6	75	-	-
	21-25	2	25	11	8.5
	26-30	-	-	60	46.2
	31 and above	-	-	59	45.4
	Total	8	100	130	100
Educational Status of Teachers	Diploma	-	-	2	1.5
	First Degree	-	-	126	96.9
	MA/MSc	-	-	2	1.5
	Total	-	-	130	100
Work Experiences	Below 5Years	-	-	8	6.2
	6-10 Years	-	-	12	9.2
	11-15 Years	-	-	53	40.8
	16-20 Years	-	-	55	42.3
	Above 20Years	-	-	2	1.5
	Total	-	-	130	100

Source: Field Survey of 2017

As it shown in table-2, this part focuses on the analysis of the demographic characteristics of the respondents. Regarding sex, out of the total respondents, 5(3.5%) students and 102 (71.8%) teachers were respectively males and 3(2.1%) of the students and 28(19.7%) from the teachers were female. This indicates that the number of female and male teachers and students were not proportional and very low share in number of female teachers. This might have negative impacts on gender disparity in teaching learning process.

The age of the respondents was part of the question asked for the study. The findings showed that 6(75%) of the students council head respondents were aged between 14 to 20 years, 2(25%) were aged between 21to 25 years according to their indication. Regarding the age of teacher respondent's majority 60(46.2%) indicated that their age was between 26 to 30 years,

and those respondents who indicated their age to be above 31 years were 59(45.4%). The rest 11(8.5%) were found between 21 to 25 years of age. This implies that respondents of the different age categories were engaged in this study. The highest level of the respondent's education levels was also part of the questions in the questionnaires. From the research findings, majority of the respondents as shown by 126(96.9%) indicated that they were at bachelor's degree level, 2(1.5%) of the respondents indicated their highest level of education as master degree and diploma respectively. These shows, majority of respondents have first degree and above. This indicates that, the majority of respondents have enough skill to understand and easily respond on the implementation of ICT in schools.

The data in the table2 shows as 55(42.3%) teachers have served 16 to 20 years in teaching and the remaining 53(40.8%) serves for 11 to 15 years. Whereas, 12(9.2%) serves for 6 to 10 years, 8(6.2%) and 2(1.5%) were serves for below 5 years and above 20 years respectively. This implies that majority of the respondents in the study area, had worked for a considerable period of time and therefore they were in a position to give credible information relating to this study.

Table: 3 Availability of ICT Material in Secondary School

No	Items	Teachers (n=130)			Mean
		high	moderate	low	
1	Adequate Computers are available in the school	30.8	11.5	57.7	2.07
2	There are enough Computers accessories are available in the school	23.1	23.8	53.1	1.70
3	There are enough ICT lab rooms for practical process in the school	34.6	12.3	53.1	1.82
4	There are enough computer software's in the school	31.5	-	68.5	2.17
5	There is an internet connection in the school	36.9	13.1	50.0	2.87

Note: Mean Ratings: 0.05-2.49 =low, 2.50-3.59 =moderate, 3.60-5.00 = high

In table 3 item1 above Respondents were requested to reflect on availability of Adequate Computers in their school. Accordingly; it can be understood that from table 3 above, majority of the respondents, 57.7% of teachers said that availability of adequate computers in their school were low, whereas, a relatively small number 30.8% of them had a view that they agree

on availability of adequate computers in their school. The mean score of the availability of computer in the schools is 2.07. This implies that most of the teachers did not satisfy with availability of adequate computers in the selected schools. Although the schools have a shortage of computers and they are too few compared to the users in the schools.

In table 3 item 2 above respondents were requested to reflect on availability of computer accessories in their school. Accordingly, majority of the respondents, 53.1% of teachers were responded that availability of enough computer accessories in their school were low. Whereas, a relatively small number 23.1% of them had a view that they were agree on availability of enough computers accessories in their school. From this majority of the respondents said that availability of enough computer accessories are low. The mean score of the availability of computer accessories in the schools is 1.70. This implies there is a shortage of computer accessories in the selected schools.

In table 3 item 3 “above questions was posed which read as are there enough ICT lab rooms for practical process in your school?”.Accordingly, majority of the respondents,53.1% reflected that they were disagree on enough ICT lab rooms for practical process in their school, Whereas, a relatively small number 34.6 % of them had a view that they were agree on enough ICT lab rooms for practical process in their school. The mean score of the availability of ICT lab rooms for practical process in the schools is 1.82. This implies that most of the teachers do not satisfied with availability of ICT lab rooms for practical process in the selected schools.

In table 3 item 4 above respondents asked about enough computer software’s in their school. Accordingly as can be understood that from table3 above, majority of the respondents, 68.5% reflected that they were disagree or strongly disagree on availability of enough computer software’s in their school, whereas, a relatively small number 31.5% of them had a view that they were agree on availability of enough computer software’s in their school. The mean score of the availability of computer software in the schools is 2.17. This shows there is a shortage of computer software’s in the selected schools.

In table 3 item 5 above regarding the availability of internet connection in the school, about half 50.0% of the teacher respondents disagree with this statement. The mean score of the availability of internet connection in the schools is also 2.87. This shows the majority of teachers were not satisfied with internet connection in their schools.

“In connection to this, interview made to principals strengthen the above fact, School principals shared that access to ICT materials is a major challenge facing in their school.”

Based on the above information, it is possible to summarize that lack of access of ICT materials like computers, computer accessories software’s, internet connection and laboratory rooms are the main challenges to practice ICT implementation in government secondary schools of DDA.

4.2 .Practices of ICT Implementation in Secondary Schools

In review literature part of this thesis, it had been discussed that the practice of ICT implementation refers to enhancement and extension of teaching and learning across a wide range of subject areas has proved challenging to many schools, and understanding the issues regarding encouragement, support and infrastructures required to achieve this has proved to be complex. However, there are some schools where almost all staff have adapted ICT use into their working practices, adapting existing approaches to teaching and learning and developing new ones. In other schools with apparently similar desire for ICT to be used, and similar resourcing, only pockets of limited ICT use has been achieved (Ainely *et al.*, 2008).With this understanding open ended question posed to teachers on “Practices of ICT Implementation in Secondary Schools” A likert scale was used as (Agree, Undecided and Disagree) and results were summarized in the following table 4 below.

Table: 4 Practices of ICT Implementation in the Schools

No	Items	Teachers(n=130) (%)			Mean
		A	UD	D	
1	I usually use ICT to manage files	52.5	13	34.5	3.3
2	I usually use ICT for word processing software	36.4	15	48.6	2.3
3	I usually use ICT for software presentation and graphic software	25.3	12.4	62.3	2.4
4	I usually use ICT for Email and Internet	36.3	9.5	54.2	2.8
Aggregate Mean					2.75

Note: Mean Ratings: 0.05-2.49 =low, 2.50-3.59 =moderate, 3.60-5.00 = high

In table 4 item 1 above respondents were asked to determine whether they use ICT to manage file or not. Accordingly it can be understood that from table 4 above, majority 52.5% of the respondents, reflected that they were use ICT to manage files, whereas, a relatively small number 34.5% of them had a view that they were disagree on use of ICT to manage files. The mean score of ICT use to manage files is 3.3. This shows that teachers used ICT moderately to manage files in their school.

In table4 item 2 above respondents were asked to determine they use ICT for word processing software or not .Accordingly it can be understood that from table4 above, majority of the respondents, 48.6%% reflected that they were not use ICT for word processing software, whereas, a relatively small number 36.4% of them had a view that they were use ICT for word processing software. The mean score of ICT use for word processing software were 2.3. This shows the majority of teachers were not use ICT for word processing software in their school.

In table 4 item3 above respondents were asked to determine whether they use ICT for software presentation and graphic software or not. Accordingly it can be understood that from table4 above, majority of the respondents, 62.3% reflected that they were disagree on use of ICT for software presentation and graphic software in their school; whereas, a relatively small number 25.3% of them had a view that they were agree on use of ICT for software presentation and graphic software in their school. The mean score of use of ICT for software presentation and graphic software were 2.4.this shows using ICT for software presentation and graphic software were low. In connection to this, interview made to principals strengthen the above fact.

"School principal's interviewee result confirmed that teachers' practices of ICT implementation in their school were low.This because of lack of knowledge of ICT, lack of skills of ICT. "

This shows majority of teachers were not use ICT for software presentation and graphic software in their school. The findings are in disagreements with Prestrike, (2012) who found teachers to be most skilled and competent in word processing compared to other applications.

Table: 5 .ICT Implementation in the Teaching Learning Process

No	Items	Teachers (n=130) Percent (%)			mean
		A	UD	D	
1	Teaching learning process is supported by practical activities in the ICT laboratory	32.3	10	57.7	1.3
2	The School management supervises the administration process with the help of ICT	37	12	51	1.4
3	Teachers give their students ICT-based assignments	36	11.5	52.5	1.4
4	Teachers are able to use ICT to assess students learning results	25.4	12.4	62.2	1.3
5	Teachers use Internet as a source of information for the teaching-learning process	50	12.4	37.6	3.2
Aggregate Mean				1.72	

Note: Mean Ratings: 0.05-2.49 =low, 2.50-3.59 =moderate, 3.60-5.00 = high

Respondents were requested to reflect on how teaching learning is supported practically in ICT lab, practice of School management in using ICT; how teachers give assignments to their students; how teachers assess students learning results using ICT, how teachers use internet as source of information for the teaching-learning process in table 5 above; mean for this category 1.3;1.4,1.4,1.3 respectively was low . Accordingly it can be understood that from table 5 above, majority of the respondents reflected that teaching learning process is not supported by practical activities in the ICT laboratory, teachers did not give their students ICT-based assignments, the school management did not supervises the administration process with the help of ICT and teachers are not able to use ICT to assess students learning results. Whereas concerning use of internet majority of teachers perceived the use of internet as a source of information for the teaching-learning process in school was very important.

“ School principal’s interviewee result confirmed that practical activity of ICT implementation in their school were low. Also lack of time is a major problem for school principals to supervise their administration process with the help of ICT.”

4.3 .Perception of teachers about use of ICT

The researcher undertook to understand the feelings of the school principals, teacher and student in use of ICTs in teaching and learning. The respective response analysis are presented in the following tables and discussed respectively. Where majority of the respondents strongly agreed that use of computers would improve efficiency and effectiveness in school.

Responses were summarized in the following table 6 blow.

Table: 6 Perception of teachers about use of ICT implementation in teaching learning

No	Items	Teachers(n=130)			Mean
		Percent (%)			
		A	UD	D	
1	ICT equipment's are useful instructional aides in almost all subject areas	56.5	13	30.5	3.32
2	Using ICT as instructional tool can increase the interest of students	60.5	11.5	28	4.18
3	ICT exposes the students to vary and multiple sources of information	54.3	10.4	35.3	3.74
4	It is very important for me to learn how to use a computer and other ICT equipment	59.4	9.6	31	4.13
5	ICT helps every student to learn and study at their own pace	58.3	11.5	30.2	3.78
6	Using ICT for instructional purposes is more important	66.4	9.5	24.1	4.63
7	I believe that ICT can really improve teaching learning process	62.3	11.2	26.5	4.41
8	ICT makes my subject more interesting and systematic	64.2	9	26.8	4.55
Aggregate Mean					4.09

Note: Mean Ratings: 0.05-2.49 =low, 2.50-3.59 =moderate, 3.60-5.00 = high

In table 6 item1 above respondents were requested to reflect on ICT equipment's are useful instructional aides in almost all subject areas. Accordingly it can be understood that from table6 above, majority of the respondents, 56.5% reflected that they agreed on ICT equipment's are useful instructional aides in almost all subject areas. Whereas, a relatively small number 30.5% of them had a view that they were disagree on use ICT equipment's are useful instructional aides in almost all subject areas. The mean score of ICT equipment's are useful instructional aides in almost all subject areas were 3.32. This shows teachers agreed that ICT equipment's are useful instructional aides in almost all subject areas were moderate.

In table 6 item2 above respondents were asked to determine whether Using ICT as instructional tool can increase the interest of students or not. Accordingly we can be understood that from table6 above, majority of the respondents, 60.5% reflected that they were agreed Using ICT as instructional tool can increase the interest of students. Whereas, a relatively small number 28% of them had a view that they were disagree on using ICT as

instructional tool can increase the interest of students. The mean score of Using ICT as instructional tool can increase the interest of students were 4.18. This shows majority of teachers were perceived that Using ICT as instructional tool can increase the interest of students.

In table 6 item 3 above respondents were asked to determine whether ICT exposes the students to vary and multiple sources of information or not. Accordingly, it can be understood that from table 6 above, majority of the respondents, 54.3% reflected that they were agreed that ICT exposes the students to vary and multiple sources of information. Whereas, a relatively small number 35.3% of them had a view that they were disagree on using ICT exposes the students to vary and multiple sources of information. The mean score of Using ICT exposes the students to vary and multiple sources of information were 3.74. This implies most of the respondents perceived that ICT were important to vary and multiple sources of information.

In table 6 item4 above respondents were requested to reflect on the importance of learning how to use a computer and other ICT equipment. Accordingly, it can be understood that from table6 above, majority of the respondents, 59.4% reflected that they were agreed that learning how to use a computer and other ICT equipment is very important. Whereas; a relatively small number 31% of them had a view that they were disagreed on learning how to use a computer and other ICT equipment. The mean score of the importance of learning how to use a computer and other ICT equipment were 4.13. This implies most of the respondents perceived that learning how to use a computer and other ICT equipment were very important.

In table 6 item 7 above respondents were asked to determine whether ICT can really improve teaching learning process or not. Accordingly, it can be understood that from table6 above, majority of the respondents, 62.3% reflected that they were agreed that ICT can be really improve teaching learning process. Whereas, a relatively small number 26.5% of them were disagreed. The mean score of the importance of ICT for improving teaching learning process were 4.41. This shows majority of teachers were perceived that ICT can really improve teaching learning process. Generally from table 6above respondents were perceived strong

agreement about ICT implementation in teaching learning process in government secondary schools of DDA.

"School principals and ICT experts interviewee result confirmed that ICT increases the learner's chance to participate in real world events, offers great advantages for students and teachers, it also facilitates management processes, such as meetings and training sessions and it increases the motivation and performance levels of students."

From the above finding result respondents were perceived strong agreement about ICT implementation in teaching learning process in government secondary schools of DDA.

4.4. Challenges Affecting Practices and Implementation of ICT

In facts there were numerous challenges that affect the practices and implementation of ICT in developing country which includes ICT infrastructure, financial issue, and lack of trained staff, school administration problems and lack of policy are the major ones. Questions in relation to these challenges were posed to respondents and discussed in table 7 as follows

Table: 7 ICT Infrastructures Related Challenges

N o	Items	Teachers (n=130) (%)			Mean
		A	UD	D	
1	Lack of adequate number of computers	68	9	24	3.64
2	Lack of internet connectivity	46	11.2	42.8	2.62
3	Lack of access to computers	67.5	10	22.5	3.63
4	Insufficient or irregular power supply	49	12	39	2.72
5	High cost of hardware and software	60	11.2	28.8	3.61
	Aggregate Mean	3.3			

Note: Mean Ratings:0.05-2.49=low,2.50-3.59=moderate, 3.60-5.00=high

In table 7 above respondents were requested to reflect on ICT Infrastructures Related Challenges in their school. Accordingly, it can be understood that from table7 above, majority of the respondents, reflected that ,68% Lack of adequate number of computers, 67.5% Lack of access to computers and 60% High cost of hardware and software respectively were the main challenges Related ICT Infrastructures in their school.

"School principals and ICT experts interviewee result, confirmed that lack of access to ICT materials, high cost of hardware and software, lack of internet connection and the insufficient power supply especially in rural secondary schools (wahel and kalicha) had contributed to the slow implementation of ICT in government secondary schools of DDA."

Based on the above given information, it is possible to summarize that lack of adequate number of computers, lack of access to computers and high cost of hardware and software, lack of internet connection and the insufficient power supply respectively were the major challenges of ICT practice and Implementation in the selected government secondary schools in DDA.

4.4. 1. Knowledge and Skills Related Challenges

As discussed in chapter two of this paper, many school leaders still perceive the lack of ICT-related knowledge of teachers as a major obstacle to the realization of their ICT-related goals (Pelgrum, 2002). The literature describes the kind of skills teachers may need when integrating ICT in new student-centered learning approaches. However, identifying which competencies each teacher needs to acquire is far from simple, as this depends very much on the circumstances of their particular school. Personal teaching styles also play a major role. With this understanding open ended question posed to teachers on “ICT knowledge and skills related challenges” A likert scale was used as (Agree Undecided Disagree) and results were summarized in the following table 8.

Table: 8 Knowledge and Skills Related Challenges

No	Items	Teachers(n=130 (%))			Mean
		A	UD	D	
1	Lack of teachers' technical skill to prepare materials by using ICT	65	12.4	22.6	3.65
2	Lack of Sufficient training about ICT for teachers	60	12	27	3.62
3	Lack of skill needed to incorporate ICT into teaching	67	11.5	21.5	3.91
4	Lack of adequate training to students on how to use the computers	35	12	53	2.13
5	Lack of time for training and exchange ideas with experts	38	10.5	50.5	2.2
6	Lack of Creating awareness rising on the opportunities that computers offer	69	11	20	3.97
7	Lack of technician to help teachers with the computer hardware or the software	65.6	11.4	23	3.7
8	High cost of staff training on computer maintenance	54.3	9.5	36.2	2.94
Aggregate Mean					3.1

Note: Mean Ratings: 0.05-2.49 =low, 2.50-3.59 =moderate, 3.60-5.00 = high

In table 8 above respondents were requested to reflect on ICT knowledge and skills related challenges in their school. accordingly, it can be understood that from table 8 above, majority of the respondents, reflected that 69% lack of creating awareness rising on the opportunities

that computers offer, 67% Lack of skill needed to incorporate ICT into teaching, 65.6% lack of technician to help teachers with the computer hardware or the software, 65% lack of teachers' technical skill to prepare materials by using ICT, 60% lack of sufficient training about ICT for teachers, and 54.3% high cost of staff training on computer maintenance, respectively were the main challenges related to ICT knowledge and skills in their school. Thus from table 8 above the researcher were concluded that lack of creating awareness rising on the opportunities that computers offer, lack of skill needed to incorporate ICT into teaching, lack of skill needed to incorporate ICT into teaching, lack of technician to help teachers with the computer hardware or the software, lack of teachers' technical skill to prepare materials by using ICT, lack of sufficient training about ICT and high cost of staff training on computer maintenance for teachers were the main challenges of ICT related to knowledge and skills of teachers in government secondary schools of *DDA*.

"School principal's interviewee result indicated that teachers teach theoretically rather than practical, lack of familiarity with good practice rooted on understanding of how to use ICTs and budget constraints in the schools to train teachers on the use of computer programs in the class. "

Therefore, proper use of ICT is not possible without knowledge, skills and experience to use the available infrastructure in the schools. ICT knowledge and experience depend on teachers' pre-service and in-service training and the research revealed that teachers have varied academic and ICT professional training.

Table: 9 School Administration Related Challenges

N	Items	Teachers(n=130)(%)			Mean
		A	UD	D	
1	Lack of support from school management	62.3	11.7	26	3.68
2	Lack of technical and maintenance support	61.4	10.6	28	3.62
3	Lack of support from external stakeholders	40	9.5	51.5	2.3
4	Absence of motivation and reward systems for ICT usage	65	10	25	3.72
5	Lack of scheduled time and opportunities to interact and share experience	37.3	11.4	51.3	2.08
6	Lack of finance to train on use of ICT programs	62.1	12	25.9	3.63
7	Insufficient amount of pre-service training on ICT	59	11	30	3.61
8	Lack of time for in-servicing staff on ICT	51	9	40	3.1
		Aggregate Mean			2.7

Note: Mean Ratings: 0.05-2.49 =low, 2.50-3.59 =moderate, 3.60-5.00 = high

In table 9 above respondents were requested to reflect on school administration related challenges ICT in their school. Accordingly, it can be understood that from table 9 above, majority of the respondents, reflected that 65% absence of motivation and reward systems for ICT usage, 62.3% lack of support from school management, 61.4% lack of technical and maintenance support, 62.1% lack of finance to train on use of ICT programs, 59% insufficient amount of pre-service training on ICT and 51% Lack of time for in-servicing staff on ICT respectively were the main challenges related to school administration in their school.

"Principals and ICT experts interviewee result indicated that principals ICT knowledge and skills, shortage of time to support teachers were the main challenges that affect ICT practices and implementation that related to school administration in government secondary schools of DDA."

Based on the above given information, it is possible to summarize that Absence of motivation and reward systems for ICT usage, lack of support from school management, lack of technical and maintenance support, lack of finance to train on use of ICT programs and Insufficient amount of pre-service training on ICT, lack of time for in-servicing staff on ICT and Budget constraints were the main challenges that affect ICT practices and implementation related to school administration in government secondary schools of *DDA*.

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Summary

This study was carried out with the major purpose of assessing the practice and perception of stakeholders about implementation of ICT in government secondary schools of DDA during 2016/2017 academic year. To meet the purpose of the study, the following basic questions were raised:

To see the objectives, this study had addressed four basic research questions were raised

1. To what extent ICT materials are available in government secondary schools of DDA ?
2. What are the practices of stakeholders in implementing ICT program in government secondary schools of DDA?
3. What are the perceptions of school stakeholders in the implementation of ICT in government secondary schools of DDA?
4. What are the challenges of ICT implementation in government secondary schools of DDA?

In order to deal with the research questions, related data were gathered mainly through questionnaire, interview, and observation. The researcher has given sufficient orientation on how to distribute and collect the questionnaire and other related issues for his assistants. prior contacts were made with the respondents to ensure their willingness to participate in the study and to maximize the return rate of the questionnaire. Eventually, most of the respondents 130 (97.01%) teachers filled out the questionnaires with all the necessary information and returned them. Interview checklists were prepared originally in English and translated in to Amharic for principal, ICT experts and student council heads. It was administered at the work places by the researcher himself.

The data obtained from the respondents were analyzed and interpreted by using tabulated frequency counts, percentage tables and mean with the help of Statistical Package for Social Sciences (SPSS). Accordingly, based on the results of the analysis made the following major findings were obtained and summarized as follows.

- Regarding the qualification of the teachers in the selected sample schools it's sufficient to undertake their responsibilities; 126(96.9%) of teaching staff with bachelor degree and 110(84.6%) of them have an experience of above ten years.

- Concerning the availability of ICT materials in the selected schools, most of the students and teachers are not satisfied with availability of ICT infrastructure in their schools.
- The majority of respondents were disagree concerning ICT practice such as using ICT for word processing software and ICT for software presentation and graphics software but they use ICT to manage files moderately. the study also indicated that most of the teachers not have practice to give ICT based assignment for their students, practical activities in the ICT laboratory is low and it is less attention to support ICT practice among school administration.
- The majorities of respondents were interested in the ICT implementation and inspired to know better and advance their perception to a better level. They were strongly agreed on using ICT for instructional purpose. It is most important and interesting subject. Besides to this, most respondents were that ICT can really improve teaching learning process, using ICT as instructional tool can increase the interest of students and it is very important to learn how to use computer and other ICT equipment. ICT increases the learner's chance to participate in real world events, offers great advantages for students and teachers, it also facilitates management processes, such as meetings and training sessions and it increases the motivation and performance levels of students.
- The analysis shows that most of respondents indicate that the major challenges on practice and perception of ICT implementation related to ICT infrastructure lack of adequate number of computers, lack of access to computers, high cost of hardware and software, irregular power supply and limited access of internet. also respondents indicates challenges that related to knowledge and skills of ICT were lack of Creating awareness rising on the opportunities that computers offer, lack of skill needed to incorporate ICT into teaching, lack of teachers' technical skill to prepare materials by using ICT, lack of Sufficient training about ICT for teachers and High cost of staff training on computer maintenance. Finally, respondents indicated that lack of support from school management, lack of technical and maintenance support, Absence of motivation and reward systems for ICT usage, lack of finance to train on use of ICT programs, Insufficient amount of pre-service training on ICT and lack of time for in-servicing staff on ICT were the major challenges of ICT practice and Implementation in the selected government secondary schools in DDA.

5.2. Conclusions

The following major conclusions are drawn based on the research findings.

1. As the findings showed, all teachers and principals from sample secondary schools were 1st degree and above with their educational status and more than five year work experiences. The data from the findings showed that the school principals had limited practices towards ICT and most of them didn't give enough attention for the ICT implementation; whereas, teachers had limited access to the resources and practices in the implementation of ICT. However, most of them were not competent to facilitate ICT practices. Based on these, it can be concluded that there is less practice of using technology for teaching learning process in government secondary schools of DDA.
2. According to the data, infrastructure was the main problem for the implementation of ICT in secondary schools . In each school all computers weren't working properly due to lack of regular and scheduled maintenance. There were no responsible technicians to maintain the computers from simple to high damages.
3. The data in perception towards ICT implementation showed that all respondents were interested in the ICT implementation and inspired to know better and advance their perception to a better level. ICT as a subject or instructional media gives great advantages for instructional purposes and interesting subjects. Besides to this, most respondents were believed that ICT can really improve teaching learning process.
4. The research also identifies different level of challenges during ICT implementation. Infrastructure was one of the major challenges in the schools were experiencing. lack of adequate training of ICT, lack of budget, less attention and restrictive administration practices, lack of technical and maintenance, and lack of time for in-servicing staff on ICT were the challenges that affect the successful implementation of ICT program in government secondary schools of DDA.

5.3. Recommendations

Based on the findings of the study and the conclusions drawn above, the following recommendations were forwarded.

- Dire Dawa education bureau should give high responsiveness for the implementation of ICT by improving the current funding, monitoring, and evaluation systems. Prepare professional development programs for school leadership; organize training on ICT and motivate teachers towards ICT implementation.
- Special attention should be given for the infrastructure development to meet the national and regional education goal.
- Schools principals and other concerned stakeholders should mobilize resources for equipping schools with ICT infrastructure and should acquire up to-date ICT infrastructure that teachers and students can use harness the benefits of ICT implementation. For each school additional computers should be provided either from direct government budgets or Non-Governmental Organizations funds.
- At least one technician or teacher should be recruited for troubleshooting and maintenance in every school.
- School principals should do more to enhance the practice, perception, skill and awareness of teachers in order to implement ICT in their schools. This might include preparation of annual ICT trainings, inviting ICT experts for lectures from Dire Dewa education bureau and Dire Dawa University, encourage teachers for a focus group and to solve common problems.

6. REFERENCES

- Adam, K.2005. *The role of department heads as change agents in the implementation of educational reform in the United Arab Emirates*. PhD thesis, Pretoria: University of South Africa.
- Akbabaaltun,S.2007.Complexity of integrating computer technologies into education in Turkey. *Journal of Educational Technology and Society*.
- Aminu Teha, 2012. *Implementation of ICT in government secondary schools of Dire Dawa city administration*. Haramaya University, Haramaya, Ethiopia
- Andersons R and Dexter, S.2005.School technology Leadership: An Empirical Investigation of Prevalence and Effect. *Educational administration quarterly*.
- Balanskat, A., Blamire, R., and Kefala, S.2006. The ICT impact report: A review of studies of ICT impact on schools in Europe, Brussels:
http://ec.europa.eu/education/pdf/doc254_en.pdf.
- BECTA.2004.Areview of the Research Literature on Barriers to Up take of ICT by Teachers. British Educational Communications and Technology Agency.
- Beggs,T.A.2000 .Influences and barriers to the adoption of instructional technology. Proceedings Fifth annual mid South Instructional Technology, Middle Tennessee state University,USA.RetrievedSeptember25,2011,from
<http://www.mtsu.edu/itconf/proceedings00/beggs.htm>.
- Borghans,L. and TerWeel, B.2004. *Are computer skills the new basic skills? The return to Computer, Writing and Math skills in Britain, Labor Economic*.
- Chanyalew Woldegebriel.2005.The Practice and Problems of Instructional Supervision in Secondary Schools of Hadya Zone. AAU (Unpublished MA Thesis)
- Chemwa,G. and Mburu, S .2007. *Longhorn Secondary Computer Studies*. Longhorn Publishers. Nairobi Kenya.
- Cuban, L. 2001. Oversold and underused: computers in the classroom. Retrieved from
<http://www.hull.ac.uk/php/edskas/Cuban%20article%20-%20oversold.pdf>
- Davies, B.2005.Strategic Leadership .In B.Davies(Ed.), *The Essential of School Leadership*. SAGE Publications London UK.
- Drent, M., & Meelissen, M. (2007). Which Factors Obstruct or Stimulate Teacher Educators to Use ICT Innovatively? *Journal of Computers & Education*, (Article in Press)

- Earle, R.S.2002.*The integration of instructional technology into public education: Promises and challenges*. Educational Technology.
- Education Sector Development Program V (ESDP V) 2008 - 2012 E.C. Federal Ministry of Education 2015Addis Ababa.
- ETP .1994.*Education and training policy MOE* , Addis Ababa, Ethiopia.
- FDRE (2004): Development of education in Ethiopia. The Federal Democratic Republic of Ethiopia. A Report to the UNESCO Forty-Seventh Session of the International Conference on Education.
- FDRE.2009 .*The national information and communication technology policy and strategy* .Addis Ababa Ethiopia
- Ferrigan, C. 2007. *Passing the ICT skills Test: 2nd edition*. London: Learning Matters Ltd
- Foskett,N.and Lumby,J.2009.*Leading and Managing Education*. International Dimensions. Lonnpaul Chapman Publishing.
- Getnet Demissie Bitew, 2008. *Using “plasma TV” broadcasts in Ethiopian Secondary Schools*. Australian Journal of Education Technology. The University of Melbourne, Melbourne, Australia.
- Greasley, P., 2008.*Quantitative Data Analysis Using SPSS. An Introduction for Health and Social Science*. England. Glasgow: Open University Press, Bell and Bain Ltd.
- Han, C. 2002. *Leadership roles of a pre-school principal in the use of ICT*. Contemporary issues in Early Childhood.
- Harry Hare June, 2007. *Survey of ICT and education in Africa: Ethiopia country report*, ICT in Education in Ethiopia.
- Hennessy, S., Ruthven, K., and Brindley, S. 2003. *Teacher perspectives on integrating ICT into subject teaching: commitment, constraints, caution, and change*. *J. Curriculum Studies*, 37(2), 155- 192, Kenya.
- Hiwot, 2013. *Practices and challenges of giving information communication technology as a subject of teaching in government preparatory schools of Dire Dawa administration*. Haramaya University, Haramaya Ethiopia.
- John Daniel, 2002. *ICT in Education*. The University of Melbourne, Australia.
- Kiptalam, 2010. Challenges facing computer education in East Africa Schools.

- Markauskaite, L.2005. *Exploring Differences in Trainee Teachers' ICT Literacy: Does Gender Matter*.
- Ministry of Education (MoE), 2006. *National ICT Policy Implementation Plan*, Windhoek: MoE, Addis Ababa, Ethiopia.
- Ministry of Education (MoE), 2008. *Education statistics annual abstract*. Addis Ababa: Federal Democratic Republic of Ethiopia.
- Ministry of Education (MoE), 2008 .*General Education Quality Improvement Package*. Addis Ababa. Ethiopia.
- Ministry of Education (MoE), 2010.*The education and training policy and its implementation*. Addis Ababa: Federal Democratic republic of Ethiopia
- Ministry of Education, 2015. Education Sector Development Program (ESDP V) 2008 - 2012 E.C. Addis Ababa Ethiopia.
- Mumtaz,S.2000 .Factors affecting teachers use of information and communication technology: are view of the literature. *Journal of Information technology for teacher education*.
- Newhouse,C.P.2009.Literature review: *The Impact of ICT on learning and teaching*. Western Australian Department of Education.
http://www.det.wa.edu.au/education/cmis/e_val/downloads/pd/impactreview.pdf
- Onunga, J. and Shah, A.2005. *Computer Studies: Introduction to Computers*. 4th Edition. Mariwa Publishers Nairobi Kenya.
- Plante,J.and Beattie,D.2004.*Connectivity and ICT integration in Canadian elementary and secondary schools: First results from the Information and Communication Technologies in Schools r v,2003-2004*. Ottawa, Ontario, Canada.
- Pernia, E.E.2008. *Strategy framework for promoting ICT literacy in the Asia-Pacific region*. Publication of UNESCO Bangkok Communication and information unit. Bangkok Thailand
- Selwood, D., Fung, A. and O'Mahony, C.2003. *Management of Education in the Information Age: The Role of ICT*.
- Schiller, J. (2003). *Working with ICT Perceptions of Australian principals*. Journal of Educational Administration, 41(2), 171-185.
- Teo, T. (2008). *Pre-service teachers' attitudes towards computer use: A Singapore survey*. *Australasian Journal of Educational Technology*, 24(4), 413-424.

Tinio, V.L., 2002. ICT in Education: UN Development Program. Retrieved from:

<http://www.eprmers.org>.

Veenhof, B., Clermont, Y. and Sciadas, G. 2005. *Literacy and Digital Technologies: Linkages and Outcomes*. Research Paper for Science, Innovation and Electronic Information Division (SIEID), Statistics Canada. Ontario: Ministry of Industry.

Waema, T.M. 2002. *ICT Human Resource Development in Africa: Challenges and Strategies*. ATPS special paper series No. 10. African technology policy studies network. Nairobi: Ideas & Places.

World Bank, 2008. *E government, World Bank*, (Online), Available:

<http://worldbank.org>. (Accessed: 11 August 2008).

7. APPENDIXCES

Appendix 7.1 Questionnaires to be filled by Secondary School Teachers

Haramaya University

Postgraduate Program Directorate

College of Education and Behavioral Sciences

A Questionnaire to be filled by Secondary School Teachers

Dear Respondents, This Questionnaire is designed to collect data on practices and perception of secondary school teachers about the implementation of ICT in Secondary School of Dire Dawa Administration. The feedback from respondents will help to identify the existing problems and forward recommendations for future improvements of practices and perception of teachers about the implementation of ICT in Secondary School of Dire Dawa Administration. Dear respondents, I would like to assure you that the information you provide is used only for educational purposes. To this end, you are kindly requested to give your genuine opinions, comments and suggestions. Do not specify your name for your responses.

Thank You in Advance!

General Instruction Please, write your responses on the space provided for open-ended questions and put a “√” mark in the box for your responses that you think are appropriate for close-ended items.

Part One: General Background

1. Sex: Male Female
2. Age: 10-19years 20-30years 31-40years 41-55years
3. Level of Education: Diploma Degree MA/MSc Degree
4. Years of Work Experience: 1-5 6-10 11-15 16-20 Above 20

Part Two: The Status of ICT Implementation

The following questions are related to the status of ICT implementation in your schools. Thus, indicate your response by putting a “√” mark on the space provided against each question. **NB: 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree, 1 = Strongly Disagree, A=1to1 B=1to2 C=1to3 D=1to4)and above**

No	Items	5	4	3	2	1
1	Adequate computers are available in the school					
2	There are enough computers accessories are available in the school					
3	There are enough ICT lab rooms for practical process in the school					
4	There are enough computer software's in the school					
5	There is an internet connection in the school					

Part Three: The Practice of ICT Implementation

The following Questions are related to the practice of ICT implementation in the schools. Thus, indicate your response by putting a “√” mark on the space provided against each question.

NB: 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree, 1 = Strongly Disagree

No	Statements/Items	5	4	3	2	1
1	I usually use ICT to manage files					
2	I usually use ICT for word Processing software					
3	I usually use ICT for software presentation and graphic software					
4	I usually use ICT for Email and Internet					
ICT Implementation in the Teaching Learning Process						
1	Teaching learning process is supported by practical activities in the ICT laboratory	5	4	3	2	1
2	The School management supervises the administration process with the help of ICT					
3	Teachers give their students ICT-based assignments					
4	Teachers are able to use ICT to assess students learning results					
5	Teachers use Internet as a source of information for the teaching-learning process					

Part Four: Teachers perception about ICT Implementation

The following Questions are related to the perception of teachers about ICT implementations in the sample schools. Thus, indicate your response by putting a “√” mark on the space provided against each question.

NB: 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree, 1 = Strongly Disagree

No	Statements/items	5	4	3	2	1
1	ICT equipment's are useful instructional aides in almost all subject areas					
2	Using ICT as instructional tool can increase the interest of students					
3	ICT exposes the students to vary and multiple sources of information					
4	It is very important for me to learn how to use a computer and other ICT equipment					
5	ICT helps every student to learn and study at their own pace					
6	Using ICT for instructional purposes is more important					
7	I believe that ICT can really improve teaching learning process					
8	ICT makes my subject more interesting and systematic					

Part Five: Challenges of ICT Implementation

The following Questions are related to the factors that affect the effective implementations of ICT in your schools.

Thus, indicate your response by putting a “√” mark on the space provided against each question.

NB: 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree, 1 = Strongly Disagree

No	ICT Infrastructures Related Challenges	5	4	3	2	1
1	Lack of adequate number of computers					
2	Lack of internet connectivity					
3	Lack of access to computers					
4	Insufficient or irregular power supply					
5	High cost of hardware and software					
ICT Knowledge and Skills Related Challenges						
1	Lack of teachers' technical skill to prepare materials by using ICT	5	4	3	2	1
2	Lack of Sufficient training about ICT for teachers					
3	Lack of skill needed to incorporate ICT into teaching					
4	Lack of adequate training to students on how to use the computers					
5	Lack of time for training and exchange ideas with experts					
6	Lack of Creating awareness rising on the opportunities that computers offer					
7	Lack of technician to help teachers with the computer hardware or the software					
8	High cost of staff training on computer maintenance					
School Administration Related Challenges						
1	Lack of support from school management	5	4	3	2	1
2	Lack of technical and maintenance support					
3	Lack of support from external stakeholders					
4	Absence of motivation and reward systems for ICT usage					
5	Lack of scheduled time and opportunities to interact and share experience					
6	Lack of finance to train on use of ICT programs					
7	Insufficient amount of pre-service training on ICT					
8	Lack of time for in-servicing staff on ICT					

Appendix 7.2 ለ2ኛ ደረጃ ት/ቤት ር/መ/ራን የተዘጋጀ ቃለ መጠይቅ

ሐረማያ ዩኒቨርሲቲ

የድህረ ምረቃ ዳሬክትሬት

የሥነ-ባህርይ ሳይንስ ትምህርት ኮሌጅ

ውድ መላሼ ሆይ፡-በድሬደዋ የመንግስት 2ኛ ደረጃ ት/ቤቶች ላይ የኢንፎርሜሽን ኮሙኒኬሽን ቴክኖሎጂ ያለበት ደረጃ፣ አፈ.ፃፀም፣ እይታና ተግዳሮቶችን ለመለየት የሚከተሉት ቃለ መጠይቅ ቀርቧል። መጠይቁ በ2ኛ ደረጃ ት/ቤቶች ላይ በአይሲቲ ትምህርት አፈ.ፃፀም ዙሪያ የሚስተዋሉትን ችግሮችን ለመለየትና የመፍትሄ ሐሳብ ለማመላከት ይረዳል።

መላሼ ሆይ፡-በዚህ ቃለ መጠይቅ የሚሰጡኝ መረጃ ለትምህርት ዓላማ ብቻ መሆኑን እያረጋገጥኩኝ ውድ ጊዜዎትን ሰውተው ለሰጡኝ አስተያየት፣ ሐሳብና መረጃ በቅድሚያ አመሰግናለሁ።

በድጋሚ ከልብ አመሰግናለሁ !!

1. ትምህርት ቤቱ ለኢንፎርሜሽን ኮሙኒኬሽን ቴክኖሎጂ ትምህርት አገልግሎት የሚውሉ የተሟላ መሣሪያዎች አሉት? የኢኮቴ መሣሪያዎችን ከዩት ድጋፍ ያገኛል?
2. በእርስዎ ግምት ምን ዓይነት የኢኮቴ ትምህርት ክህሎትን እንድናረዳዎት ይፈልጋሉ?
3. በትምህርት ቤቱ ተግባራት ውስጥ መምህራን አይሲቲን እንድተገብሩት ድጋፍ የሚደረግላቸው እንዴት ነው ? ኢኮቴን እንድተገብሩትና እንድለማመዱት የትምህርት ቤቱን እስታፍ የማበረታታትና የማነቃቃቱ ሥራን ያከናውናሉ?
4. በኢኮቴ ዙሪያ ለመምህራን ሊሰጡ የሚገባቸው ተጨማሪ ሥልጠናዎች ምን ሊሆኑ ይችላሉ?
5. በት/ቤትዎ ውስጥ በኢኮቴ አፈ.ፃፀም ዙሪያ የሚስተዋሉት ችግሮች ምንድናቸው? ችግሮቹስ እንዴት ይፈታሉ ብለው ያስባሉ?

ስለ ሰጡኝ ምላሽ በድጋሚ አመሰግናለሁ !!

Appendix 7.3 ለት/ቢሮ ኢኮኔ ባለሙያዎች የተዘጋጀ ቃለ መጠይቅ

ሐረማያ ዩኒቨርሲቲ

የድህረ ምረቃ ዳሬክትሬት

የሥነ-ባህርይ ሳይንስ ትምህርት ኮሌጅ

ውድ መላሽ ሆይ፡-በድሬደዋ የመንግስት 2ኛ ደረጃ ት/ቤቶች ላይ የኢንፎርሜሽን ኮሙኒኬሽን ቴክኖሎጂ ያለበት ደረጃ፣ አፈፃፀም፣ እይታና ችግሮችን ለመለየት የሚከተሉት ቃለ መጠይቅ ቀርቧል። መጠይቁ በ2ኛ ደረጃ ት/ቤቶች ላይ በኢኮኔ ትምህርት አፈፃፀም ዙሪያ የሚስተዋሉትን ችግሮችን ለመለየትና የመፍትሄ ሐሳብ ለማመላከት ይረዳል።

ውድ መላሽ ሆይ፡-በዚህ ቃለ መጠይቅ የሚሰጡኝ መረጃ ለትምህርት ዓላማ ብቻ መሆኑን እያረጋገጥኩኝ ውድ ጊዜዎትን ሰውተው ለሰጡኝ አስተያየት፣ ሐሳብና መረጃ በቅድሚያ አመሰግናለሁ።

በድጋሚ ክልብ አመሰግናለሁ !!

1. ት/ቢሮ የኢኮኔ መሣሪያዎችን ለ2ኛ ደረጃ ት/ቤቶች ድጋፍ ያደርጋል፣ የሚያደርግ ከሆነ ምን ዓይነት መሣሪያዎች ናቸው?
2. ት/ቢሮ በኢኮኔ ትምህርት ዙሪያ ለ2ኛ ደረጃ ት/ቤቶች የግንዛቤ ማስጨበጫ ሥልጠና ይሰጣል፣ የሚሰጥ ከሆነ ምን ዓይነት ሥልጠናዎች ናቸው?
3. በትምህርት ቤቱ ውስጥ መምህራን ኢኮኔን እንድትተገብሩት ድጋፍ የሚደረግላቸው እንዴት ነው ? ኢኮኔን እንድትተገብሩትና እንድትሰማሙት የባለሙያ ድጋፍ ይደረግላቸዋል ይላሉ?
4. በኢኮኔ ዙሪያ ለት/ቤቶቹ መምህራንና ርዕሰ መምህራን ሊሰጡ የሚገባቸው ተጨማሪ ሥልጠናዎች ምን ሊሆኑ ይችላሉ?
5. በ2ኛ ደረጃ ት/ቤቶች ውስጥ በኢኮኔ አፈፃፀም ዙሪያ የሚስተዋሉት ዋና ዋና ችግሮች ምንድናቸው? ችግሮቹን እንዴት ይፈታሉ ብለው ያስባሉ?

ስለ ሰጡኝ ምላሽ በድጋሚ አመሰግናለሁ !!

Appendix 7.4 ለ2ኛ ደረጃ ት/ቤት የተማሪ ተወካዮች የተዘጋጀ ቃለ መጠይቅ

ሐረማያ ዩኒቨርሲቲ

የድህረ ምረቃ ዳሬክትሬት

የሥነ-ባህርይ ሳይንስ ትምህርት ኮሌጅ

ውድ መላሼ ሆይ:-በድሬደዋ የመንግስት 2ኛ ደረጃ ት/ቤቶች ላይ የኢንፎርሜሽን ኮሙኒኬሽን ቴክኖሎጂ ያለበት ደረጃ፣አፈፃፀም፣እይታና ተግዳሮቶችን ለመለየት የሚከተሉት ቃለ መጠይቅ ቀርቧል።መጠይቁ በ2ኛ ደረጃ ት/ቤቶች ላይ በኢኮቴ ትምህርት አፈፃፀም ዙሪያ የሚስተዋሉትን ችግሮችን ለመለየትና የመፍትሄ ሐሳብ ለማመላከት ይረዳል።

ውድ መላሼ ሆይ:-በዚህ ቃለ መጠይቅ የሚሰጡኝ መረጃ ለትምህርት ዓላማ ብቻ መሆኑን እያረጋገጥኩኝ ውድ ጊዜዎትን ሰውተው ለሰጡኝ አስተያየት፣ሐሳብና መረጃ በቅድሚያ አመሰግናለሁ።

በድጋሚ ከልብ አመሰግናለሁ !!

1. ትምህርት ቤቱ ለኢንፎርሜሽን ኮሙኒኬሽን ቴክኖሎጂ ትምህርት አገልግሎት የሚውሉ የተሟላ መሣሪያዎች አሉት? በኢኮቴ ክ/ጊዜ በአንድ ኮምፕዩተር ስንት ተማሪዎች ይጠቀማሉ ?
2. የክፍል ውስጥ የመማር ማስተማር ስራ ቤቱ የተደገፈ ነዉ?
3. ርዕሳነ መምህራን መምህራኖቻቸውን በክፍል ውስጥ ማስተማር እንድንጠቀሙ ያበረታታሉ?
4. መምህራን ማስተማር መሰረት ያደረገ የቤት ሥራ ለተማሪዎቻቸው ይሰጣሉ?
5. በት/ቤታችሁ ውስጥ በኢንፎርሜሽን ኮሙኒኬሽን ቴክኖሎጂ አፈፃፀም ዙሪያ የሚስተዋሉት ዋና ዋና ችግሮች ምንድናቸው ? ችግሮቹን እንዴት ይፈታሉ ብለው ያስባሉ?

APPENDIX 7.5 Approval sheet for data collected from sample schools

Approval sheet for sample of data collected, questionnaires distributed and collected from the respondents. School name -----School location (urban or rural)-----

Type of Respondents	Population Size (9-10 th) level	Sample Size	Remark
Teachers			
Principals and Vice Principals			
Student council heads			
Total			

Collected by -----

Approved by -----

Signature-----

Signature-----

Date-----

Date-----

School seal