

The Role of Information and Communication Technology(ICT) on the  
quality Education in case of secondary and preparatory school in Bale  
Zone, Oromia Region, Ethiopia

A Research Report

*Submitted by:*

*Abdela Aman(M.Tech)*

*Abdeta Hussein(M.Tech)*

*Sultain Ermias(Msc.)*

*Bezabeh Wondemu(Dr.)*

*Hassen Mohammed(Msc)*

*Submitted to:*

Research and Publication Directorate

Research and Community engagement and technology transfer Vice President

**Madda Walabu University**

**Jun, 2020**

**Bale Robe, Ethiopia**

## Signature

As a principal investigator I hereby certify that the research prepared by the group of researchers is original work and has not been proposed for the same locality previously.

Principal investigator

Name: -----

Signature: -----

Date: -----

Research and Publication Director

Name: -----

Signature: -----

Date: -----

## Abstract

Information communication technologies (ICT) at present are influencing every aspect of human life. They are playing vital roles in work places, business, health, education, entertainment and in others field. Moreover, many people recognize ICTs as catalysts for change; change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information communication technologies. In this digital era, ICT use in the classroom is important for giving students opportunities to learn and apply the required 21st century skills. ICT improves teaching and learning and its importance for teachers and students in performing their role of creators of pedagogical environments.

The study investigated the effect of ICT on students' learning by taking the case of secondary and preparatory schools student in Bale zone, Oromia region. It sought to establish the relationship between ICT and students' learning particularly looking at the availability, accessibility, quality and user-ability of the ICT resources Bale zone. The study will be prompted due to the persistent observation that the secondary and preparatory students in Bale zone are getting difficulties in their studies due to limited access and use of ICT resources. It will conduct through using questionnaires and observation. The collected data will be analysed using SPSS software and the result will be represented by using graph, chart and tabular form.

**Keywords:** *ICT, Secondary School, Preparatory school, Computer, Internet*

## Table of Contents

Abstract .....	i
List of Tables.....	v
List of Figures .....	vi
List of Acronym/Abbreviation.....	vii
CHAPTER ONE .....	1
1. Introduction .....	1
1.1. Background.....	1
1.2. Statement of the Problem.....	2
1.3. General objective .....	3
1.3.1. Specific Objective .....	3
1.4. Research Questions .....	3
1.5. Scope/delimitation of the Study .....	3
1.6. Limitation.....	4
1.7. Significance of the Study .....	4
1.8. Definitions of terms .....	4
1.9. Organization of the study.....	5
CHAPTER TWO .....	6
2. Literature Review .....	6
2.1 Technology in Education .....	6
2.2 Technology and Student Collaboration and Motivation.....	6
2.3 Teach-Student Interactions and Technology Use.....	7
2.4 The Negative Impact of Using Technology in Secondary/preparatory Schools .....	9
CHAPTER THREE .....	10
3. Research Design and Methodology .....	10
3.0 Introduction.....	10
3.1 Research Design.....	10
3.2 Description of study area .....	10
3.3 Target population .....	10
3.4 Sample and Sampling Techniques .....	11
3.5 Research instruments .....	12
3.6 Data Collection Methods.....	12
3.6.1 Questionnaires .....	12
3.6.2 Observation.....	12

3.7 Data Analysis .....	13
3.8. Expected Outcomes .....	13
3.9. Dissemination.....	13
CHAPTER FOUR .....	14
4. DATA PRESENTATION, ANALYSIS AND DISCUSSIONS .....	14
4.1 Introduction.....	14
4.2 Questionnaire return rate .....	14
4.3 Demographic information of respondents.....	15
4.3.1. Demographic information (Gender of students) .....	15
4.3.2. Demographic information (Age of students).....	16
4.3.3. Demographic information (Grade of students) .....	17
4.3.4. Demographic information (school level of students).....	18
4.3.5. Demographic information (school level of students).....	19
4.3.6. Demographic information (woreda of students .....	19
4.3.6 Demographic Information (respondent stream) .....	20
<b>4.4 ICT infrastructures (Availability, accessibility, usage) in the school .....</b>	<b>22</b>
4.4.1 There are sufficient number of computers in school.....	22
4.4.2 Most of the computers in the laboratory are fully functional.....	23
4.4.3 Computer laboratory are opened during their class schedule .....	23
4.4.4 Available Computer lab are not opened for students to practice in their free time .....	24
4.4.5 Available computers are quietly attacked by virus so that they are usually out of use .....	24
4.4.6 There are adequate ICT teachers in the school like other subjects .....	24
4.4.7 There is no enough lab technician that solve computer related problems in the school... ..	25
4.4.8 Teachers’ skill gap in teaching and learning with ICT.....	26
4.4.9 Insufficient number of ICT books and related materials.....	26
4.4.10 Availability of Internet facilities in computer lab.....	26
4.4.11 Availability of electric power .....	27
4.4.12 frequent failure of power .....	28
4.4.13 Speed of internet service in the School is fairly enough to deliver the service.....	28
4.4.14 there are enough classrooms reserved only for computer lab/lesson .....	29
4.4.15 Descriptive Statistics .....	30
<b>4.5. Perception and Attitude of students on ICT. ....</b>	<b>32</b>
4.5.1 Computers can help me to learn things easily and enjoyable.....	32
4.5.2 Computers are difficult to understand and frustrating experience.....	32

4.5.3 Computers and its related tools should be used in learning of all subjects .....	32
4.5.4 Computer can help me in doing my assignments and homework .....	33
4.5.5 It is important for me to learn how to use computers.....	34
4.5.6 Students prefer to learn more from computers than from books .....	34
4.5.7 ICT help students to improve teaching and learning processes .....	35
4.5.8 ICT support independent learning and simulate creativity .....	35
4.5.9 ICT helped me to solve the problem in the real-world situation.....	36
4.5.10 I received different training on ICT to improve my skill .....	36
4.5.11 the internet is as resourceful as books .....	37
4.5.12 Students use the internet/computer to look for information and others things .....	37
4.5.13 Descriptive Statistics .....	38
4.6 ICT skill and Knowledge of student.....	40
4.6.1 Working with basic computer skills (MS word, MS excel, MS power point).....	40
4.6.2 Working with basic file management (creating, opening, closing, saving files and folders Etc.) .....	40
4.6.3 Use of internet for teaching and learning (for working assignment and homework) .....	41
4.6.4 Booting (proper starting and shutdown) computers .....	41
4.6.4 Using different social media (Facebook, yahoo, twitter, messenger, etc.) to find information .....	42
4.6.6 Identifying and Connecting computer device or equipment correctly.....	42
4.6.7 Submitting assignment and homework via email, yahoo, etc. ....	43
4.6. 8 Understanding computer and its related ICT technology .....	43
4.6.8 Descriptive Statistics .....	44
CHAPTER FIVE.....	45
<b>5. Summary, Conclusion and Recommendations of the Research.....</b>	<b>45</b>
5.1 Introduction.....	45
5.2 Summary of the study .....	45
5.3 Summary of the study findings .....	46
5.4 Conclusion .....	50
5.5 Recommendation.....	51
5.6 Suggestion for further research.....	53
References .....	54
APPENDIX A: student Questionnaires” .....	56

**List of Tables**

Table 1. 1	Questionnaire return rate .....	14
Table 1. 2	Demographic information (Gender of student) .....	15
Table 1. 3	Demographic information (Grade of students).....	17
Table 1. 4	Demographic information (student Town/Woreda of school) .....	20
Table 1. 5	summary of demographic characteristics of student (respondent).....	21
Table 1. 6	there are sufficient number of computers in school .....	22
Table 1. 7	Most of the computers in the laboratory are fully functional .....	23
Table 1. 8	computer laboratory are opened during their class schedule .....	23
Table 1. 9	Available Computer lab are not opened for students to practice in their free time .....	24
Table 1. 10	Available computers are quietly attacked by virus so that they are usually out of use ...	24
Table 1. 11	there are adequate ICT teachers in the school like other subjects .....	25
Table 1. 12	There is no enough lab technician that solve computer related problems in the school	25
Table 1. 13	Teachers' skill gap in teaching and learning with ICT .....	26
Table 1. 14	Insufficient number of ICT books and related materials .....	26
Table 1. 15	Availability of Internet facilities in computer lab .....	27
Table 1. 16	Availability of electric power.....	27
Table 1. 17	Frequent failure of power.....	28
Table 1. 18	Speed of internet service in the School is fairly enough to deliver the service .....	28
Table 1. 19	there are enough classrooms reserved only for computer lab/lesson.....	29
Table 1. 20	Descriptive statistics .....	30
Table 1. 21	Computers can help me to learn things easily and enjoyable .....	32
Table 1. 22	Computers are difficult to understand and frustrating experience .....	32
Table 1. 23	It is important for me to learn how to use computers .....	34
Table 1. 24	students prefer to learn more from computers than from books .....	34
Table 1. 25	ICT help students to improve teaching and learning processes .....	35
Table 1. 26	ICT support independent learning and simulate creativity.....	35
Table 1. 27	ICT helped me to solve the problem in the real-world situation .....	36
Table 1. 28	I received different training on ICT to improve my skill.....	36
Table 1. 29	the internet is as resourceful as books .....	37
Table 1. 30	Students use the internet/computer to look for information and others things .....	37
Table 1. 31	Descriptive Statistics .....	38
Table 1. 32	Working with basic computer skills (MS word, MS excel, MS power point) .....	40
Table 1. 33	Working with basic file management .....	40
Table 1. 34	Use of internet for teaching and learning.....	41
Table 1. 35	Booting (proper starting and shutdown) computers .....	41
Table 1. 36	Using different social media to find information .....	42
Table 1. 37	Identifying and Connecting computer device or equipment correctly .....	42
Table 1. 38	Submitting assignment and homework via email, yahoo, etc. ....	43
Table 1. 39	4.6. 8 Understanding computer and its related ICT technology .....	43
Table 1. 40	Descriptive Statistics .....	44

## List of Figures

Figure 1. 1 Demographic information (Age of students) .....	16
Figure 1. 2 Demographic information (Grade of students) .....	17
Figure 1. 3 Demographic information (school level of students) .....	18
Figure 1. 4 Demographic information (school level of students) .....	19
Figure 1. 5 Demographic information (woreda of students) .....	19
Figure 1. 6 Demographic Information (respondent stream) .....	20

## List of Acronym/Abbreviation

**ICT:** Information and Communication Technology

**NGO:** Non-Governmental Organization

**PCs:** Personal Computers

**SPSS:** Statistical Package for Social Science

## CHAPTER ONE

### 1. Introduction

#### 1.1. Background

New ICT technologies, such as computers and the Internet, which are developed, have affected the every structure of world society, and the world at large including the transportation system, security, economic stability, and overall sense of well-being. Technology, as defined by various authors, has several meanings, such as, it is the practical application of knowledge especially in a particular area such as engineering or medical technology, a capability given by the practical application of knowledge such as a car's fuel-saving technology, a manner of accomplishing a task especially using technical processes, methods, or knowledge as in new technologies for information storage, and the specialized aspects of a particular field of endeavour. There is also a need to show that education should be seen as using technology not only as an end in itself, but as a means to promote creativity, empowerment and equality and produce efficient learners and problem solvers. Many academic researchers have tried to answer this question at theoretical and empirical levels. They have faced two main difficulties. On one hand, student performance is hard to observe and there is still confusion about its definition. On the other, ICT entails evolving technologies and their effects are difficult to isolate from their environment.

Information technology has plays vital role in different sector like health, educational, economic sector and etc. New technologies, such as computers and the Internet, which are developed, have affected the very structure of teaching learning system. In the beginning of the implementation of ICT there were optimistic beliefs about profound changes in teaching and learning practices, among both educational researchers and economic development of many countries. From time to time the uses of ICT are being increasing in education sector. In addition in Ethiopia, governmental secondary school ICT course started in 1997 to enhance the performance of student, but the objective of the course is not yet successful because of different factors.

In this research proposed to assess the role of ICT on educational quality. In addition, the study will identify the advantage and the challenges of ICT in secondary and preparatory school student found in Bale zone. This study will assess the student attitude and perception on ICT course and the infrastructure of ICT in the school. The data for this research will be collected from selected secondary and preparatory schools found bale zone, Oromia region.

## 1.2. Statement of the Problem

Know a day's; Information Communication technology plays vital role every activity of our life. ICT providing developing countries with an unprecedented opportunity to meet important development goals, such as poverty reduction, basic health care and education. However, due to shortages of financial resources, limited Internet access, a lack of trained teachers and the lack of proper policies the application, use and awareness is very limited. According study conducted by (Woreta et al., 2013) the University of Gondar, collage of medicine and health science, about 50% of the respondents had knowledge of ICT, from which 75% is urban dwellers. This shows that, let alone at secondary and preparatory school, half of the students at University level have limited clue about ICT and exposure for computer and related tools.

Most of the secondary and preparatory school students may not get basic knowledge of information technology both theoretically and practically, and the current use and potential application of ICT in overall socio-economic development of a country. Moreover, they have incorrect perception and attitude about disciplines related to information communication technology (ICT) field.

Most of student's awareness about ICT related fields such computer science, Information system and Information science could be limited to type writing, using computers to play games and watching movies and internet technology to aces social medias on unfruitful things. Thus, students having a potential to create innovative things and should have joined the ICT fields preferred to study another subject and those joined without basic knowledge of ICT unwilling to study hard rather engaged inappropriate use of internet and information technology products. In appropriate use of internet technology, degrades student's time and motivation to read books. Consequently, this trend and other factors (education policy and strategy) contribute for decline of education quality. The following assumption is considered as root problems of education quality:

- ✓ Most of the rural high school students may not have exposure the basic knowledge of information technology use and its application.
- ✓ Most of the students (in urban areas) spent their time on using of social media, irrelevant web-pages (Face book, YouTube, Instagram and telegram) and playing games. Thus, their motivation and time they give for reading subject matter book and related material declines.

- ✓ Most of the students did not have enough awareness about use of internet for improving their knowledge related to their subject matter.
- ✓ Most of the students, may not consider ICT as important field of study like Medicine, Agriculture or Engineering.

### 1.3. General objective

The main aim of this research is to identify the role of information communication technology on quality of education in secondary and preparatory students found in Bale zone, Oromia region.

#### 1.3.1. Specific Objective

- ✓ To identify the advantages of Information Technology on knowledge of students
- ✓ To assess the challenges of Information Technology on quality education
- ✓ To identify perception and attitude of student on ICT use and application
- ✓ To assess the facility of information technology on quality of education
- ✓ To assess the accessibility, availability and usability of ICT infrastructure in the schools

### 1.4. Research Questions

- ✓ Does Information technology have an advantage for improving knowledge and skill of students in the secondary and preparatory school?
- ✓ Does information communication technology have a challenge for improving quality of education
- ✓ Does Students have a negative or positive attitude and perception towards ICT courses?
- ✓ Does Schools have adequate access to ICT facilities?
- ✓ Does each school have adequate and trained man power in ICT?

### 1.5. Scope/delimitation of the Study

This study will focus on role of Information technology on quality education. To conduct this study, the data will be collected from selected secondary and preparatory school in Bale zone. The target population of the study is students found in selected secondary and preparatory school in the Bale zone. The study incorporates only secondary and preparatory school found both in rural and urban districts of Bale zone.

### 1.6. Limitation

This study will have the following limitation; this study will not include all secondary and preparatory school with in the bale zone, Oromia region.

### 1.7. Significance of the Study

This study will cover the role of information communication technology on quality of education, the perception and attitude of student on ICT course and use of ICT, compares student's awareness of ICT between rural and urban school students, the laboratory facility and teacher's availability of ICT teachers in each school. The outcome of this study will be used as tool to improve the quality of education in general and on ICT specifically. In addition, the result will be used as an input for further researches.

### 1.8. Definitions of terms

The following terminologies have been used throughout this study:

**Computer:** Refers to Electronic machine operated under the control of instructions stored in its own memory, that can accept data (input) manipulate data according to specific rules (process) produce results (out-put) and store the results for future use.

**Internet:** The Internet is the global system of interconnected computer networks that uses the Internet protocol suite (TCP/IP) to communicate between networks and devices.

**Information communication technologies (ICT):** Refers to networks that provide new opportunities for teaching, learning and training through delivery of digital contents.

**ICT Integration:** Refers to the process of using any ICT (Information resources on the web, multi-media programmers in CD-ROMs, learning objects or other tools) to enhance student teaching, William, 2003.

**ICT Incorporation:** The incorporation of information and communications technology (ICT) into teaching and learning processes is going on at the university as a whole. To suggest the use of ROC curves to express graphically the differences between groups for the study variables in the field of educational research

**Impact:** Refers to the overall achievement of an intervention on the educational system and can be described by a variety qualitative of indicators such as improvements in national test results or improved learning in schools' depending on the policy target.

**Keywords:** Are important words/concepts found in your research question or thesis. A quick and dirty way to pull keywords from a research question/thesis is to choose the most important nouns; all other words are irrelevant

**Role:** The position or purpose that someone or something has in a situation, organization, society, or relationship: What is his role in this project?

**Curriculum:** Refers to a set of courses, and their content offered at school or university.

**Hardware:** Refers to tangible components of computers including processors, input, output communication and memory

**Software:** Refers to sets of instructions and data used by computers, sometimes referred to as computer programmers.

**Integration:** Refers to a sense of completeness or wholeness, Earle, 2002; by which essential elements of a system are seamlessly combined together to make a whole.

**Questionnaires:** Refers to information data collection to be undertaken that consist of students, teachers and administrators on the resources required and ICT assisted educational support.

**Digital era:** Digital Era is a period where a shift process occurs from industrial based to a information based economy using computer or other technology devices as medium or communication.

### 1.9. Organization of the study

The study is organized into five chapters. Chapter one presents a general introduction and includes the background to the study, the statement of the problem, objectives of the study, research questions, significance, limitations, scope/delimitations, definition of significant terms. Chapter two covers literature reviews on use of ICT in teaching and learning in secondary and preparatory schools, Technology and Student Collaboration and Motivation in secondary and preparatory schools. Chapter three describes the research methodology to be used. This included the research design, target population, sample and sampling procedure and data analysis techniques. Chapter four focused on data analysis, interpretation and discussion of findings. Chapter five contains the introduction, summary, research findings, discussions, conclusions, recommendations and further research study.

## CHAPTER TWO

### 2. Literature Review

#### 2.1 Technology in Education

Wangling sky studied the relationship between different applications of education and its outcomes. The research involved the collection of statistics from the National Assessment of Education advancement in mathematics. The sample consisted of 6,227 learners in the fourth grade and 7,146 from eighth grade. The information sought was related to the frequency of computer use in studying mathematics in school set up, the availability of computers at homes, the use of computers by teachers as well as technology to give instructions. According to the findings, there are inequities in the manner in which computer are used. Schools in poor urban and rural areas may lack opportunities to develop computers effusively (Wenglinsky, 1998). Therefore, teachers from regions that have not embraced the utilization of information technology have less technical skills compared to those in developed urban centres. The study concluded that computers are not the solution to all problems' schools might be experiencing, although they present a comprehensive tool for proficiency in mathematics. In the study by Clotfelter et al. (2010), they employed state wide end-of-course tests that were carried out in Carolina to establish the connection among tutors' qualifications and learner's achievement in high schools. According to the findings, there was compelling proof that tutors' qualifications, especially the license and credited ones, have significant impacts on learner success of high magnitude. The results mean that the uneven division of tutor testimonial brought about by racial profiling and economic condition of school learners influenced student achievement (Clotfelter et al., 2010). Teachers with certified computer education performed better in ensuring.

#### 2.2 Technology and Student Collaboration and Motivation

Goldin and Katz (2018) researched on three factors that increase students' motivation in the technologically enhanced setting. The factors included communication, learning, and empowerment as students appreciated how they interact with others in real time by using technologies such as computers. Connecting with others is made possible by the internet enabling real-time communication. The learners were empowered in a technology surrounding, as they were secluded from teachers and were less scared of relating to others. Learners believed that computer enables them to have control over their learning by promoting independence (Goldin & Katz, 2018).

Introduction of modern technology in high schools has also had a significant impact on teaching by a generalization of teachers' schedules (Ibieta et al., 2017). For instance, lesson preparation has been supported by emerging inventions, especially computers. Teachers can plan interactive and creative lessons as well as set assignments using various technologies in a class setting. Instructors can use technology for assessing learners in various forms although overall technology is capable of enhancing tests through the provision of flexible designs. Learners' skills and competencies can be established, and teachers can utilize real-time feedback. Therefore, technology enhances student-teacher interactions improving understanding of the critical content. The tutor can explain concepts severally for students to comprehend what is being taught. The adoption of technology in this area leads to overall improvement in reporting and student grades (Abboud& Rogalski, 2017). The use of technology in high school can help break down boundaries, as it does not limit the lesson period. Therefore, there is the creation of an authentic learning continuum between home and school due to empowerment in the latter. Students and their instructors can take more control in the learning process and harness the capabilities of gaining new experiences thus encouraging quality studies outside libraries and classroom (Kennewell et al., 2008). Learners can utilize technology to facilitate the meeting, collaborating, and creating content virtually. Collaboration is also possible through technology due to the flexibility that helps students to work in an environment considered as more collaborative. Technology is vital for mutual learning enabling interaction between teachers and learners. Students can always contribute to lesson content and engage with their colleagues in solving problems during lesson time. Use of mobile devices and laptops is the best for remote and online learning. Students are continually generating new approaches to problem-solving as well as learning ways of working alongside their peers. Future careers of high school students are enhanced when technology is used to support teaching. Textbooks are still crucial in the classroom for references and extensive research.

### **2.3 Teach-Student Interactions and Technology Use**

Muir-Herzig (2004) researched to determine the impact of the extent of using computers in the class setting on learners' performance and turnout. He used the tutor technology survey in measuring teachers, students, and overall use of technology inside classrooms. The study utilized a sample that comprises of tutors from the Northwest Ohio high school (Muir-Herzig, 2004). The findings of the research indicated that instructors, learners and general use of technology do not significantly offer positive impacts on the attendance and academic

performance of the at-risk learners. Furthermore, from the research, it was evident that the application of technology was minimal amongst the tutors in the sampled population. From the results, it was clear that technologies to have positive effects and make a change in at-risk learners' attendance and academic performance, high school, and other institutions must be prepared to apply modern inventions in the classroom. The administrators of such institutions must develop a model that should include a shared ideology, in the entire system and ensure community involvement. Face book is an effective means of communication for learners and tutors to exchange knowledge and record greater achievements (Aaen et al., 2016). In addition, specific training for employees and allocating enough time for technology adoption in the schools can enhance the value of education. The impacts of technology use in the institutions of learning mainly in secondary level result in positive changes among students and the teachers. Technology is considered a significant tool for positive change although there is a need for it to be used effectively. According to Stepp-Greany, Substantial learning occurs through learners' interaction with peers and ensuring the context is aligned to their needs. In this case, constructing a resourceful and interaction-rich learning environment in high schools is essential in facilitating learners' studies. Resources located in conventional classrooms at times restrict students to make inquiries, ascertain, examine and unravel emerging issues (Stepp-Greany, 2002). Furthermore, computer classes, with fixed PCs and network infrastructure are likely to prevent students from utilizing their technical skills effectively. Mobile learning gadgets can resolve the impasse in conventional and computer classrooms allowing learners to engage in both physical and implicit learning actions Sang et al. studied learners-tutors' reasoning capacity and ICT alignment. According to this research, learners and tutors should prepare to integrate ICT into the educational practices and future learning. The research also found that although there is better accessibility concerning ICT incorporation, few instructors are ready to align ICT with their tutoring actions. The study largely focused on different tutor interlinked variables in explaining the low level of integrating ICT into the high school curriculum

In addition, results showed that potential ICT incorporation has a significant correlation with instructor related variables, except the gender (Sang et al., 2010). Therefore, prospective ICT integration may be directly anticipated based on tutor perception and factors like teacher's self-efficacy, constructivist tutoring beliefs, and computer effectiveness and learners attitude in education. Nevertheless, the gender of the learner or teacher influences integration.

#### 2.4 The Negative Impact of Using Technology in Secondary/preparatory Schools

Smith et al. study found that technology in high school could have an adverse effect such as cyber bullying. The findings indicate that such crimes are less frequent compared to the traditional bullying (Smith et al., 2008). However, many cases have been reported within the schools compared to other places. Misuse of school technological gadgets is linked to the existence of cases of cyber-bullying of colleagues. Bingimlas in his work claimed that teachers were willing to integrate technology in teaching but faced many obstacles. Some of the barriers encountered include the lack of confidence, inadequate competences, scarce resources, and time (Bingimlas, 2009). ICT resources include hardware, software, technical support, and professional development, which need to be availed to teachers. Incorporating all the components can make it easier for high school teachers to integrate technology in schools and achieve active learning in the school environment (Zheng & Warschauer, 2015). Lack of confidence hinders utilization of modern technology in the learning process, and the leading cause of lacking confidence is fear of failure and anxiety concerning usage of new methods during classes. Instructors fear attending

## CHAPTER THREE

### 3. Research Design and Methodology

#### 3.0 Introduction

This chapter shows how the research was carried out. It discusses the research design, study area, target population, sample and sampling techniques, sampling strategies, data collection instruments, procedure for data collection, and the data analysis techniques employed in the study.

#### 3.1 Research Design

In any research, the type of methodology used depends on the research problem, research question, type and source of data to be collected and the analysis processes required (Koranteng, 2012). Research design is a comprehensive plan for data collection in a research project. It is a “blueprint” for research aimed at answering specific research questions or testing specific hypotheses, and must specify at least three processes: (1) the data collection process, (2) the instrument development process, and (3) the sampling process (Bhattacharjee A., 2012). To investigate the role of Information technology on quality education and to attain the objectives of the study, mixed research method will be used. In mixed research methods quantitative data will be collected and analysed with statistical package for social science (SPSS) version 20 and supported with qualitative data. Closed ended questioners will be distributed for sampling units. Mixed research methods used to triangulate data collected quantitatively with qualitative data.

#### 3.2 Description of study area

This research will be conducted on selected secondary and preparatory school which is found in Bale zone, Oromia region.

#### 3.3 Target population

The target population for this study was mainly students that selected from public secondary and preparatory schools found in woredas in bale zone, Oromia region. The students were considered the true representative population. Students are also important respondents in this research because they are the sole beneficiaries of the outcome of appropriate and effective use of ICT.

### 3.4 Sample and Sampling Techniques

To collect data for this study, multistage sampling methods will be used. Initially, the number districts (woredas) and school found in Bale zone will be identified. Totally in Bale zone totally 18 woredas and 2 city administration exist. Out of the 18 woredas, 9 are Dega agro-ecology zone and the other nine found in kola agro-ecology zone. Accordingly, purposively, based on the proximity to Bale robe, we included 5 woredas (Robe, Goba, Agarfa, Gindir, and Dallo Mana). In the zone, 57 secondary and 19 preparatory schools found. From each Woredas, we will include 1 urban secondary and preparatory school and totally we will collect data from 5 secondary and preparatory school.

To determine, the number of students from each secondary school, we use the formula developed by (Yamane, 1967);  $n = \frac{1}{1+N(e)^2}$ , n= sample size, N = population and e= precision level (0.05) %. With the assumption, if the number of sections from grades 9-12 in rural school possibly 8 and 40 students per class, we will have  $40*8*10= 3200$ . The number of section and in urban area per school expected to be 10 and the number of students per section expected to be 45, totally we will have  $45*20*10= 9000$ . By employing the above formula, our sampling student at 95% confidence interval will be 450students from urban secondary schools, respectively. Accordingly, 610 total numbers of sampling students will be surveyed. The number of districts and school in the districts identified. The schools will be grouped into rural and urban schools purposively, from each category through random sampling techniques; the sample schools will be identified. After the school identified, the number of students in each school and taking the course ICT will be considered. To select students for the study with the help of teachers based on their academic performance, the student will be grouped into three categories (high achievers, medium and low) systematically or purposefully.

Bale zone,

- Number of Districts (18) or Woreda and 2 city administration in Bale zone
- Selected woredas were (Robe, Goba, Agerfa, Dallo Mana and Gindir)
- One school from each selected woredas (from urban).
- Through simple random sampling schools will be identified

- The student will be grouped into three categories and from each category student will be taken randomly.
- Total 610 student was selected from 5(five) woredas

### 3.5 Research instruments

In order to explore the role of ICT in enhancing teaching and learning or quality of education, data was collected using closed questionnaire i.e. students' questionnaire and observation schedule. The questionnaires attempted to answer the research questions developed by the researcher. The students' questionnaire had four sections which include: -demographic information of student, students' ICT skills and knowledge, students' attitude and perception towards ICT and infrastructure (availability, accessibility and usability) of ICT in the school.

### 3.6 Data Collection Methods

Secondary data was collected by the method of analysis of documents. Such documents included official records, newspaper accounts, reports, as well as the published data used in the review of outstanding literature. Primary data on the other hand was not directly from the field and collected through observation, self-administered questionnaires, and interviews. This research will be conducted by collecting data from selected secondary and preparatory school students.

#### 3.6.1 Questionnaires

Questionnaires were designed (in Appendices A) such that each question was related to a given research question and the topic. Only closed ended questions were used. You would use closed ended questions to collect quantitative data. From which you'd determine some 'statistical significance'. They're usually simpler than their open-ended counterparts, allowing respondents to quickly answer. The questionnaires are preferred because it gives clear and specific responses and enable the respondent to express themselves freely especially lecturers who may not have enough time to attend to personal interview.

#### 3.6.2 Observation

Observation of participants in the context of a natural scene was made. Observation provided knowledge of the context in which events occurred, and enabled the researcher to see things that participants themselves were not aware of.

### 3.7 Data Analysis

The collected data will be analyzed using SPSS (statistical package for social sciences) and presented in form table, chart and graphs. The SPSS is software package which is used for many kinds of researches like education research, data miners, and many more for the processing and analyzing of survey data in order to analyze data.

### 3.8. Expected Outcomes

The immediate result will be obtained after the completion of this research are role of Information technology on quality of education in the study area, clarify the major challenges, advantage of information technology and assess the school's facility of ICT and teacher's availability and student's awareness about ICT.

### 3.9. Dissemination

After completion of this study, the result will disseminate to different stakeholder in hardcopy as well as electronically by preparing workshop. The research will be published the on Madda Walabu university and other journals as well.

## CHAPTER FOUR

### 4. DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

#### 4.1 Introduction

This chapter deals with the interpretation and analysis of the data collected from sample groups of respondents: The Governmental secondary and preparatory students in five woredas in Bale zone, Oromia region. The chapter also focus on the questionnaire return rate, demographic information of respondents, perceptions and attitude of student on ICT, self-efficacy on the use of ICT, presentations, interpretations and discussion of findings. The presentation of the findings was done based on the research questions.

The data from these groups were collected through questionnaires, observation checklist and document review. All the data gathered through questionnaires were organized and analysed in tabular or chart form as well as interpreted using percentage and frequency. Analysis and interpretation of the data were made based on the responses obtained from respondent.

#### 4.2 Questionnaire return rate

Questionnaire return rate is the proportion of the sample that participated as estimated in all the research procedures. In the study, 61 students from each woredas were sampled giving a total of 305 questionnaires were distributed. All the 61 students in each school (100%) and total 305 students in five schools (100%) returned the questionnaires.

*Table 1. 1 Questionnaire return rate*

<b>Respondent school</b>	<b>Sample size</b>	<b>Actual response</b>	<b>Percent</b>
Robe	61	61	100
Goba	61	61	100
Agarfa	61	61	100
Dalo Mana	61	61	100
Gindir	61	61	100
Total	305	305	100

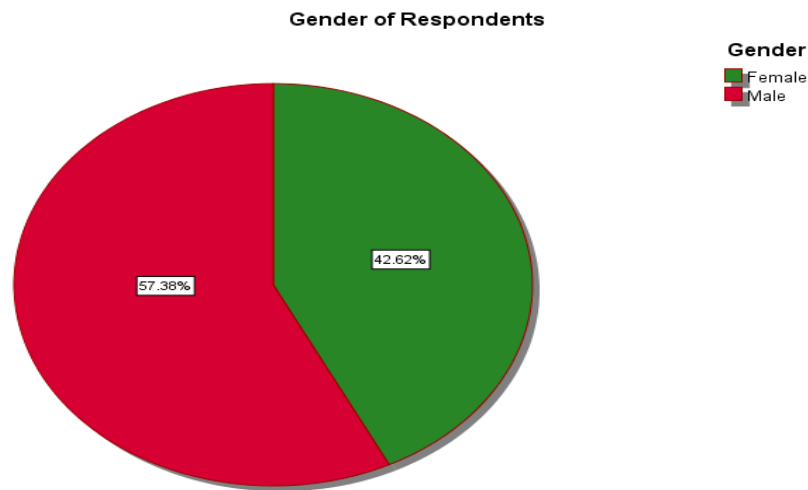
Table 4.1 indicates that the average response rate was 100%. According to Edward, Roberts, Clarke, Diguseppi, Pratep, Wentz and Kwan (2000) a questionnaire return rate of 80% and above is absolutely satisfactory while 60-80% is quite satisfactory. A rate below 60% is barely acceptable. This response rate obtained here was considered absolute satisfactory to provide reliable response.

### 4.3 Demographic information of respondents

This section deals with demographical information of respondents; students at the secondary and preparatory schools in Bale zone. Description of the characteristics of respondents gives some highlights about the sample population. The following sections deals with demographic characteristics of sample students in Bale zone secondary and preparatory school within five woredas (Robe, Agarfa, Goba Gindir and Dalo Mana).

#### 4.3.1. Demographic information (Gender of students)

*Figure 4.1 Demographic Information (Gender of student)*



The above pie chart shows that about 57.36% of the respondents were male whereas the rest were female, this indicates that the currently the number of the male students were increases in some woredas but not in all woredas. Majority of the respondents were male compared to the female in this study. This was so because upon observation there were more male students than female students in the sample schools.

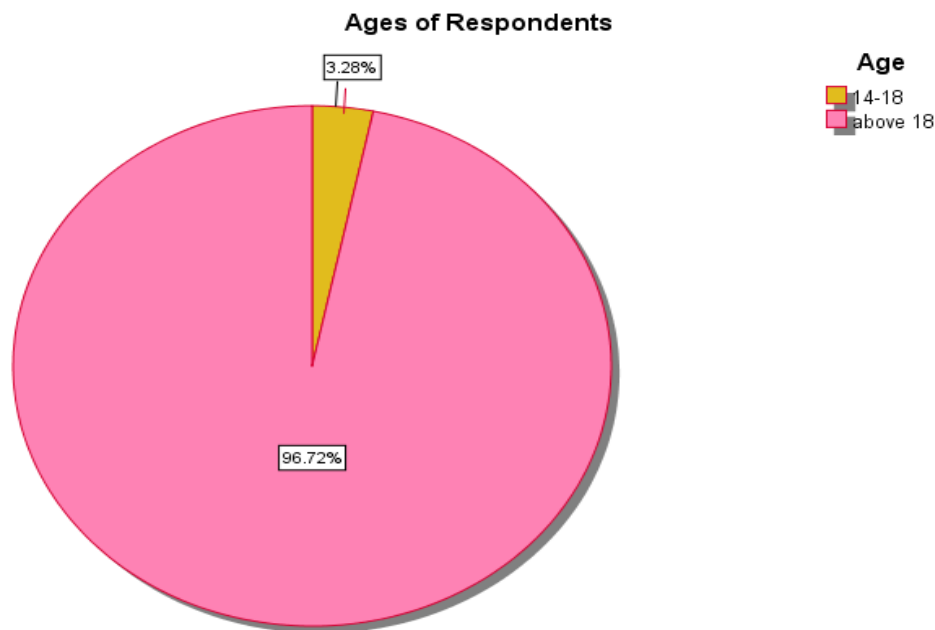
*Table 1. 2 Demographic information (Gender of student)*

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Female	130	42.6	42.6	42.6
Male	175	57.4	57.4	100
<b>Total</b>	305	100.0	100.0	

From the above, the student respondents from grade 9 to grade 12 consisted of 175(57.4%) male and 130 (42.6%) female

#### 4.3.2. Demographic information (Age of students)

Figure 1. 1 Demographic information (Age of students)

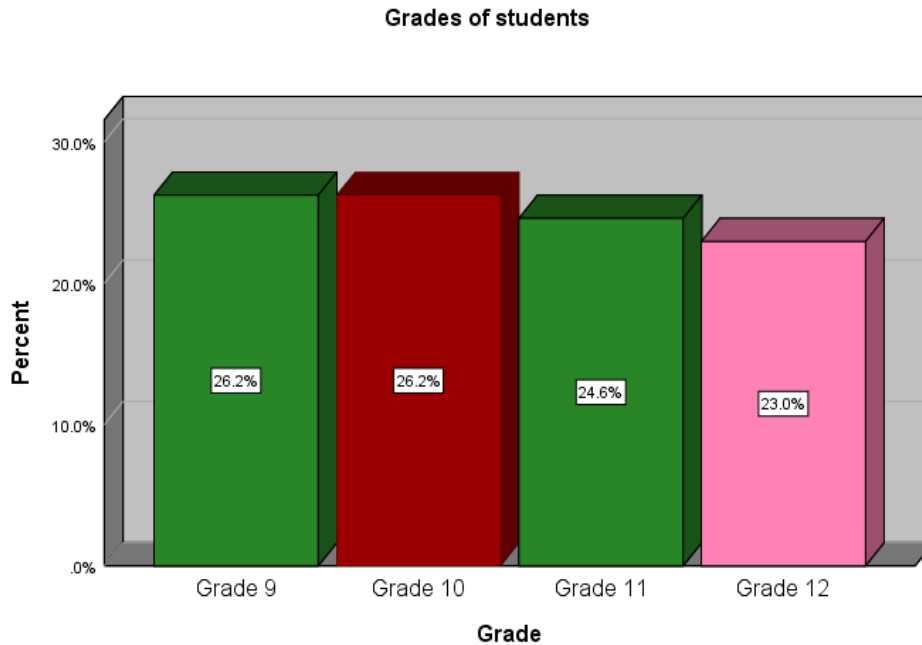


Concerning ages of respondent students can be observed in the pie chart above, 14-18 (3.28%), above 18 (96.72%) and years respectively. Generally, age range above 18 years of respondent students accounted 295 (96.72%). The findings indicate that majority of the students in the schools are young and more open to the use of ICTs in schools to develop their skills and knowledge as well as improve their teaching and learning process.

**4.3.3. Demographic information (Grade of students)**

The distribution of the Student’s grade was indicated with table and histogram format below.

*Figure 1. 2 Demographic information (Grade of students)*



The results in the above histogram indicate that 26.2% of the students were from grade 9<sup>th</sup>, 26.2% were from grade 10<sup>th</sup>, 24.6 were from grade 11<sup>th</sup> and 23, 0% were the students from grade 12<sup>th</sup> respectively

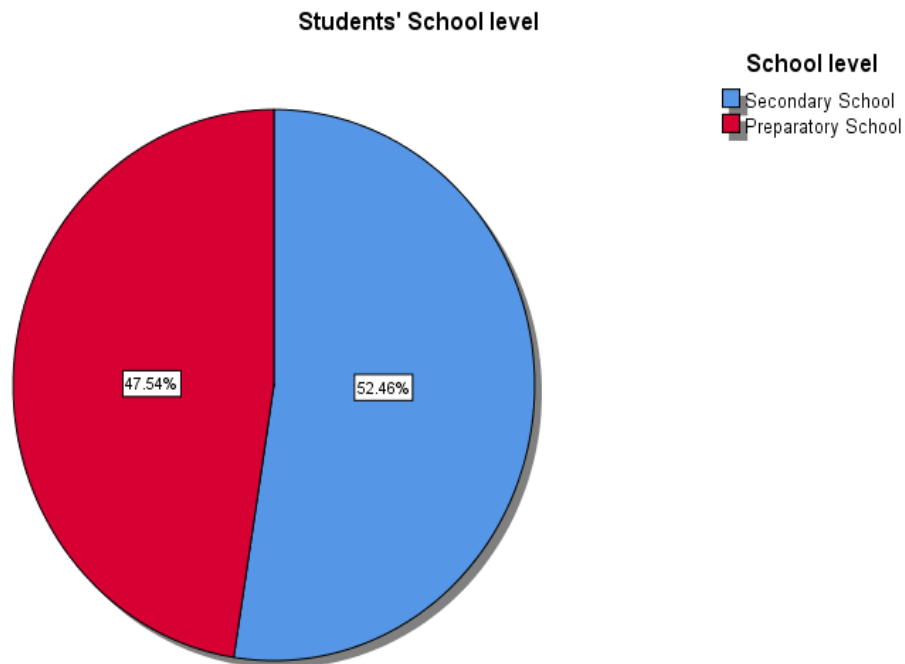
Grade	Frequency	Percent	Valid Percent	Cumulative Percent
Grade 9	80	26.2	26.2	26.2
Grade 10	80	26.2	26.2	52.5
Grade 11	75	24.6	24.6	77.0
Grade 12	70	23.0	23.0	100.0
Total	305	100.0	100.0	

*Table 1. 3 Demographic information (Grade of students)*

From the above table the Distribution of students in grade level comprised of 80 (26.2 %) students from grade 9, 79 (26.2%) students from grade 10, 75 (24.6%) students from grade 11 and 70 (23.0%) students from grade 12. The students from Secondary Schools were 160 and 145 respectively.

**4.3.4. Demographic information (school level of students)**

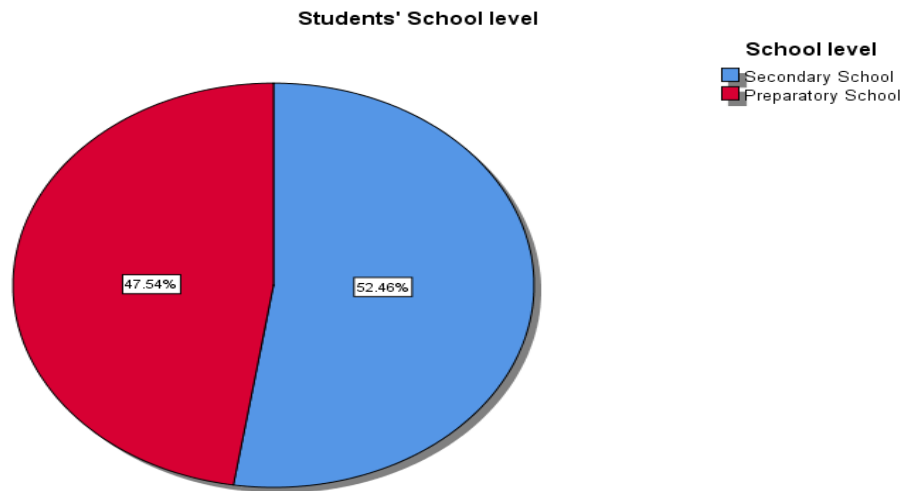
*Figure 1.3 Demographic information (school level of students)*



Concerning the school level of the students from all school in five woredas the result was indicated by pie chart above. According to the result 47.54% of the students were from secondary school and 52.54% of the students were from preparatory school.

#### 4.3.5. Demographic information (school level of students)

Figure 1. 4 Demographic information (school level of students)

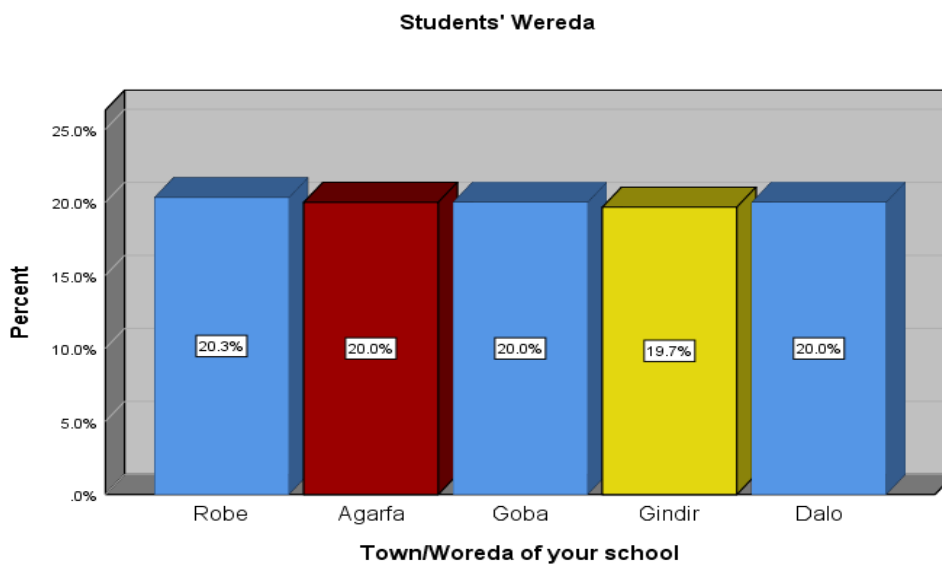


Concerning the school level of the students from all school in five woredas the result was indicated by pie chart above. According to the result 47.54% of the students were from secondary school and 52.54% of the students were from preparatory school.

#### 4.3.6. Demographic information (woreda of students)

Concerning the woreda of the students in which students are attending their class the result was indicated by table and histogram below.

Figure 1. 5 Demographic information (woreda of students)



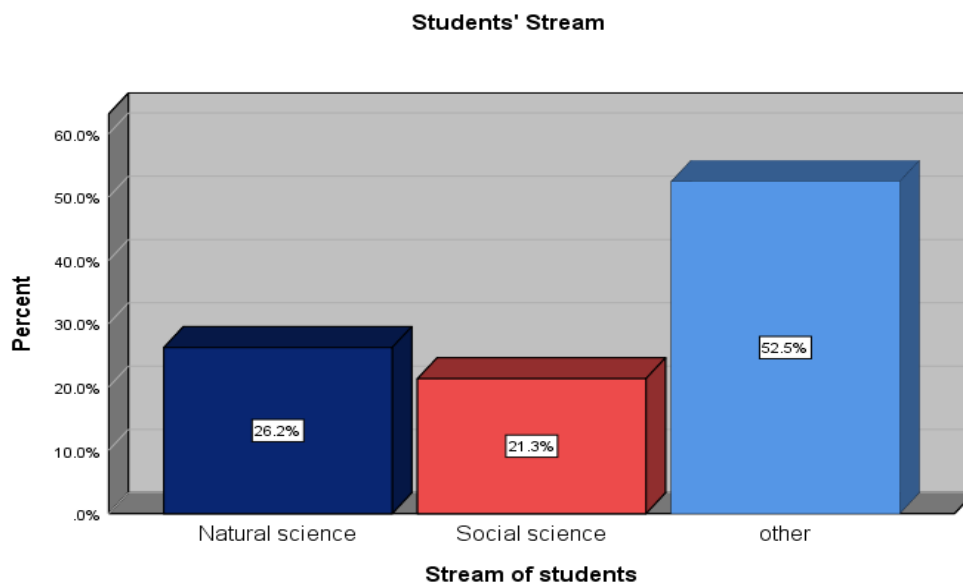
*Table 1. 4 Demographic information (student Town/Woreda of school)*

<b>Town/Woreda</b>	<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Robe	62	20.3	20.3	20.3
Agarfa	61	20.0	20.0	40.3
Goba	61	20.0	20.0	60.3
Gindir	60	19.7	19.7	80.0
Dalo	61	20.0	20.0	100.0
Total	305	100.0	100.0	

Regarding the woredas or Town in which the students are attending their class 62(20.3%) of students were from Robe Town, 61 (20 %) of students were from Agarfa woreda, 61(20.3%) of students were from Goba woreda, 60(19.7%) of students were from Gindir woreda, 61(20 %) of students were from Dalo Mana woreda,

#### **4.3.6 Demographic Information (respondent stream)**

*Figure 1. 6 Demographic Information (respondent stream)*



The results in the histogram shows that from the total sample, 26.2% are from Natural science stream, 21.3% and 52.5% are from other stream which means students in secondary school.

*Table 1. 5 summary of demographic characteristics of student (respondent)*

<b>Item No</b>	<b>Level</b>	<b>Alternative</b>	<b>Frequency</b>	<b>Percent</b>
1	Sex	Male	175	57.4
		Female	130	42.6
		<b>Total</b>	<b>305</b>	<b>100</b>
2	Age	14-18 years	10	3.28
		Above 18 years	295	96.72
		<b>Total</b>	<b>305</b>	<b>100</b>
3	Grade	9	80	26.2
		10	80	26.2
		11	75	24.6
		12	70	23.0
		<b>Total</b>	<b>305</b>	<b>100.0</b>
4	School level	Secondary	144	47.4
		Preparatory	161	52.54
		<b>Total</b>	<b>305</b>	<b>100.0</b>
5	Stream	Natural science		26.2
		Social science		21.3
		Others		52.5
		<b>Total</b>	<b>305</b>	<b>100.0</b>
6	Woreda	Robe	62	20.3
		Goba	61	20.0
		Agerfa	61	20.0
		Delo Mana	61	20.0
		Gindir	60	19.7
		<b>Total</b>	<b>305</b>	<b>100.0</b>

*Source: Own Survey result (2020) SPSS Output*

#### **4.4 ICT infrastructures (Availability, accessibility, usage) in the school**

Respondents were asked to indicate on a five-point scale ranging: strongly agree (5) to strongly disagree (1) their views on the transformative role of ICT in their teaching and learning process.

##### **4.4.1 There are sufficient number of computers in school**

Pertaining distribution of desktop computers in the schools, the students were asked to give weather there are sufficient number of computers in schools their responses were as summarized in Table 4.6:

*Table 1. 6 there are sufficient number of computers in school*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	155	50.8	50.8	50.8
	Disagree	130	42.6	42.6	93.4
	Neutral	20	6.6	6.6	100.0
	Total	305	100.0	100.0	

As shown in Table 4.6, availability of computers in the school seems to be one of the major concerns in the school. According to the result the majority (50.8%) of respondents strongly disagree about the presence of sufficient computers in the school and (42.6%) of respondent disagree with availability if sufficient computers in the school. About (6.6%) of respondents who asserted that they were not sure of the presence of computers the school.

The above findings suggest that there are no enough computers in each school in the selected wordas and the integration of ICT in the teaching and learning process in secondary and preparatory school is not fairly good as students do not have access to new technology and different types of educational information. Thus, the process of learning in the class room can become significantly poorer as students do not have access to personal computer in the school and different type's educational material.

**4.4.2 Most of the computers in the laboratory are fully functional**

*Table 1. 7 Most of the computers in the laboratory are fully functional*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	115	37.7	37.7	37.7
	Disagree	100	32.8	32.8	70.5
	Neutral	20	6.6	6.6	77.0
	Agree	70	23.0	23.0	100.0
	Total	305	100.0	100.0	

The result in table 4.7 revealed that 37.7% of respondents strongly disagree, 32.8% of respondents disagree, 23% of respondents agree about the full functionality of the personal computers in the laboratory of each school. About 6.6% of respondents have no idea regarding functionality of the computers in the laboratory.

The findings indicate that majority of the students in the schools responds most computer in the laboratories are not fully functional due to several factors like Trojan, virus, bomb etc.

**4.4.3 Computer laboratory are opened during their class schedule**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	1.6	1.6	1.6
	Disagree	85	27.9	27.9	29.5
	Neutral	55	18.0	18.0	47.5
	Agree	160	52.5	52.5	100.0
	Total	305	100.0	100.0	

*Table 1. 8 computer laboratory are opened during their class schedule*

As seen in the table 4.8 above, reveal that majority of respondent 52.5% agree, 27.9% disagree, 1.6% strongly disagrees and 18% are neutral that shows weather computer laboratories are opened during their class schedule. The finding indicate that computer laboratories were opened for ICT subjects during class schedule and it is good to ensure the implementation of ICT integration in their respective schools.

**4.4.4 Available Computer lab are not opened for students to practice in their free time**

*Table 1. 9 Available Computer lab are not opened for students to practice in their free time*

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	20	6.6	6.6	6.6
Disagree	10	3.3	3.3	9.8
Neutral	10	3.3	3.3	13.1
Agree	160	52.5	52.5	65.6
Strongly agree	105	34.4	34.4	100.0
Total	305	100.0	100.0	

As seen in the table 4.9 above, reveal that majority of respondent 52.5% agree, 34.4 %strongly agree, 3.3% disagree, 6.6 % strongly disagree and 3.3 % are neutral that shows weather computer laboratories are opened during their class schedule. The finding indicate that available computer laboratories were not opened for students to practice in their free time and it hinders the students to practice what they have learnt in theory class and reduce the role of ICT in the education sectors

**4.4.5 Available computers are quietly attacked by virus so that they are usually out of use**

*Table 1. 10 Available computers are quietly attacked by virus so that they are usually out of use*

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Neutral	55	18.0	18.0	18.0
Agree	155	50.8	50.8	68.9
Strongly agree	95	31.1	31.1	100.0
Total	305	100.0	100.0	

Data in table 4.10 indicates that 155(50.8%) of respondents responds agree, 95(31.1%) responds strongly agree, 55(18%) responds neutral on computers are quietly attacked by virus. The finding shows that the majority of the respondents believe most available computers are quietly attacked by virus so that they are out of service and the reason for semi functionality.

**4.4.6 There are adequate ICT teachers in the school like other subjects**

*Table 1. 11 there are adequate ICT teachers in the school like other subjects*

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	40	13.1	13.1	13.1
Disagree	135	44.3	44.3	57.4
Neutral	50	16.4	16.4	73.8
Agree	70	23.0	23.0	96.7
Strongly agree	10	3.3	3.3	100.0
Total	305	100.0	100.0	

As seen in the table 4.11 above, reveal that 10(3.3%) of respondent are strongly agree, 70(23 %) of respondents are agree, 135(44.3%) of respondents are disagree, 40(13.1%) strongly disagree and 50(16.4%) are neutral on adequacy if ICT teachers in the school like another subjects. These finding imply that the respondents believe that there are inadequate ICT teachers in the schools and the government need to hire more ICT teachers and experts

#### **4.4.7 There is no enough lab technician that solve computer related problems in the school**

*Table 1. 12 There is no enough lab technician that solve computer related problems in the school*

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	10	3.3	3.3	3.3
Neutral	25	8.2	8.2	11.5
Agree	175	57.4	57.4	68.9
Strongly agree	95	31.1	31.1	100.0
Total	305	100.0	100.0	

As seen in the table 4.12 above, reveal that 95(31.1%) of respondent are strongly agree, 70(23 %) of respondents are agree, 175(57.4%) of respondents are disagree and 25(8.2 %) are neutral on the question there is no enough lab technician that solve computer related problems in the school. The finding indicates that the majority of the respondents Believe that there is no enough lab technician that solve computer related problems in the school.

#### 4.4.8 Teachers' skill gap in teaching and learning with ICT

*Table 1. 13 Teachers' skill gap in teaching and learning with ICT*

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly disagree	20	6.6	6.6	6.6
	Disagree	30	9.8	9.8	16.4
	Neutral	60	19.7	19.7	36.1
	Agree	140	45.9	45.9	82.0
	Strongly agree	55	18.0	18.0	100.0
	Total	305	100.0	100.0	

As seen in the table 4.13 above, 55(18%) of respondent are strongly agree, 70(23 %) of respondents are agree, 140(45.9%) of respondents are strongly disagree, 20(6.6%) strongly disagree, 30(9.8 % of respondents are disagree and 60(19.7%) are neutral on teachers skill gap with ICT. The finding indicate that the majority of the respondents Believe that there is teachers skill gap in teaching and learning with ICT subject and it needs to be improved by providing training for teachers.

#### 4.4.9 Insufficient number of ICT books and related materials

*Table 1. 14 Insufficient number of ICT books and related materials*

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	Neutral	40	13.1	13.1	13.1
	Agree	185	60.7	60.7	73.8
	Strongly agree	80	26.2	26.2	100.0
	Total	305	100.0	100.0	

According to the results on table 4.14, Concerning the insufficient number of ICT books and related materials, 80(26.2 %) said “strongly agree”, 185(60.7 %) said “agree” and 40 (13.1%) said “neutral. The finding shows that there is no sufficient number of ICT books and related materials in the school and it needs to be prepared by soft copy and hardcopy.

#### 4.4.10 Availability of Internet facilities in computer lab

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	185	60.7	60.7	60.7
Disagree	85	27.9	27.9	88.5
Neutral	35	11.5	11.5	100.0
Total	305	100.0	100.0	

*Table 1. 15 Availability of Internet facilities in computer lab*

On Table 4.15, On the other hand internet connectivity and availability for teaching and learning responded 185(60%) “Strongly disagree”, 85(27.9%) responded disagree and 35(11.5 %) responded “neutral”. This shows the importance of Internet for teaching learning activity. But the schools and laboratories have no internet connectivity and facilities.

#### **4.4.11 Availability of electric power**

*Table 1. 16 Availability of electric power*

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Neutral	40	13.1	13.1	13.1
Agree	165	54.1	54.1	67.2
Strongly agree	100	32.8	32.8	100.0
Total	305	100.0	100.0	

According to the results on table 4.16, Concerning the Availability of electricity supply, 100(32.8%) said “strongly agree”, 165(54.1%) said “agree” and 40 (13.1%) said “neutral”. The sufficient power supply in most of the secondary and preparatory schools in the selected worked had contributed to the high integration of ICTs in the schools.

**4.4.12 frequent failure of power**

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	20	6.6	6.6	6.6
Disagree	50	16.4	16.4	23.0
Neutral	75	24.6	24.6	47.5
Agree	130	42.6	42.6	90.2
Strongly agree	30	9.8	9.8	100.0
Total	305	100.0	100.0	

*Table 1. 17 Frequent failure of power*

According to the results on table 4.17, concerning the frequent failures of electricity power, 20(6.6%) said “strongly disagree”, 50(16.4%) said “disagree”, 75(24.6%) said,” Neutral”, 130(42.6%) said “agree” and 30 9.8%) said “strongly agree”. The frequent failure of power in most of the secondary and preparatory schools in the selected worked had contributed to the high integration of ICTs in the schools.

**4.4.13 Speed of internet service in the School is fairly enough to deliver the service**

*Table 1. 18 Speed of internet service in the School is fairly enough to deliver the service*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	150	49.2	49.2	49.2
	Disagree	110	36.1	36.1	85.2
	Neutral	45	14.8	14.8	100.0
	Total	305	100.0	100.0	

Concerning to the results on table 4.18, the result indicates, 150(49.2%) said “strongly disagree”, 110(36.1%) said “disagree” and 45(14.8%) said “neutral”. This show the speed of internet service in the school is not fairly enough to delivery service in most of the selected secondary and preparatory schools.

**4.4.14 there are enough classrooms reserved only for computer lab/lesson**

*Table 1. 19 there are enough classrooms reserved only for computer lab/lesson*

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	60	19.7	19.7	19.7
Neutral	45	14.8	14.8	34.4
Agree	130	42.6	42.6	77.0
Strongly agree	70	23.0	23.0	100.0
Total	305	100.0	100.0	

According to the results on table 4.19, Concerning the class reserved for computer lab only, 60(19.7%)said “disagree”,45(14.8%) said “neutral” ,130(42.6%) said,” agree” and 70(23.0%) said “strongly agree” this result show that there is enough classroom reserved only for computer lab or lessen but there is computer and others facilities in the lab.

#### 4.4.15 Descriptive Statistics

*Table 1. 20 Descriptive statistics*

Variables	N	Mean	Std. Deviation
There are sufficient number of computers in school	305	1.56	.616
Most of the computers in the laboratory are full functional	305	2.15	1.159
Computer laboratory are opened during their class schedule	305	3.21	.909
Available Computer lab are not opened for students to practice in their free time	305	4.05	1.049
There are enough classrooms reserved only for computer lab/lesson	305	3.69	1.035
Available computers are quietly attacked by virus so that they are usually out of use	305	4.13	.690
There are adequate ICT teachers in the school like other subjects	305	2.59	1.079
There is no enough lab technician that solve computer related problems in the school	305	4.16	.707
Teachers' skill gap in teaching and learning with ICT	305	3.59	1.094
Insufficient number of ICT books and related materials	305	4.13	.614
Availability of Internet facilities in computer lab	305	1.51	.694
Speed of internet service in the School is fairly enough to deliver the service	305	1.66	.723
Frequent failure of power	305	3.33	1.069
Availability of electric power	305	4.20	.649
Valid N (listwise)	305		

As seen from table 4.20 , the results of the study showed that there is sufficient number of computer in the school (mean=1.56) as shown in the table 4.19 Most of the computers in the laboratory are not fully functional (mean=2.15) as shown in the table 4.19,Computer laboratory are opened during their class schedule (mean=3.21) as shown in the table 4.19 Available Computer lab are not opened for students to practice in their free time (4.05) as shown in the table 4.19 There are enough classrooms reserved only for computer lab/lesson (mean=3.69) as shown in the table 4.19 Available computers are quietly attacked by virus so that they are usually out of use(mean= 4.13) as shown in the table 4.19 Availability of Internet facilities in computer lab (mean=1.51) as shown in the table 4.19 Availability of electric power (mean=4.2) as shown in the table 4.19 Frequent failure of power (3.33) as shown in the table 4.19 There are adequate ICT teachers in the school like other subjects(mean=2.59) as shown in the table 4.19 Teachers' skill gap in teaching and learning with ICT(mean=(3.59) as shown in the table 4.19 Insufficient number of ICT books and related materials (mean=4.13).The findings of the study revealed that the respondents responds there is no enough computer laboratories that balance the ratio of students in secondary and preparatory school, most computer in the school are not fully functional means semi-functional/mul-functional, available computer laboratories are not opened for practice in their free time, there is no internet connectivity in the school and available computers are attacked by virus, there is laboratory technicians that solve computer related problems like virus attack and Trojan horse attach, sometimes there high power fluctuation in the country. In addition the finding shows there are inadequate ICT teachers, there is skill gap of ICT teachers in the school and there Insufficient number of ICT books and related materials.

---

## 4.5. Perception and Attitude of students on ICT.

### 4.5.1 Computers can help me to learn things easily and enjoyable

*Table 1. 21 Computers can help me to learn things easily and enjoyable*

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	195	63.9	63.9	63.9
Strongly agree	110	36.1	36.1	100.0
Total	305	100.0	100.0	

As seen in the table 4.21 above, 110(36.1%) of respondent are strongly agree and 195(63.9 %) of respondents are agree, computers can help me to learn things easily and enjoyable way. The finding indicates that the majority of the respondents Believe that involvement of computers in teaching and learning has more benefit for students.

### 4.5.2 Computers are difficult to understand and frustrating experience

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Disagree	70	23.0	23.0	23.0
Neutral	50	16.4	16.4	39.3
Agree	130	42.6	42.6	82.0
Strongly agree	55	18.0	18.0	100.0
Total	305	100.0	100.0	

*Table 1. 22 Computers are difficult to understand and frustrating experience*

As seen in the table 4.22 above, reveal that 55(18%) of respondent are strongly agree, 130(42.6 %) of respondents are agree, 70(23%) of respondents are disagree and 50(16.4%) are neutral on Computers are difficult to understand and frustrating experience. These finding indicates learning and understanding computers are difficult. Therefore, it needs the students learn ICT and practice it.

### 4.5.3 Computers and its related tools should be used in learning of all subjects

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	Neutral	65	21.3	21.3	21.3
	Agree	160	52.5	52.5	73.8
	Strongly agree	80	26.2	26.2	100.0
	Total	305	100.0	100.0	

*Table 4.23 Computers and its related tools should be used in learning of all subjects*

As seen in the table 4.23 above, 80(26.2%) of respondent are strongly agree and 160(52.5 %) of respondents are agree and 65(21.3) of respondents are neutral on the questions Computers and its related tools should be used in learning of all subjects. The finding indicate that the majority of the respondents Believe that involvement of computers and related tools in teaching and learning of all subject has more benefit for students and teachers.

#### **4.5.4 Computer can help me in doing my assignments and homework**

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	Neutral	30	9.8	9.8	9.8
	Agree	165	54.1	54.1	63.9
	Strongly agree	110	36.1	36.1	100.0
	Total	305	100.0	100.0	

*Table 4.24 Computer can help me in doing my assignments and homework*

As seen in the table 4.24 above, 110(36.1%) of respondent are strongly agree and 165(54.1 %) of respondents are agree and 30(9.8%) of respondents are neutral on the questions Computers can help me in doing my assignments and homework. The finding indicates that the majority of the respondents Believe that majority of the students enjoy doing assignments and homework by using computers.

**4.5.5 It is important for me to learn how to use computers**

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	Neutral	5	1.6	1.6	1.6
	Agree	105	34.4	34.4	36.1
	Strongly agree	195	63.9	63.9	100.0
	Total	305	100.0	100.0	

*Table 1. 23 It is important for me to learn how to use computers*

As seen in the table 4.25above, 195(63.9%) of respondent are strongly agree and 105(34.4 %) of respondents are agree and 5(1.6%) of respondents are neutral on the questions that, it is important for the students to learn how to use computers. The finding indicate that the majority of the respondents wants to know how to operate and use the computers because, it has high benefit for the students

**4.5.6 Students prefer to learn more from computers than from books**

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	Disagree	30	9.8	9.8	9.8
	Neutral	55	18.0	18.0	27.9
	Agree	165	54.1	54.1	82.0
	Strongly agree	55	18.0	18.0	100.0
	Total	305	100.0	100.0	

*Table 1. 24 students prefer to learn more from computers than from books*

As seen in the table 4.26 above, 55(18%) of respondent are strongly agree and 165(54.1 %) of respondents are agree, 30 (9.8) of respondent are disagree and 55(18%) of respondents are neutral on the questions the students prefer to learn more from computers than from books. The finding indicates that the majority of the respondents Believe that many students prefer to learn more from computers than from books.

**4.5.7 ICT help students to improve teaching and learning processes**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	130	42.6	42.6	42.6
	Strongly agree	175	57.4	57.4	100.0
	Total	305	100.0	100.0	

*Table 1. 25 ICT help students to improve teaching and learning processes*

As seen in the table 4.27 above, 175(57.4%) of respondent are strongly agree and 130(42.6 %) of respondents are agree on how ICT can help students to improve teaching and learning processes. The finding indicate that the majority of the respondents believe that ICT has crucial role in improving teaching and learning process in education sector especially in the selected woredas

**4.9.8 ICT support independent learning and simulate creativity**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	1.6	1.6	1.6
	Agree	180	59.0	59.0	60.7
	Strongly agree	120	39.3	39.3	100.0
	Total	305	100.0	100.0	

*Table 1. 26 ICT support independent learning and simulate creativity*

Data in table 4.28 indicates that 120(39.3%) of respondents responds strongly agree, 180(59%) responds agree, 5(1.6%) responds neutral on the ICT support independent learning and simulate creativity in the students in the school. The finding shows that the all most all respondents believe

ICT enhances independent learning and self-learning. In addition, ICT simulate creativity among the students.

**4.5.9 ICT helped me to solve the problem in the real-world situation**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	105	34.4	34.4	34.4
	Strongly agree	200	65.6	65.6	100.0
	Total	305	100.0	100.0	

*Table 1. 27 ICT helped me to solve the problem in the real-world situation*

Data in table 4.29 indicates that 200(65.6%) of respondents responds strongly agree and 105(34.4%) on how ICT help the students to solve the problem in real-world situation .The finding indicates that majority of the respondents strongly agrees that ICT is very important tool that helps to solve real world problems.

**4.5.10 I received different training on ICT to improve my skill**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	120	39.3	39.3	39.3
	Disagree	185	60.7	60.7	100.0
	Total	305	100.0	100.0	

*Table 1. 28 I received different training on ICT to improve my skill*

Data in table 4.30, indicates that 120(39.3%) of respondents responds strongly disagree and 185(60.7%) disagree on ICT training. according to the finding majority the respondents strongly disagrees that secondary and preparatory school students receive any kinds of ICT training. Therefore, the school need to provide ICT training by cooperating with concerned organizations.

**4.5.11 the internet is as resourceful as books**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	90	29.5	29.5	29.5
	Strongly agree	215	70.5	70.5	100.0
	Total	305	100.0	100.0	

*Table 1. 29 the internet is as resourceful as books*

Table 4.31 shows 90(29.5%) of the respondents are agree and 215(70.5%) of the respondents are responded strongly disagree on the questions the internet is as resourceful as book. The finding indicates the all the students use the internet as a resource for learning purpose from their mobile, internet café and broadband service.

**4.5.12 Students use the internet/computer to look for information and others things**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	125	41.0	41.0	41.0
	Agree	115	37.7	37.7	78.7
	Strongly agree	65	21.3	21.3	100.0
	Total	305	100.0	100.0	

*Table 1. 30 Students use the internet/computer to look for information and others things*

Data in table 4.32 indicates that 65(21.3%) of respondents responds strongly agree, 115(37.7%) responds agree, 125(41 %) responds neutral on the students use internet/computer to look for information and another thing. Therefore, the students use internet to access several information's-like communications (Facebook, what sap and email) and to access educational materials.

#### 4.5.13 Descriptive Statistics

Variables	N	Mean	Std. Deviation
Computers can help me to learn things easily and enjoyable	305	4.36	.481
Computers are difficult to understand and frustrating experience	305	3.56	1.034
Computers and its related tools should be used in learning of all subjects	305	4.05	.689
Computer can help me in doing my assignments and homework	305	4.26	.626
It is important for me to learn how to use computers	305	4.62	.518
All students should have opportunities to learn about computers in school	305	4.20	.624
I prefer to learn more from computers than from books	305	3.80	.847
ICT help me improve my teaching and learning processes	305	4.57	.495
ICT allows me to learn independently and simulate creativity in me	305	4.38	.518
ICT helped me to solve the problem in the real-world situation	305	4.66	.476
ICT makes me to develop interest in the learning content and increase motivation	305	4.11	.656
I received different training on ICT to improve my skill	305	1.61	.489
The internet is as resourceful as books	305	4.70	.457
Students use the internet/computer to look for information and others things	305	3.80	.766
Valid N (listwise)	305		

*Table 1. 31 Descriptive Statistics*

As seen from table 4.33, the results of the study showed that Computers can help the students to learn things in easy and enjoyable way(mean=4.36), Computers and its related tools should be used in learning of all subjects(mean=4.05), Computer can help the students in doing their assignments and homework(mean=4.26), It is important for the students to learn how to use computers (mean=4.62),more students prefer to learn more from computers than from books(mean=3.8),ICT help the students to improve their teaching and learning processes(mean=4.57), ICT allows students to learn independently and simulate creativity(mean=4.38), ICT helped students to solve the problem in the real-world situation(mean=4.66), The internet is as resourceful as books(mean=4.7).

The findings of the study revealed that the number of respondents responds computer can help the students to learn in easy and enjoyable way. In addition most students use the internet to do their assignment and homework activity. Many students understand as internet is educational resource as book and more students prefer to learn from internet/internet than book. The majority of students believe that ICT allows independent learning, self-learning, and creativity and help the students to solve real world problems. The least students receive training on ICT subject.

#### 4.6 ICT skill and Knowledge of student

##### 4.6.1 Working with basic computer skills (MS word, MS excel, MS power point)

*Table 1. 32 Working with basic computer skills (MS word, MS excel, MS power point)*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	130	42.6	42.6	42.6
	Poor	115	37.7	37.7	80.3
	Good	60	19.7	19.7	100.0
	Total	305	100.0	100.0	

Results from Table 1.32, show the respondents 60(19.7%) emphasized that their skills to use computer basic skill like Msword, MS excel and MS PowerPoint. While 115 (37.7%) and 130(42.6%) of respondents rated their skills as being poor and very poor respectively in using computer basic skill. The finding reveals that the student’s capabilities to use Ms-Word and Ms Excel for their academic purpose like preparations of course work is relatively very poor which suggest that ICT can influence learning..

##### 4.6.2 Working with basic file management (creating, opening, closing, saving files and folders Etc.)

*Table 1. 33 Working with basic file management*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	100	32.8	32.8	32.8
	Poor	160	52.5	52.5	85.2
	Good	45	14.8	14.8	100.0
	Total	305	100.0	100.0	

Table 41.33 recorded only 45 (14.8%) respondents who envisaged their skills to use basic file management as very good together with 100 (32.8%) who rated their skills as very poor. Majority of the respondents 160(52.5%) rated their skills of using basic file management as poor. During a discussion with the researcher, some students revealed that the content taught to them is very shallow and even one lecturer consented that “we train them only basic components” which was a further proof of the shallowness of the contents taught.

**4.6.3 Use of internet for teaching and learning (for working assignment and homework)**

*Table 1. 34 Use of internet for teaching and learning*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very poor	70	23.0	23.0	23.0
	Poor	175	57.4	57.4	80.3
	Good	60	19.7	19.7	100.0
	Total	305	100.0	100.0	

Table 1.34, recorded only 70 (23%) respondents who agreed that their skills to use Internet for working assignment and homework by using online technology were very poor. About 175 (57.4%) respondents said were poor. Majority of the respondents 175(57.4%) agreed that their skills to use internet and online resources were very poor. The above finding is indicative that the students rate their skills in using internet and online resources are low and thus should not be capable of doing their assignment and homework.

**4.6.4 Booting (proper starting and shutdown) computers**

*Table 1. 35 Booting (proper starting and shutdown) computers*

	Frequency	Percent	Valid Percent	Cumulative Percent
Very poor	20	6.6	6.6	6.6
Poor	165	54.1	54.1	60.7
Good	80	26.2	26.2	86.9
Very good	40	13.1	13.1	100.0
Total	305	100.0	100.0	

Table 1.35 recorded only 20 (6.6%) respondents who agreed that their skill of booting computer were very poor. About 165 (54.1%) respondents said were poor. A total of 80(26.2% said their skills were good. Majority of the respondents 40(13.1%) agreed that their skills to use internet and online resources were very good. The above finding is indicative that the student’s capacity to boot computer is poor and they need to improve by learning and ICT training.

**4.6.4 Using different social media (Facebook, yahoo, twitter, messenger, etc.) to find information**

*Table 1. 36 Using different social media to find information*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	35	11.5	11.5	11.5
	Good	210	68.9	68.9	80.3
	Very good	60	19.7	19.7	100.0
	Total	305	100.0	100.0	

Table 1.36 recorded only 35 (11.5%) respondents who agreed that students in the school are using social media to exchange information were poor. A total of 60(19.7) % said their skills were very good. Majority of the respondents 210(68.9%) agreed that their skills to use different social media is good. The above finding is indicative that the students can use different social media like Facebook, yahoo, twitter and messenger to exchange educational information.

**4.6.6 Identifying and Connecting computer device or equipment correctly**

*Table 1. 37 Identifying and Connecting computer device or equipment correctly*

		Frequency	Percent	Valid Percent	Cumulative Percent
Very poor		50	16.4	16.4	16.4
Poor		185	60.7	60.7	77.0
Good		70	23.0	23.0	100.0
Total		305	100.0	100.0	

Table 1.37 recorded only 50(16.4%) respondents who agreed that students cannot identify and connect computer device properly is very poor. A total of 70(23%) % said their skills Identifying and Connecting computer device or equipment correctly were poor. Majority of the respondents 185(60.7%) agreed that their skills to Identifying and Connecting computer device or equipment correctly is poor. The above finding is indicative that the students Identifying and Connecting computer device or equipment correctly.

**4.6.7 Submitting assignment and homework via email, yahoo, etc.**

*Table 1. 38 Submitting assignment and homework via email, yahoo, etc.*

	Frequency	Percent	Valid Percent	Cumulative Percent
Very poor	90	29.5	29.5	29.5
Poor	170	55.7	55.7	85.2
Good	45	14.8	14.8	100.0
Total	305	100.0	100.0	

Table 1.38, recorded only 90 (29.5%) respondents who agreed that their skills to use email service for submitting assignment and homework by using email very poor. About 45(14.8%) respondents said were good. Majority of the respondents 170(55.7%) agreed that students can submit assignment via email like yahoo and Gmail service is poor. The above finding is indicative that the students can submit assignment via email like yahoo and Gmail service are low and thus should not be capable of submitting their assignment and homework via email

**4.6. 8 Understanding computer and its related ICT technology**

*Table 1. 39 Understanding computer and its related ICT technology*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	195	63.9	63.9	63.9
	Good	100	32.8	32.8	96.7
	Very good	10	3.3	3.3	100.0
	Total	305	100.0	100.0	

Table 1.39, recorded only 10(3.3 %) respondents who agreed that they understand computer and its related technology is very good. About 100(32.8%) respondents said were good. Majority of the respondents 195(63.9%) agreed that students Understanding computer and its related ICT technology is poor. The above finding is indicative that the students cannot understand computer and its related ICT technology.

#### 4.6.8 Descriptive Statistics

Table 1. 40 Descriptive Statistics

	N	Mean	Std. Deviation
Working with basic computer skills (MS word, MS excel, MS power point, etc.)	305	1.77	.756
Working with basic file management (creating, opening, closing, saving files and folders Etc.)	305	1.82	.667
Use of internet for teaching and learning (for working assignment and homework)	305	1.97	.653
Booting (proper starting and shutdown) computers	305	2.46	.802
Finding information via internet through browsing	305	2.93	.848
Using different social media (Facebook, yahoo, twitter, messenger, etc.) to find information	305	3.08	.553
Identifying and Connecting computer device or equipment correctly	305	2.07	.625
Submitting assignment and homework via email, yahoo, etc.	305	1.85	.650
Understanding computer and its related ICT technology	305	2.39	.552
Valid N (listwise)	305		

## CHAPTER FIVE

### **5. Summary, Conclusion and Recommendations of the Research**

#### 5.1 Introduction

This chapter presents summary of the study, research findings, conclusions drawn and the recommendations for the study as well as suggestions for further research.

#### 5.2 Summary of the study

The purpose of the study was to determine the role of information communication technologies (ICT) on quality of education (teaching and learning process) in secondary and preparatory schools found in Bale zone, Oromia region. The instantaneous objectives of the study were:-To identify the advantages of Information Technology on knowledge of students, To assess the challenges of Information Technology on quality education, To identify perception and attitude of student on ICT use and application, To assess the facility of information technology on quality of education, and to determine the ways in which ICT is integrated in teaching and learning process. Literature reviewed on ICT in Education laid the background for the study. The main data collection method used was questionnaire administered students which in Appendix A.

The study employed descriptive survey design. Total of 305 students from five woredas (Robe,Goba,agerfa,Gindir and Dalo Mana) secondary and preparatory schools in Bale zone Oromia, region, were purposively included for the study. Data collected from the respondents was both quantitative and qualitative in nature (mixed research).

To investigate the role of Information technology on quality education and to attain the objectives of the study, mixed research method will be used. In mixed research methods quantitative data will be collected and analysed with statistical package for social science (SPSS) version 20 and supported with qualitative data. Closed ended questioners will be distributed for sampling units. Also mixed research methods used to triangulate data collected quantitatively with qualitative data. Quantitative data was analysed using descriptive statistics such as frequencies and percentage. The data was analysed and summarized to identify the main research finding and there after conclusions, recommendations and further study were made.

### 5.3 Summary of the study findings

The summary of the research findings has been presented as per research objectives in the study. The findings revealed that the role of Information and Communication Technology (ICT) on quality of education in sample selected woredas of Bale zone, Oromia region. This summary is in agreement with the basic research question. These include the advantage of ICT for improving knowledge and skill of students in the secondary and preparatory school, Challenge of ICT for improving quality of education, negative or positive attitude and perception towards ICT courses, adequate access to ICT facilities and adequate and trained man power in ICT. The following is the discussion was made according to the research objectives:

**ICT infrastructures (Availability, accessibility, usage) in the school:** The result of study shows that the ICT infrastructure i.e. Availability, Accessibility and usability in selected school is still very much wanting. The results naked that computers were not adequate for full integration of ICT in teaching and learning process. This was reported by five schools about (93.8%). This shows the availability of computers in the school seems to be one of the major concerns in the school. About 70.5 % of the respondents stated that most computer in the laboratories are not fully functional due to several reasons and about 52.5% of the respondents show that computer laboratories were opened for ICT subjects during class schedule and it is good to ensure the implementation of ICT integration in their teaching and learning. For proper and thorough integration of ICT into the teaching and learning process, technology gadgets and their accessories should be made available for use to yield the intended benefits. According to Mbwesa (2000), the availability of ICT resources can enhance learning by making education less dependent on differing teacher quality and by making education available at school/home throughout the day. Furthermore, Riel (1998) stressed that the availability and use of ICT can help students exploit enormous possibilities for acquiring information for schooling purposes and can increase learning through communication.

The study also further reveals that human resources and ICT material in the school are inadequate for teaching and learning in the schools. About 57.4% respondents believe that there are inadequate ICT teachers in the schools compared to others subjects. 88.5% respondent believes that there are no enough lab technicians that solve computer related problems in the school. About 63.9 % indicate that that there is teacher's skill gap in teaching and learning with ICT subject and it needs to be improved by providing training for teachers. 86.9% of the respondent indicate that there is no sufficient number of ICT books and related materials in the school related others subjects.

Greenleaf (1994) explained that inadequacy of ICT facilities translates into lack of skills in the use of ICT equipment and software which results in a lack of confidence in utilising ICT tools among the students. This is consistent with Herman and Joan (1994) who concluded that lack of enough ICT tools to be key inhibitor to the use of ICT in classroom.

About 65.6% of the respondents were sure of the presence enough classroom reserved only for computer lab or lesson but there is no computer and others facilities in the lab, 88.6% of the respondents stated that they were not sure of internet connection in the school and about 86.9% consented to electric power was being fairly available.

Alessi and Trollip (2002) precisely hint that the internet will transform many activities including teaching and learning. This makes ICT in learning to manifest and be limited to computer lab and the library only. Learning on the internet conforms to constructivist approach to instruction (Jonassen, 2002) so the limit to places is not an ideal practice

The study reveals that, because of the limitation in the numbers of functional computers and laboratories, the computer laboratories are timetabled and time for accessibility is limited.

The study also indicates majority of the student hardly accessed ICT facilities from school.

**Perception and Attitude of student:** The research has attempted to scrutinize the attitudes and perception of students to towards the educational benefit of integrated ICT use in

education in general, and towards the role of ICT to improve quality of education in particular. The study also tried to identify perception and attitude of the student on the role of ICT in improving their teaching and learning process in the sampled secondary and preparatory schools of five woredas in Bale zone, Oromia region. The opinion of the students on the use of computer and internet service and their appropriateness that they have for providing quality education and the infrastructure development level to create ICT enabled teaching and learning environment; and the major challenges that were hinder the use of ICT in education. About 100% of respondent indicate that the majority of the respondents believe that involvement of computers in teaching and learning has more benefit for students but majority of the respondent state that understanding computer are difficult without practice since computer lab is not opened for student at free time in schools. About 78.7% of the respondent in the study show that involvement of computers and related tools in teaching and learning of all subjects has more benefit for students and teachers.

The studies revealed that majority of the respondents (72.1%) believe that many students prefer to learn more from computers than from books. About 98.4 % the finding shows that the all most all respondents believe ICT enhances independent learning and self-learning. In addition, ICT simulate creativity among the students and these help them through their life. About 100% of this study show that the respondent has awareness about ICT is very important tool that helps to solve real world problems but according to the finding majority the respondents strongly disagrees that secondary and preparatory school students receive any kinds of ICT training. Therefore, the school need to provide ICT training by cooperating with concerned organizations.

To sum up, the study was designed by the researcher to have a general view of the current status of ICT usage in education from 305 selected sample students, from the five secondary and preparatory schools in Bale zone.

**ICT skill and Knowledge of student:** According to UNESCO (2002), the safe way to bring computers to school is teaching students skills how to use word processing skills (MS word, MS excel, MS power point, etc.) data bases and working with file. These are the productive tools required later on in life. The developments of appropriate strategies to use these tools productively are through identifying and developing the level of user-ability skills. The study has shown that 80.3% of respondents rated their word processing skill as not good, about 85.3% rated also not good in file management and others. Although the respondents scored low on ICT user-ability skills, this does not mean that they don't use ICT effectively. Only what can be inferred is that the respondents rate their skills highly and rating the user skill is not based on any standard measure. It is just a way one perceives his or herself. However, perceiving oneself positively is a very important basis on which to judge the ability to participate effectively in an activity.

The study tells that computer user-ability skills influence learning. Students and teachers with such low skills were seen to be not more comfortable in their application of the various computer programs, meaning that those who rated their ICT user-ability skills low also have less skill to gage ICT into learning processes. Clearly a basic level of ICT skill must be achieved but this should be followed by an integrated approach to ICT and learning. The aim should be for embedding ICT firmly into the teaching and learning process so that it is no longer considered a separate and discrete element (Tearle, 2003; Davis, 2003).

Like Tearle (2003), Drenoyianni (2004) agrees that variations in the ICT skill base of individuals can impede the use of ICT for teaching and learning. Drenoyianni (2004) advocates a phased approach where students are required to complete a mandatory initial introduction to ICT and this in turn leads on to training in the more complex ICT packages. In this way the introduction to ICT is a preparatory stage allowing students to build their ICT confidence where they later learn to utilize ICT in the learning context.

## 5.4 Conclusion

The ICTs has great advantage in improving all sphere of life including education. In addition, linking of computers to education across the world is known to many people because it is believed that ICT has a crucial impact on teaching and learning process. Therefore, Educational institutions are witnessing a paradigm shift brought about by the use of ICT that others have even started seeing ICT as an indispensable tool in the teaching and learning process. As a result, the research findings revealed that students are continually exposed to the capabilities of ICT, their perceptions and attitude towards changes.

In generally, from the discussions, the following conclusions are drawn:

1. From the research findings it is clear that selected schools in Bale zone had installed computers and related peripherals in schools. However, they were not adequate and poorly developed for full ICT integration in the teaching and learning process (i.e. to improve quality of education). However, some ICT resources like computer lab, were considered to be fairly available for some schools
2. ICT access in the selected school's sector for both teachers and students was not well attended to. The biggest challenge still affecting easy access to ICT facilities in the schools remains the limited number of ICT resources which does not match with the ever-increasing student population (ratio of student and resource in the school is not match).In addition available resource in the schools also not properly handled and used.

### 5.5 Recommendation

The use of ICT in education and set in the package is intended to improve quality of education provided in the schools which have no adequate number of qualified teachers, scarce resources of teaching materials and information that are needed for their subject matters. Besides, the use of ICT in education enables those in the remote to access to education. Practically also different research studies show that, teachers, students and school communities believe that the potential and effective use of ICT improve quality of education. However, some educational technologies could be sensitive to inadequacy of other complementary equipment's including lack of technical support, manpower, lack of infrastructure development and budget supplies

Therefore, based on the findings of the study, it is recommended that:

1. There is need for the school and others concerned body to invest more finance on ICT infrastructure in the schools. As means of not only solving accessibility problem but improving on the presence of the facilities especially more infrastructures like computer, computers lab room, manpower, internet utilities, ICT books and others resource that enhance ICT integration in education to improve quality of education.
2. Students should be involved in using ICT in learning activities such as doing assignments and homework as well as searching the internet for learning resources because it is believed that ICT can enhance student and teacher interaction and also tends to increase students learning motivations.
3. The school's administration and other education stakeholders in Bale zone should develop strategies concerning increasing the use of ICT in teaching and learning in secondary and preparatory school through addressing the various challenges identified in this study.
4. The school administration and others educational sector should be facilitating training for student and teachers on capacity building training that enhance their skill and

knowledge on ICT. Clearly a basic level of ICT skill must be achieved but this should be followed by an integrated approach to ICT and learning. The aim should be for embedding ICT firmly into the teaching and learning process so that it is no longer considered a separate and discrete element. Such changes may offer the potential to improve on teaching and learning using modern technology.

5. To implement and use ICT effectively in the education sector, all the communities of the schools such as especially teachers and students' knowledge and skills, attitude and perceptions and their motivation should be developed. Otherwise, it becomes difficult for them to exploit the advantages ICT could offer to increase their current performances and for their future career. Therefore, the school's administration has to take short term and long-term measures. As temporary solution in developing the necessary basic skills of using ICT for both the students and teachers should be given
6. Finally, to make sustainable and institutionalized the use of ICT in education, the schools should also be empowered both financially and administratively so that they manage the implementation successfully.

## 5.6 Suggestion for further research

Since ICT is relatively a new in the teaching and learning process a lot of research is needed to be carried out. This study has exposed many things but could not covered all things. The following are the suggestions for further research.

1. This study was carried out only in five woredas but a similar study could be carried out in the others woredas that found in Bale zone, Oromia region.
2. This study was carried out only on perceptions and attitude of student, similar student could be carried out on teachers, schools' principals and others school community.
3. Similar study could be carried out on effect of Information communication Technology on students' performance.
4. Comparative study can be carried out on the impact of School Net (like plasma TV) in secondary and preparatory school found in the zone.
5. Relevant strategies for using ICT to improve teaching and learning in secondary and preparatory school could be carried.

## References

- Heitink, M., Voogt, J., Verplanken, L., van Braak, J., &Fisser, P. (2016). Teachers' professional reasoning about their pedagogical use of technology. *Computers & Education*, 101, 70-83. <https://doi.org/10.1016/j.compedu.2016.05.009>
- Hinostroza, J. E., Ibieta, A. I., Claro, M., &Labbé, C. (2016). Characterisation of teachers' use of computers and Internet inside and outside the classroom: The need to focus on the quality. *Education and Information Technologies*, 21(6), 1595-1610. <http://dx.doi.org/10.1007/s10639-015-9404-6>
- Singh, S. (2018). Role of Information and communication technology in Education. *Scholarly Research Journal for Humanity Science & English Language*, 6(26). <https://doi.org/10.21922/srjhsel.v6i26.11577>
- Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., &Tippett, N. (2008). Cyberbullying: Its nature and impact in secondary school pupils. *Journal of Child Psychology and Psychiatry*, 49(4), 376-385. <https://doi.org/10.1111/j.1469-7610.2007.01846.x>
- Wenglinsky, H. (1998). Does it compute? The relationship between educational technology and student achievement in mathematics. Princeton, NJ: Educational Testing Service (ETS). Retrieved January 19, 2013 from Educational Testing Service (ETC) <http://www.ets.org/Media/Research/pdf/PICTECHNOLOG.pdf>
- Weaver, C. (1990). *Understanding whole language*. Portsmouth, NH: Heinemann Educational Books. Weiss, J. (1994). Keeping up with the research. *Technology and Learning*, 14(5), 30-34.
- Woreta,S., Zegeye, D and Kebede, Y. 2013.Knowledge and utilization of information communication technology (ICT)among health science students at the University of Gondar, North Western Ethiopia, *BMC Medical Informatics and Decision Making*;13(31):2-7 <http://www.biomedcentral.com/1472-6947/13/31>
- Yang, K. T., Wang, T. H., & Chiu, M. H. (2015). Study the Effectiveness of Technology-Enhanced Interactive Teaching Environment on Student Learning of Junior High School Biology. *Eurasia Journal of Mathematics, Science & Technology Education*, 11(2), 263–275. <https://doi.org/10.12973/eurasia.2015.1327a>

Yılmaz, R. (2017). Exploring the role of e-learning readiness on student satisfaction and motivation in the flipped classroom. *Computers in Human Behavior*, 70, 251-260.  
<https://doi.org/10.1016/j.chb.2016.12.085>

## APPENDIX A: student Questionnaires”

MADDA WALABU UNIVESRISTY

COLLEGE OF COMPUTING

### QUESTIONARIES FOR STUDENT/LEARNERS

Dear students,

This questionnaire is designed to study “**The role of Information and Communication Technology (ICT) on the quality of education in case of Secondary and preparatory school Bale zone, Oromia region, Ethiopia**”, The effectiveness of the questionnaire relies on your honest and reliable response to each of the questions. Thus, you are kindly requested to share your perceptions, feelings and ideas. The researcher/data collector hereby kindly requests your cooperation to fill up this questionnaire and return at your earliest time.

Thank you in advance for sharing your time to complete the questionnaire.

#### General Direction

- ✓ You do not need to write your name on anywhere in the questionnaire
- ✓ When you respond for the questions in the box, use only a tick mark (✓)
- ✓ If any open-ended questions, write your responses in the space provided

#### SECTION A: Demographic Information of respondents.

**Instruction:** Please read the statements carefully and put ‘✓’ Mark for your response in the box for each question and write your response in open space for open questions if any

1. Name of your school .....

2. Gender

Female

Male

3. Your age in years

14-16 years

16-18 years

18-20 years

above 20 years

4. Your grade

9

10

11

12

5. Your School level

Secondary school

Preparatory School

6. Your stream (optional)

Natural science  Social science  others

7. Town/woreda of your school

Robe  Agarfa  Goba  Gindir  Dalo

**Section B: ICT infrastructures (Availability, accessibility, usage) in the school**

The following is a list of potential challenges in use of ICTs in enhancing teaching and learning.

**Instruction:** Indicate the extent to which you agree with the following statements using the scale given below:

**5.SA**=Strongly Agree, **4. A**=Agree **3.N**= Neutral, **2.D**= Disagree and **1.SD**= Strongly Disagree

No	Items/variables	5	4	3	2	1
1	There are Insufficient number of computers in school					
2	Most of the computer in the laboratory are non-functional					
3	Computer laboratory are opened during their class schedule					
4	Available Computer lab are not opened for students to practice in their free time					
5	There are enough classrooms reserved only for computer lab/lesson					
6	Available computers are quietly attacked by virus so that they are usually out of use					
7	There are adequate ICT teachers in the school like other subjects					
8	There is no enough lab technician that solve computer related problems in the school					
9	Teachers' skill gap in teaching and learning with ICT					
10	Insufficient number of ICT books and related materials					
11	Availability of Internet facilities in computer lab					
12	Speed of internet service in the School is fairly enough to deliver the service					
13	Frequent failure of power					
14	Availability of electric power					

**SECTION C: Perception and Attitude of student**

**Instruction:** Indicate the extent to which you agree with the following statements using the scale given below:

**5 SA= strongly agree, 4 A= Agree, 3 N= Neutral, 2 D= Disagree 1 SD= strongly disagree**

No	Items	5	4	3	2	1
1	Computers can help me to learn things easily and enjoyable					
2	Computers are difficult to understand and frustrating experience					
3	Computers and its related tools should be used in learning of all subjects					
4	Computer can help me in doing my assignments and homework					
5	it is important for me to learn how to use computers					
6	All students should have opportunities to learn about computers in school					
7	I learn more from computers than from books					
8	ICT help me improve my teaching and learning processes					
9	ICT allows me to learn independently and simulate creativity in me					
10	ICT helped me to solve the problem in the real-world situation					
11	ICT makes me to develop interest in the learning content and increase motivation					
12	I received different training on ICT to improve my skill					
13	The internet is as resourceful as books					
14	Students use the internet/computer to look for information and others things					

**SECTION D: ICT skill and Knowledge of student**

Indicate the extent to which you agree with the following statements using the scale given below:

**5 E= Excellent, 4 V= V. Good, 3 G= Good, 2P= poor 1VP= Very poor**

No	Items/variables	5	4	3	2	1
1	Working with basic computer skills (MS word, MS excel, MS power point, etc.)					
2	Working with basic file management (creating, opening, closing, saving files and folders Etc.)					
3	Use of internet for teaching learning (for working assignment and homework)					
4	Booting (starting and shutdown) computers					
5	Finding information via internet through browsing					
6	Using different social media (Facebook, yahoo, twitter, messenger, etc.) to find information					
7	Identifying and Connecting computer device or equipment correctly					
8	Summiting assignment and homework via email, yahoo, etc.					
9	Understanding computer and its related ICT technology					

\*\*\*\*\* THANK YOU VERY MUCH!!!! \*\*\*\*\*