THE PRACTICES AND CHALLENGES OF ICT UTILIZATION IN TEACHING-LEARNING PROCESSAT BONGA COLLEGE OF TEACHERS EDUCATION

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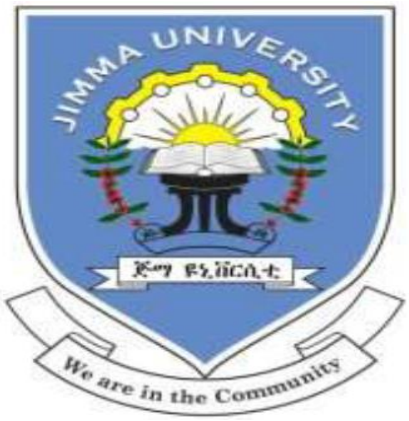

COLLEGE OF EDUCATION AND BEHAVIORAL SCIENCES

DEPARTMENT OF TEACHER EDUCATION AND CURRICULUM STUDIES

A THESIS REPORT SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF JIMMA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF ARTS DEGREE IN CURRICULUM AND INSTRUCTION.

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DEPARTMENT OF TEACHER EDUCATION AND CURRICULUM STUDIES

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Abstract

The primary purpose of the study was to examine the practices and challenges of ICT utilization in teaching-learning process in Bonga College of teacher education. The research design employed in this study was mixed approach. Among mixed research designs, concurrent embedded (nested) was applied. The sources of data were college instructors, third-year student-teachers in the academic year 2020/21 and administrative staff members. The study adopted a questionnaire, semi-structured interview and observation to generate the required data. The data obtained from the study participants were analyzed both quantitatively and qualitatively. The result of the study revealed that the perception of majority of stakeholders on the use of ICT in teaching-learning process as very important and perceive it positively. The level of availability of ICT infrastructures in the college was found to be too low extent. Thecurrent practices of ICT utilization in the particular college of teacher education are at their beginning/early stages. The major factors that hinder ICT utilization in the college were: low technology availability, lack of technical support, inadequate administrative support, shortage of training , absence of ICT policy, lack of knowledge and skills, poor connectivity and lack of time to use ICTs were among the challenges. Thus, to lessen these problems, the college as a higher educational institution should provide appropriate emphasis on developing a positive perception of administration that enables them support in ICT utilization. There should be adequate ICT infrastructures so that the college instructors, student-teachers and administrative bodies to utilize it in teaching-learning process. The college leadership should also play a vital role in the utilization of ICT in education. The college should develop strategies concerning improving ICT use in teaching and learning by addressing the various challenges, specifically, continuous training on ICT utilization and the college should employ competent computer technicians.

Keywords: perception, availability, practice, challenges

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Declaration

The researcher hereby declares that this thesis on the "The practice and challenges of ICT utilization in teaching-learning process: The case of Bonga College of Teacher Education,Kaffazone."is my original work and that all sources of materials used for the thesis have been indicated and acknowledged with complete references.

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Abbreviations and Acronyms

BCTE Bonga College of Teacher Education

CD-ROM Compact Disk - Read Only Memory

DVDS Digital Video Disk/ Digital Versatile Disk

E-learning Electronic learning

ESDP Educational Sector Development Program

ETQAA Education and Training Quality Assurance Agency

FDRE Federal Democratic Republic of Ethiopia

GEQIP General Education Quality Improvement Package

HEI Higher Education Institution

HERQA Higher Education Relevance Quality Assurance

HESC Higher Education Strategy Center

HI Higher institution

ICT Information and Communication Technology

IT Information Technology

MDG Millennium Development Goals

MOE Ministry of Education

PC Power Tablet

QoS quality of service

SPSS Statistical package for social science

TV Television

UNESCO United Nations Educational, Scientific and Cultural Organization

USA Untied States of America

WSIS World Summit on the Information Society

CHAPTER ONE: INTRODUCTION

This chapter comprises of the background of the study, statement of the problem, basic research questions of the study, objectives of the study, significance of the study, delimitation of the study, limitations of the study, operational definitions of basic terms and organization of the study.

1.1 Background of the study

The introduction of Information and communication technology (ICT) today influenced the education of all levels including higher education throughout the world. The importance of (ICT) in education ranges from specific classroom practice to general education management. Modern economies are in the process of being transformed from agricultural and industrial economies to information and knowledge-based economies. Such rapid transformation has had significant impact on the social, economic, political and cultural dimensions of developments across the world. For such development and growth, Information and Communication Technology (ICT) is seen as a driver and an enabler towards establishing and developing the various sectors socio-economic and political that contributes to stronger, more developed and richer societies. During any such transformational passage, the leaders of a society and policy makers are likely to undergo a paradigm shift that involve developing their capacity and providing tools and direction for accepting such changes in mind-sets (Duncan &Sonail, 2012).

Similarly, today's information world is believed to be driven by technology, fueled by information and guided by knowledge. Information and communication technologies (ICT) can be regarded as all techniques, tools, and methods introduced to serve the societal needs in current information era. Information and communication technology (ICT) have been defined by

different scholars in different ways. However, more commonly, information and communication technology (ICT) include hardware and software devices, materials, programs and techniques used to facilitate sharing of effective quality and timely information throughout the world at anytime and anywhere. This idea is further elaborated by Anderson and Glen (2003) and UNESCO (2002) who defined ICT as hardware, software applications, and connectivity technologies that are used for accessing, gathering, manipulating and presenting or communicating information of any sector.

Furthermore, the Government of Ethiopia has placed importance on Information Communication Technology of Education for national development. Both the national Information Communication Technology for Development 2010 Plan and ICT in Education Implementation Strategy recognize ICT as an enabler for widening access to education for the Ethiopian population and for facilitating educational delivery and training at all levels. Thus, in its five years policy action plan (2006 – 2010), the Ethiopian Ministry of Capacity Building stated that the government is committed to addressing the nation`s human resource requirements in the area of ICTs through the promotion of mass ICT literacy and training. This is aimed at increasing the use of ICTs in educational institutions as well as implementing initiatives aimed at connecting schools and higher educational institutions to online resources. The young generation is entering a world that is changing in all spheres: scientific and technological, political, economic, social and cultural. The emergence of a knowledge-based society is changing the global economy and the status of education.

However, the 1994 Education and Training policy gives due attention to teacher education program for the reason that, Teacher Education Institutions(colleges) have the potential to bring progress change in the society by creating individuals and society who can make active participation in the development process by acquiring knowledge, ability, skills and Attitudes (MOE, 2003). Among the areas of special attention and designated as most important strategies of the 1994 policy was teacher training and overall development of teachers. Thus, teacher education institutions are anticipated to equip student-teachers who are entirely appropriate to the needs of today's classroom and who have knowledge of subject matter as well as pedagogical skills. However, in the case of Bonga College of Teachers' Education there was

no empirical evidence about the practices and challenges of ICT utilization. Even though different instructors conducted research on various challenges in the college teaching learning processes, no one has conducted a study on ICT utilization in the particular college of teacher education. Therefore, putting this issue in to consideration, the study has taken a special focus on the practices and challenges of ICT utilization in Bonga College of Teachers' Education. Hence, it is within this context that the researcher has attempted the teacher education be realized as it has expected.

1.2 Statement of the problem

Information and Communication Technologies (ICTs) is a diverse set of technological tools that are very important for Pre-service teacher education programme in the 21st Century. Without proper knowledge of ICT, teacher cannot perform in his/her class room activities and it could not be said to be a complete one (UNESCO, 2002). Even though the rapid development of emerging technologies attract the attention of teachers, there are challenges to the effective integration and use of these new technologies.

However, the central problem of this study is that despite the critical role of information and communication technology in sectors like banking, health, agriculture, construction, transport and communication, it has not fully adopted and utilized in teaching and learning process in most developing counties like Ethiopia(Unwin, 2008). While there is wide range of innovation in information and communication technology (ICT) to support effective and quality of delivery of educational services, there is considerable technology lack in Ethiopian education institutions. In line with the above ideas, the Ethiopian government has given due emphasis to develop the ICT sector as a tool to bring about change in all social, economic, and political sectors. Accordingly, ministry of education also indicated the importance of ICT for teaching and learning in various policy and strategic documents.

For instance, MOE (1994) clearly emphasized active learning in Education and Training Policy and this necessitated the need for ICTs in teaching-learning practices. Furthermore, MOE (2016) indicated the percentage of students accessing digital libraries and smart (ICT supported) classrooms as major indicators to enhance educational resources and facilities in higher education in current Education Sector Development Program (MOE ,2015). The implementation

of educational technology and the preparation and utilization of ICT is an important component in teaching learning process. Moreover, effective use of ICT is considered as one element of the quality improvement program in general education quality improvement package (GEQIP) document (MOE,2005).

Despite the above facts, different kinds of literature show that the use of ICT for teaching learning in higher education is affected by different internal and external factors both at teachers' and institutional level. Similarly, the results of the study conducted in some of the Ethiopian public universities indicate that the challenges of using ICT for teaching-learning process are highly related to teachers' skill and interest, infrastructural facilities and emphasis of different educational management. For example, the result of the study conducted by Hirut (2011) in Mekele University indicated that the major challenges for adopting E-learning in higher institution include the infrastructure problem, lack of awareness, motivation, ICT skill, training facilities, administrative management, technical support and resistance of individuals to change.

However, her study depends on only purposive sampling technique and data was collected by means of structured questionnaires and interview at Institute of Technology and College of Health Science. But ,the current study exclusively has used stratified sampling and simple random sampling as an additional means to select respondents from various field of study and the study was conducted in a one college of teacher education.

Moreover, as coming to the reality of study area to the knowledge of the researcher, there was no research previously conducted on practices and challenges of ICT utilization in the college teaching learning process, But, there is an evidence that shows the presence of a research locally conducted by group of college instructors like Tadesse H.,AyeleM.andFikadu A. (2008) that focused only on assessing the practice of instructors on ICT utilization revealed that instructors practice on ICT utilization for teaching and learning process found very poor. Yet, their work failed to indicate the practices of student-teachers, administrators and the major challenges those hamper the effective utilization of ICT in teaching-learning process.Due to this reason, the researcher was initiated and felt that there is a gap which needs an investigation. As a result, the current study focused on examining both the practices and challenges faced during

usage of ICT in teaching-learning process. Thus, this study intended to answer the following four basic research questions:

1. How do the student-teachers, college instructors and educational administrators perceive information and communication technologies (ICT) in teaching and learning process?
2. To what extent information and communication technology infrastructures are available at Bongacollege of teacher education?
3. What are the current practices of using information and communication technologies (ICT) in the teaching-learning process in the College?
4. What are the significant challenges encountered during utilization of Information Communication Technology in the case of Bonga College of Teacher Education?

1.3. Objectives of the study

1.3.1. General objective of the study

- This study's primary purpose was to examine the practices and challenges of ICT utilization in the teaching-learning process at Bonga teachers' training college.

1.3.2. Specific objectives

1. To examine the student-teacher's, instructor's and educational administrator's perception towards ICT utilization in teaching-learning process.
2. To identify the availability level of information and communication technology infrastructures at Bonga College of Teacher Education (BCTE).
3. To assess the current practices of using information and communication technology in teaching-learning process at Bonga College of Teacher Education (BCTE).
4. To identify the challenges encountered during utilization of ICTin teaching-learning process at Bonga College of Teacher Education(BCTE).

1.4. Significance of the study

The finding from this study may provide teacher training college to get more insight about the practices and challenges of ICTs in teaching-learning process.

More specifically, the study is believed to have the following contributions:

1. It may provide information on the level of ICT practices and challenges to college teachers, student-teachers and educational administrators on the basis of given feedback.
2. It may reinforce the effort of the leadership to fulfill ICT infrastructures depending on the given recommendation about deficient ICT tools.
3. Moreover, the study may help the college administrators in formulating institutional capacity building framework (training programs) to empower the practice of ICT in instruction by referring the outcome of the study.
4. Finally, this research would help as a reference for those who initiated to study further research in the area of ICT utilization.

1.5. Delimitation of the study

This study was conceptually focused on the practices and challenges of ICT utilization in teaching-learning process. Moreover, the study was methodologically delimited merely to third year student-teachers, instructors and administrators believing that these bodies would have better understanding regarding the practices of ICT utilization in the college. Furthermore, due to constraints of time, transportation and materials as well as to make the study more manageable this study geographically confined to Bonga College of Teachers Education (BCTE).

1.6 Limitations of the study

This research was not done without limitations because of some obstacles. The first most obvious challenge was the prevalence of COVID-19 which affected the freedom of both researcher and respondents during data collection. The other drawback that faced during data collection was that some respondents were not returned the questionnaire on time .However, in

order to lessen the problems, the researcher and respondents use appropriate protection techniques and the researcher tried to go to some respondent's home those who near by the researcher and informed those who far apart from the study area. In spite of these limitations, the researcher has made every possible effort to overcome the obstacles and completed the study successfully.

1.7 Operational Definitions of key Terms

Availability-An accessibility of the needed ICT resources to effectively apply in teaching-learning process.

Challenge: Constraints that hinder student-teachers and instructors from using ICT tools in the classroom.

Communication- Is the act of exchanging idea between two and more than student-teachers and instructors by the aid of electronic channel .

Information-Any condition that gives hint /awareness to someone.

Information Communication Technology(ICT):Is the use of any new product that can store, retrieve, manipulate and analyze information electronically.

Perception: refers to the beliefs or views of stakeholders on utilization of ICT in teaching learning process

Practices- The actual participation of student-teachers and instructors in the use of ICT tools during classroom instruction.

Stakeholders-Are those concerned bodies in a utilization of ICT this includes (student- teachers, Instructors and administrative staffs at Bonga College of Teachers Education).

Student -teachers-Are candidates those who are going to be teachers after they graduate from the college.

Technology- Any device that newly introduced to facilitate teaching-learning process in a given educational institution.

1.8 Organization of the study

This study was divided in to five major chapters. The first chapter deals with the introductory part of the study that encompasses the background of the study, statement of the problem, objectives of the study, research questions, Significance of the study, scope/delimitation of the study, limitation of the study, operational definition of the basic terms and organization of the study. The review of related literature presented in chapter two. while chapter three comprises of the methodologies employed in the study were discussed in detail. The fourth chapter in its turn focuses on the results and discussion of the collected data. The fifth chapter comprises of summary of the major findings, conclusion, recommendation and suggestion for future study. Finally, list of reference materials used for conducting the study, Questionnaires, Semi-structured interview questions and an observation checklist are annexed at the end of the paper.

CHAPTER TWO:REVIEW OF RELATED LITERATURE

This part of the study deals with a brief description of literatures relevant to the practices and challenges of ICT utilization in teaching-learning process. It comprises of components such as, Concepts of Information and Communication Technologies ,Definition of ICT in Education, an overview of Ethiopian education system, Information and Communication Technology (ICT) Policy in Ethiopia, ,Role of Information and Communication Technology (ICT), Information and communication Technology (ICT) and Learning Theory, Perception of stakeholders on ICT utilization in teaching learning process, Availability of ICT Infrastructures and Student Learning, ICT and Ethiopian Higher Education Institution (HI); practices and challenges, Challenges of ICT utilization in Education , Theoretical review and conceptual frame works of the study.

2.1 The Concepts of Information and Communication Technologies

There are many definitions for ICT and the most elaborate version by Blurton (1999, p.1) defined ICT as the: " diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony". Information and Communication Technologies are a networked system comprising data processing and storage and retrieval of information (Herselman& Britton, 2002).It is true that the use of ICT has now become an integral part of daily life for a large percentage of people in both developed and developing countries (Kirkwood & Price, 2006). Kozma (2002) believed that ICT is becoming the heart of preparing students and teachers for participation in the teaching and learning society.

Information and Communications Technology is not a cure for all educational dilemmas, even though today technologies are obligatory tools (Guri-Rosenblit, 2006; Jung, 2005). Information and Communications Technology when effectively incorporated into teaching and learning ensures interaction between learners and teachers, thus advancing cognitive skills development (Jones & Cress, 2001; Punie et al., 2006).

Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing and numeracy. However, there appears to be a misconception that ICTs generally refers to 'computers and

computing related activities'. This is fortunately not the case, although computers and their application play a significant role in modern information management, technologies and/or systems also comprise of the phenomenon that is commonly regarded as ICTs. Pelgrum and Law (2003) state that near the end of the 1980s, the term 'computers' was replaced by 'IT' (information technology) signifying a shift of focus from computing technology to the capacity to store and retrieve information. This was followed by the introduction of the term 'ICT' (information and communication technology) around 1992, when e-mail started to become available to the general public (Pelgrum, 2003).

Moreover, according to a United Nations report (1999) ICTs cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centers, commercial information providers, network-based information services, and other related information and communication activities.

In addition, according to UNESCO (2002) information and communication technology (ICT) may be regarded as the combination of 'Informatics technology' with other related technology, specifically communication technology. The various kinds of ICT products available and having relevance to education, such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counseling, interactive voice response system, audiocassettes and CD ROMs etc have been used in education for different purposes (Sharma, 2003; Sanyal, 2001; Bhattacharya &Sharma, 2007).

Similarly, Anderson &Glen (2003) define information and communication technology (ICT) as those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware (e.g. computers and other devices); software applications; and connectivity (e.g. access to the Internet, local networking infrastructure, and video-conferencing).

2.2 Definition of ICT in Education

According to a United Nations report (1999) ICTs cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centers, commercial information providers, network-based information services, and other related information and communication activities.Moursund (2003 online) accepts this definition of ICT but details more comprehensively the range of technologies embraced by ICT.

ICT includes the full range of computer hardware, computer software, and telecommunications facilities. Thus, it includes computing devices ranging from handheld calculators to super computers. It includes the full range of display and projection devices used to view computer output. It includes the local area networks and wide area networks that allow computer systems and people to communicate with each other. It includes digital cameras, computer games, CDs, DVDs, cell telephones, telecommunication satellites, and fiber optics. It includes computerized robots.

In a brief, the term ICT as applied to education, are those technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony that can facilitate not only delivery of instruction, but also learning processes itself. These technologies have been identified as an important tool for realizing a new paradigm of learner-centered education that better supports learners' needs through differentiated and personalized instruction (Watson and Watson 2011). Components such as providing interactive content, giving immediate feedback, diagnosing student needs, providing effective remediation, assessing learning, and storing examples of student work (e.g., portfolios) are critical elements in digital technology that is able to support learner-centered instruction for diverse learners (Bush & Mott, 2009; Reigeluth et al., 2008).

Moreover, ICT can promote international collaboration and networking in education and professional development. There are a range of ICT options -from videoconferencing through multimedia delivery to web sites - which can be used to meet the challenges teachers face today. In fact, ICT will be able to provide more flexible and effective ways for lifelong professional development for today's teachers. As a result, both teachers and students will get enormous benefits for their empowerment and development.

2.3 An overview of Ethiopian Education System

The current Ethiopian government recognizes the importance of education for national development. Policy is mainly aimed at expanding the education sector, improving quality and ensuring that educational content is harmonized with the country's economic needs. Each of the country's nine states have two own educational bureaus (National Regional States Education Bureaus). These Bureaus are responsible for the administration and management of the general education, technical and vocational education and teacher-training programmes and institutions. The federal Ministry of Education is responsible for higher education. The Ministry of Education formulates policy and guidelines, which are implemented by the various Bureaus. There are also two government bodies charged with regulating higher education, namely the Higher Education Strategy Center (HESC) and the Education and Training Quality Assurance Agency (ETQAA) (formerly HERQA). The education system comprises both formal and non-formal education. Non formal education includes a broad scope of educational programmes for all age categories, catering to both school leavers and new pupils.

Formal education comprises pre-school education, primary and secondary education (general education), technical-professional education and higher education. The issue of higher education is currently high on the list of national priorities. It was not until 2003 that a strategy was formulated to bring about further development in this area. The 2003 Higher Education Proclamation aimed to ensure that the higher education system contributes directly to thenational strategy for economic development and poverty reduction.

According to the Higher Education Proclamation, No. 650/2009, (FDRE, 2009), the objectives of higher education are to prepare knowledgeable, skilled, and attitudinally mature graduates in numbers with demand-based proportional balance of fields and disciplines so that the country shall become internationally competitive. Besides this, it has also an objective of promoting and enhancing research focusing on knowledge and technology transfer consistent with the country's priority needs.

The Ministry of education is expected according to the proclamation (FDRE, 2009), to encourage government organizations, professional associations, business organizations, and other appropriate persons to work jointly on matters concerning education, training, research,

practicum or apprenticeship and research and technology transfer.Besides the documents prepared by the government and practical efforts being practiced, the above statements also show how much is the government convinced and dedicated in using the ICT or technology in general in the poverty eradication and development process and in education specifically. Education can be regarded as one of the most important sectors among many sectors in which ICT is used. As it was mentioned by Takeuchi (2008) about ICTs for Development in Ethiopia, ICT‟s application is significant in the buildup of e-government initiatives which include e-Administration, e-Society, e-Services, and e-Citizens. This is further described in the case of Ethiopia, the e-government projects such as the School Net (distance education), Health Net (telemedicine), Agri Net (agricultural information sharing) are classified as e-Services, which aim to provide better public services, while the WoredaNet (TV conference between the central and local public offices) is categorized into e-Administration which aims to improve work processes in the public offices.

2.4 Information and Communication Technology (ICT) Policy in Ethiopia

Information and communication technology (ICT) policy can be defined as the rules and regulations set by the organization in regards to ICT. According to Jones &Kozma(2003) states that, national ICT policies can serve several important functions. Firstly, ICT policies provide a rationale, a set of goals, and a vision of how education systems work if ICT is introduced into teaching and learning, and they can benefit students, teachers, parents and the general population of a given country. Secondly, ICT policies are expected to provide guidance, and failure to do so means that individual school and classroom innovations would be unlikely to be sustained. Additionally, individual efforts are less likely to be felt across the country unless there is a shared vision clearly laid out in the policy (kozma,2003).

Similarly, Policy determines the type of internal and external information resources that can accessed, the kinds of programs they may install on their own computers as well as their authority for reserving network resources. Policy is also related to network quality of service (QoS), because it can define priorities by user, workgroup or application with regard to reserving network bandwidth. Hawkins (2004), in Ten Lessons for ICT and Education in the Developing World notes that while many ministries of education around the world have made the

commitment to computerize schools; few have developed coherent strategies to fully integrate the use of computers as pedagogical tools in the classroom. While all countries in Africa acknowledge the strategic role of ICTs in development, only a couple has established a comprehensive policy for the integration of ICT in education. Where such policies exist, they tend to remain vague and make little reference to implementation.

According to Kandiri, 2006 the ICT policy process for a long time lacked political leadership, which has been reflected in the absence of a national ICT strategy and ineffective coordination between different government departments and agencies with ICT responsibilities. This for a long while also included the absence of ICT policy process open to participation by all stakeholders and based on public discussion and debate the first national ICT policy was released in late 2003, just prior to World Summit on the Information Society (WSIS) in Geneva. However, Ethiopia's ICT policy process reflects a scenario parallel to most other African countries – where policymaking lags far behind developments in the sector. Development of the National ICT Policy began in the early 2000s.

The National ICT Policy that went through several iterations was approved in 2009. The policy's "mission" is: to develop, deploy and use information and communication technology to improve the livelihood of every Ethiopian, and optimize its contribution to the development of the country (MOE,2016).

2.5 Role of Information and Communication Technology

Several studies argue that the use of new technologies in the classroom is essential for providing students to learn to operate in an information age. It is evident, as Yelland (2001) argued, that traditional educational environments do not seem to be suitable for preparing learners to function or be productive in the workplaces of today's society. She claimed that organizations that do not incorporate the use of new technologies in the school cannot seriously claim to prepare their student for life in twenty-first century. This argument is supported by Grimus (2000), who pointed out that "by teaching ICT skill in primary schools the pupil is prepared to face future developments based on proper understanding" (p.362).Similarly, Branford et al. (2000) noted that "what is now known about learning provides important guide

lines for uses of technology that can help students and teachers the competences needed for twenty-first century"(p.206).

In relation, Information and communication technology (ICT) can play various roles in teaching and learning processes. According to Bransford et at.(2000), several studies have reviewed the literature on ICT and learning and have concluded that it is has great potential to enhance student achievement and teacher learning. In addition, Worg et al. (2006) point out that technology can play part in supporting face-to-face teaching and learning in classroom. Furthermore, Many researchers and theorists assert that the use of computers can help students become knowledgeable, reduce the amount of direct instruction given to them, and give teachers an opportunity to help those students with those particular needs (Iding, Crosby, &Speitel, 2002:Shamatha, peressin, &Meymaris 2004; Remeo, 2006).Even though ICTs play significant roles in representing equalization strategy for developing countries, the reality of the digital divide- the gap between those who have access to, and control technology and those who do not, make a huge difference in the use of ICTs.

This means, that the introduction and integration of ICTs at different levels and various types of education is the most challenging undertaking. Failure to meet the challenges would mean a further widening of the knowledge gap and deepening of existing economic and social inequalities among the developed and the developing countries.

2.6 Information and communication Technology (ICT) and Learning Theory

Recent trends towards the constructivist approach and teacher interaction suggest that the learning process can be enhanced through the use of technology, which adapt the presentation of user needs, preference and requests. Due to the interactive nature of the internet, it is well suited for a creative learning approach (World bank, 2004). The ability to share knowledge and experiences with an emerging global community is one of the biggest benefits of internet in order to come up with joint research projects on a variety of topics (World bank,2004).Moreover, online resources offer teachers access to vast and diverse collection of educational materials enabling them to design curriculum that best suits the needs of their learners. Furthermore, the use of ICTs in education also shifts the learning approaches. As put by (Bransford, Browen, &cocking,1999) cited in Volman (2005), there is common belief that the use of ICTs in

education contributes to a more constructivist learning and an increase in activity and greater responsibility of student. This limits the role of teacher to supporting, advising, and coaching student rather than merely transmitting knowledge. Now a day, there has been a growing interest to know how computers and internet can best utilize to improve effectiveness and efficiency of education at all levels and in both formal and non-formal settings. As there is a shift of theories explaining learning processes, ICTs become handmaiden for learning activities. Voogt's (2003) description on the major roles, distinguished ICTs as an object for study, an aspect of a discipline or a profession, and a medium of instruction.

As a medium of instruction, ICTs fit to realize and implement the emerging pedagogy of constructivism (Davis, 1997; Office of Technology Assessment, 1995; Panel on Educational Technology, 1997; Watson, 1996) in Voogt (2003). Moreover, Voogt (2003) differentiated between traditional learning setting and constructivist approaches. The former considers learning as transmission of knowledge to students, which is the sole responsibility of the teacher. On the other hand, the constructivist approach considers learning as authentic and learner centered. ICT, the computer for example is a great help in the constructivist approach, where one can design simulated and individualized learning environments to students.

2.7 Perception of stakeholders on ICT utilization in teaching learning process

2.7.1 Perceptions of Instructors on ICTs utilization in teaching learning process

Murphy and Greenwood (1998) reported that younger instructors show a significantly higher level of confidence than older ones in the use of computers in teaching due to the fact of having positive perception on using ICT. The large majority of lecturers describe their teaching as being student- centered with the use of ICTs; that is, they provide opportunities for their students actively to search for the ways of learning, make choices about their own learning methods, and self-evaluate their learning progress. Furthermore, instructor's beliefs about how using ICTs can impact on teaching and learning do vary greatly according to students' learning outcomes. Some instructors feel comfortable in moving away from a traditional teacher- centered teaching method to a more integrated approach using ICT (Yang, 2008).

According to Bakkabulindi (2008) and a Report by the Republic of Uganda (2002, 2007), most institutions of higher learning in Uganda, both tertiary and universities, depend on manual systems, with little use being made of computers in teaching, admission, examination, registration, students‟ records, finance and accounting. Waite (2004), cited in Malcolm and Godwilly, (2008) indicate that even though lecturers show great interest and motivation to learn about the potential of ICTs, in practice, the use of ICT is relatively low and it is focused on a narrow range of applications, with word processing being the predominant use.

According to Fraser and Fisher (1982) inconsistency between instructor's actual use of ICT and perception can be attributed to inadequate supply of ICT resources, lack of access to the right kinds of technology, inadequate ICT pedagogical training and insufficient administrative support.

Teachers hold diverse perspective on the use of ICT in education. Teachers' perceptions are critical to the success or failure of ICT integration in education (Apeanti, 2014). For this reason, it is vital that researchers gather information about the apprehension teachers hold regarding the use of ICT in the classrooms. The decisions regarding whether and/or how to use ICT in education rests on the shoulders of the classroom or subject teachers. It was reported that for education sector to achieve fundamental changes from classroom teaching practices, there is a need to examine the beliefs teachers hold about the use of ICT in teaching and learning (Hutchison &Reinking, 2011). Furthermore, Grabe (2001**)** stated that technology should facilitate meaningful learning in the classroom. Also, it should engage the thinking, decision making, problem solving and reasoning behaviors of students.

For instance, Gebremedhin and Fenta (2015) reported a significant relationship between the perception of teachers towards the integration of ICT in teaching-learning process and the use of ICT. Regarding this, Gebremedhin&Fenta (2015) maintain that the association is motivated by several other factors in schools such as staff motivation, willingness to use ICTs and availability of resources.

2.7.2 Perceptions of Students on information and Communication Technologies

The views of students and lecturers about technology are very diverse (Nihuka, 2011). According to Hiltz, Johnson, and Turoff, (1991), students are positive in using ICTs when working together online. Hilts et al (1991) found that there is differential use of ICT between the younger and older students. The younger students use Internet more for playing games and chatting, while the older students use it more for e-mail. This gives a clue that the use of ICT for leisure may be due to its earlier incorporation in lives, although the age differences in this population are minimal. On the other hand, there are no excessive differences in the perception of university students regarding the uses, advantages and difficulties of ICT between students due to their gender or age group. For example, women mention more advantages related to autonomy and learning, such as having access to complementary material and establishing their own study time table (Azcorra, Bernardos, Gallego, & Soto, 2001; Jorge, Acosta, Garcia,& Diaz, (2003). Some women also mention more concerns or difficulties of a technological nature (not knowing how to use the Internet) and of a "communicative" nature (not "seeing" the teacher and classmates).

Although many students' satisfaction surveys have been conducted on the use of ICTs, it is still unclear whether or not students fully perceive the potential of ICTs and use them effectively (Noss&Pachler, 1999). Galanouli, Murphy, & Gardner, (2001) reported that students perceive three main barriers to their perceptions of ICT use during learning practice: teachers' attitudes, lack of resources and lack of time. Although lack of appropriate equipment was considered an important factor when students were unable to use ICT in their learning, it was also clear that teachers' uptake of ICTs and attitudes towards ICTs' use played the most crucial role in the success or failure of their teaching and learning. This concurred with Lee, Hong, Ling, (2002) who found that student perspective on using computers and their attitude played an important role for determining the success of its use. In a study to examine students' perceptions of ICT integration by faculty at a Midwest public university, Keengwe (2007) reported that students lack computer skills in various computer applications that are necessary to support and enhance their learning experiences.

2.8 Availability of ICT Infrastructures and Student Learning

2.8.1 Infrastructure and resources

A proper ICT infrastructure is crucial for ICT-enabled higher education; however, developing countries often lack these infrastructures and resources (Dada, 2006). This lack of ICT infrastructure in developing countries was further highlighted by Cullen (2001) who emphasized ICT infrastructure as a mandatory prerequisite. Lack of infrastructure and the high cost of telecommunication facilities create a physical barrier to the use of technology in the educational arena (Sidorenko& Findlay, 2001). Speaking in the context of ICT access, Kozma, McGhee, Quellmalz and Zalles (2004) pointed out that lack of access to technology reduces the prospects for developing countries to participate in the growing global economy. Cullen (2001) added that the main barriers in ICT adaptation are physical access to telecommunications infrastructure and lack of ICT skills (see Kozma et al., 2004). Mac-Ikemenjima (2005) described inadequate ICT infrastructure, such as computer hardware and bandwidth, and ICT skilled manpower as the two major challenges faced in technology-based education.

2.8.2 Accessibility of ICT resources and students learning

Effective integration of ICT in schools would call for a whole institution to be networked to ensure access to multimedia and learning- rich resources via the school's Intranet and the Internet wherever students and teachers are, in or out of school. The computer labs and classroom computers need to be sufficient in number to allow ready access by students and staff in most subjects across the school. A wide range of peripheral and remote working devices, including video-conferencing, is provided and integrated into the curriculum. Large and small group presentation facilities are readily available (school net Africa, 2004).

Despite the above desired situation, most Institutions in Africa face barriers to effective integration of ICT in the teaching and learning process; limited infrastructure in terms of satisfactory physical conditions of laboratories and the subsequent accessibility of the resources (ICT) to the learners (Singh, 1993). Many commercial and academic developers of educational multimedia have focused primarily on information access and presentation (Singh, 1993). However, it is easy to see that multimedia has tremendous potential to enhance the vividness

with which information can be presented and ease with which it can be accessed, the main barriers to learning are not generally that appropriate information is difficult to access or badly presented. The technologies allow them to receive feedback, refine their understanding, build new knowledge and transfer from school to non-school settings (Committee on Developments in the Science of Learning, 2000).

2.9 ICT and Ethiopian Higher Education Institution (HI); practices and challenges

The utilization of ICTs for teaching learning needs the availability of ICT equipments such as computer hardware and software, e-library, web sources, video & audio materials. Supporting these ideas, Unwin (2008) stated that successful implementation of e-learning needs availability of electronic media including the Internet, intranets, extranets, satellite broadcast, audio/video tape, radio, interactive television, and compact disk read only memory etc. Besides, Hargreaves (1997) &Meighan (1997) also found that the implementation of ICT in higher education for teaching learning not only needs changing equipments, but also needs organizational changes or facilitating interactions among all the actors, and developing collective learning.

However, the result of various study shows that effective use of ICT in teaching and learning remains an elusive act, and inconsistently practiced in educational institutions including public universities though the practice differs from nation to nation and between institutions based on the availability of resources, knowledge and skill to use them effectively.

In addition, absence of adequate infrastructure facilities such as availability of access to electricity, availability of computers and the Internet connectivity, cost of educational technologies, the lack of local expertise, instructors awareness and attitudes towards e-learning and lack of educational management are main obstacles of effective e-learning practices in least developed countries like Ethiopia (Unwin, 2008; Rhema&Miliszewska, 2010). The challenges of using ICT for teaching learning can be categorized in to different dichotomy. For example, Al-awani (2005) classify as intrinsic and extrinsic; where the former refers to interest, attitudes, beliefs and resistance to ICT and the later refers to access, time, support, resource and training.

On the other hand, Becta (2004) classify the challenges of using ICT for teaching learning as teachers' level and institutional level factors; where the former refers to teachers' lack of time, confidence, interest and skill and the later refers to institution lack of training and access to resources. Furthermore, Blanskatetal.(2006) classify as macro and micro level factors; where the former refers to institutional or system level factors and the later refers to attitudes and approaches to ICT.

Moreover, Pelgrum(2001) categorize it as material and non-material factors; where the former is related with computer hardware and software and the latter is related to knowledge, skill and attitudes to ICT. For the purpose of this research, the intrinsic/extrinsic or material/non-material and the teacher-level and school-level barriers categories are helpful and discussed.

2.9.1 The concept and definition of e-learning

The internet has become one of the vital ways to make available resource for research and learning for both teachers and students to share and acquire information (Richard and haya 2009).Technology-based e-learning encompasses the use of the internet and other important technologies to produce materials for learning, teach learners, and also regulate courses in an organization (Fry,2001). There has been extensive debate about a common definition of the term e-learning. Existing definitions according to Dublin (2003) tend to reveal the specialization and interest of the researchers.

2.9.2 The use of e-learning in education

The development of multi-media and information technologies, as well as the use internet as a new technique of teaching has made radical changes in the traditional process of teaching (Wanget al. 2007). Development in information technology, according to Yang and Arjom and (1999), has generated more choices for today's education.

Table 1. Summary of Characteristics and Benefits of E-learning for Teaching and Learning

Characteristics	Benefits
Information is consistent depending on need	Everyone gets the same content, presented in the same way. Yet the programs can also be customized for different learning needs or groups of people
Content is more timely and Dependable	E-learning can be updated instantaneously, making the information more accurate and useful for a longer period of time.
Learning is 24/7	Students can access e-Learning anywhere and at any time of the day. It's "just in time – any time' approach makes the learning process ubiquitous
Universality	E-learning is web-enabled and takes advantage of the universal Internet protocols and browsers. Everyone on the Web can receive virtually the same material in virtually the same time.
Scalability	E-Learning solutions are highly scalable. Programs can envolve more participants with little effort or cost (as long as the infrastructure is in place).
Builds communities	The Web enables students to build enduring communities of practice where they can come together to share knowledge and insight motivator for learning
E-Learning lowers costs	Despite outward appearances, e-learning is often the most cost effective way to deliver instruction: cuts travel expenses; reduce teaching time, and the need for a classroom/teacher infrastructure.

(Source:Alsultanny,2006)

2.9.3 Teacher training and ICT use

Larose et al.(1999) argue that regardless of the quality of ICT equipment available to teachers in the school environment and independently of the quantities of courses which they have taken during undergraduate studies ,the level of transfer of acquired competencies and learning to practice is very weak.

Results of Ololube's study carried out in Nigerian teacher education institutions, indicate a statistically significant relationship between the lack of ICT integration and the poor standard of teacher education programs other empirical studies(Yusuf 2005b in Ololube 2006) have recognized that teachers' lack of ability and willingness to use ICT and integrate it into their teaching is largely caused by the poor quality of professional ICT development they receive. The

fact that teachers trained through these programs are not well equipped technologically to carry out their duties effectively is due to the fact that the existing curriculum designed for training of pre-service teachers in Nigeria does not include the practical usage of ICT materials such as computers and their software. (Ololube 2006).

Table 2. Essential condition for implementing ICT in teacher education

Access	Educators have access to current technologies, software, and telecommunications networks
Skilled Educators	Educators are skilled in the use of technology for learning
Professional Development	Educators have consistent access to professional development in support of technology use in teaching and learning
Technical Assistance	Educators have technical assistance for maintaining and using the technology.
Content Standards and Curriculum Resource	Educators are knowledgeable in their subject matter and cur-rent in the content standards and teaching methodologies in their discipline.
Student-Centered Teaching	Teaching in all settings encompasses student-centered approach to learning.
Assessment	There is continuous assessment of the effectiveness of technology for learning
Community Support	The community and school partners provide expertise, support, and resources

Source: Adapted from review of literature

2.9.4 ICT-Based Teacher Education

Education systems around the world are under increasing pressure to use the new Information and Communication Technologies to teach students the knowledge and skills they need in the 21st Century. The 1998 UNESCO World Education Report, *Teachers and Teaching in a changing World*, describes the radical implications ICTs have for conventional teaching and

learning. It predicts the transformation of the teaching-learning process and the way teachers and learners gain access to knowledge and information. With the emerging new technologies, the teaching professions are evolving from an emphasis on teacher-centered, lecture-based instruction to student-centred, interactive learning environments. Designing and implementing successful ICTs enables teacher education programmes and is the key to fundamental wide-ranging educational reforms.

Consequently, teacher education institutions are faced with the challenge of preparing a new generation of teachers to effectively use the new learning tools in their teaching practices. For many teachers' education programs, this task requires the acquisition of new resources, expertise and careful planning. There has been a joint effort of international bodies (UNESCO, World Bank) to provide a guide to help teacher educators, administrators and policy-makers infuse, integrate and embed ICTs into teacher education.

Guidelines for the development of a high quality strategic technology plan could then be provided thereby enabling planning and managing the change process, and building a broad base of support among all stake holders to achieve the goals of integrating ICTs into the teacher education programme.

Using ICTs in teaching and learning have created changes in the education and training for both the educator and the learner. Education systems worldwide are calling for a revision of the learning and teaching processes so as to accommodate the new media as well as optimize learning in a fast changing world.

Table 3.The use of ICTs in Teacher Education Programmes

Levels of use	Diagnostic Assessment
Non-use	Not involved with ICTs
Orientation	Begins to find out what ICTs are about
Preparation	Gets ready to use ICTs
Mechanical	Focuses on immediate, rote aspects of ICTs
Routine	Uses ICTs in a basic way
Refinement	Considers changes in use of ICTs to improve student learning outcomes
Integration	Works with colleagues to find ways in which ICTs can improve student learning outcomes.
Renewal	Considers how the use of ICTs might be improved

Source: Adapted from Kozma and McGhee (2003, 2006)

2.10 Challenges of ICT utilization in Education

The diffusion of ICT is still a growing phenomenon in the education sector. It is not surprising that, although it is a leading exercise, its integration within the educational sector is faced with numerous challenges. Gebremedhin and Fenta (2015) have admitted that ICT integration into education is fraught with numerous challenges that have bedeviled its effective integration into education. Gebremedhin and Fenta (2015) identified the challenges as a shortage of resources or technological tools, lack of technical support, poor ICT preparation for teachers and lack of encouragement for teachers which may have negative implications on the teachers 'Perceptions towards the use of ICT in teaching and learning.

Thus, they remarked that teachers perceived that teaching and learning would improve with ICT integration provided the challenges above are eliminated or minimized. Ghavifekr et al. (2016) found significant challenges associated with the use of ICT tools in teaching and learning. With this finding, the implementation of ICT in teaching and learning is faced with limited accessibility and poor network connection, limited technical support, limited time and lack of

teachers' competency. With the intent of using ICT, Khokhar and Javaid (2016) stated that teachers are faced with challenges such as ICT devices being restricted to classroom teaching. Equally, some teachers maintain that to use ICT in education, more time is needed for instruction. What this means is that much instructional responsibility and skills is required to use the technological tools (Sim&Theng, 2007).

In the same vein, these challenges can further be stretched to the teachers' practice of spending much of their teaching hours online, mainly to play games, engaging on social media and watch movies or listen to music instead of searching for educational materials.

Based on the views of Kizlik (2008), it is crucial that teachers teach their pupils to appropriate ICT capability before applying it in other subjects. Even though there is a strong relationship between ICT the subject and ICT in subjects, some teachers may find it a challenge to lay a foundation of ICT usage for their pupils if they (teachers) are not capacitated on the effective use of ICT.FurthermoreBecta (2004) classify the challenges of using ICT for teaching learning as teachers' level and institutional level factors; where the former refers to teachers' lack of time, confidence, interest and skill and the later refers to institution lack of training and access to resources.

Furthermore, Blanskat et al. (2006) classify as macro and micro level factors; where the former refers to institutional or system level factors and the later refers to attitudes and approaches to ICT. Moreover, Pelgrum (2001) categorize it as material and non-material factors; where the former is related with computer hardware and software and the later is related to knowledge, skill and attitudes to ICT. For the purpose of this research, the intrinsic/extrinsic or material/non-material and the teacher-level and school-level barriers categories are helpful and discussed in the following section.

2.10.1 Teacher-level barrier

2.10.1.1 Lack of teacher confidence

Several researchers indicate that one barrier that prevents teachers from using ICT in their teaching is lack of confidence. Dawes (2001) sees this as a contextual factor which can act

as a barrier. According to Becta (2004), much of the research proposes that this is a major barrier to the uptake of ICT by teachers in the classroom. In Becta's survey of practitioners (2004), the issue of lack of confidence was the area that attracted most responses from those that took part. Some studies have investigated the reasons for teachers' lack of confidence with the use of ICT. For example, Beggs (2000) asserted that teachers' "fear of failure" caused a lack of confidence. On the other hand, Balanskat et al. (2006) found that limitations in teachers' ICT knowledge makes them feel anxious about using ICT in the classroom and thus not confident to use it in their teaching.

Similarly, Becta (2004) concluded their study with the statement: "many teachers who do not consider themselves to be well skilled in using ICT feel anxious about using it in front of a class of children who perhaps know more than they do" (p. 7). In Becta's survey (2004), many of the teacher respondents who identified their lack of confidence as a barrier reported being particularly afraid of entering the classroom with limited knowledge in the area of ICT with their students knowing that this was the case. It was argued that lack of confidence and experience with technology influence teachers' motivation to use ICT in the classroom (Cox, Preston, & Cox, 1999b; Osborne & Hennessy, 2003; Balanskat et al., 2006).

On the other hand, teachers who confidently use technologies in their classrooms understand the usefulness of ICT. Cox, Preston, & Cox (1999a) found that teachers who have confidence in using ICT identify that technologies are helpful in their teaching and personal work and the need to extend their use further in the future.

2.10.1.2 Lack of teacher competence

Another barrier, which is directly related to teacher confidence, is teachers' competence in integrating ICT into pedagogical practice (Becta, 2004). In Australian research, Newhouse (2002) found that many teachers lacked the knowledge and skills to use computers and were not enthusiastic about the changes and integration of supplementary learning associated with bringing computers into their teaching practices. Current research has shown that the level of this barrier differs from country to country. In the developing countries, research reported that teachers' lack of technological competence is a main barrier to their acceptance and adoption of ICT (Pelgrum, 2001; Al-Oteawi, 2002).

On the other hand, the data used for the report came from the Head Teachers and Classroom Teachers Survey carried out in 27 European countries. The finding shows that teachers who do not use computers in classrooms claim that, "lack of skills are a constraining factor preventing teachers from using ICT for teaching. Another worldwide survey conducted by Pelgrum (2001), of nationally representative samples of schools from 26 countries, found that teachers' lack of knowledge and skills is a serious obstacle to using ICT in education.

2.10.1.3 Resistance to change & negative attitudes

Much research into the barriers to the integration of ICT into education found that teachers' attitudes and an inherent resistance to change were a significant barrier (Cox et al., 1999a; Watson, 1999; Earle, 2002; Becta, 2004; Gomes, 2005; Schoepp, 2005). From his/her analysis of the questionnaires, Gomes (2005) found that science teachers' resistance to change concerning the use of new strategies is an obstacle to ICT integration in science teaching. At a broader level, Becta (2004) argued that resistance to change is an important barrier to teachers' use of new technologies in education.

Watson, an Australian researcher, (1999) argued that integrating the new technologies into educational settings requires change and different teachers will handle this change differently. According to him, considering different teachers' attitudes to change is important because teachers' beliefs influence what they do in classrooms. Becta (2004) claims that one key area of teachers' attitudes towards the use of technologies is their understanding of how these technologies will benefit their teaching and their students' learning.

According to Earle (2002), the change from a present level to a desired level of performance is facilitated by driving (encouraging) forces such as the power of new developments, rapid availability, creativity, Internet access, or ease of communication, while it is delayed by resisting (discouraging) forces such as lack of technical support, teacher expertise, or time for planning. In their study, Cox et al. (1999a) found that teachers are unlikely to use new technologies in their teaching if they see no need to change their professional practice. They showed that teachers who resist change are not rejecting the need for change but lack the necessary education in accepting the changes and are given insufficient long-term opportunities to make sense of the new technologies for themselves. Obviously, not all communities have this

barrier. In Europe, for example, Korte&Hüsing (2007) state that only very few teachers can be regarded as fundamentally opposing the use of ICT in the classroom. Only a fifth of European teachers believe that using computers in class does not have significant learning benefits for pupils (Korte&Hüsing, 2007).

2.10.2 School-level barrier

2.10.2.1 Lack of effective training

The barrier most frequently referred to in the literature is lack of effective training (Albirini, 2006; Balanskat et al., 2006; Beggs, 2000; Özden, 2007; Schoepp, 2005; Sicilia, 2005; Toprakci, 2006). One finding of Pelgrum's (2001) study was that there were not enough training opportunities for teachers in the use of ICTs in a classroom environment. Similarly, Beggs (2000) found that one of the top three barriers to teachers' use of ICT in teaching students was the lack of training.

However, according to Becta (2004), the issue of training is certainly complex because it is important to consider several components to ensure the effectiveness of the training. These were time for training, pedagogical training, skills training, and an ICT use in initial teacher training. Correspondingly, recent research by Gomes (2005) relating to science education concluded that lack of training in digital literacy, lack of pedagogic and didactic training in how to use ICT in the classroom, and lack of training concerning the use of technologies in science specific areas were obstacles to using new technologies in classroom practice.

According to Newhouse (2002), teachers need training in technology education (focusing on the study of technologies themselves) and educational technology (support for teaching in the classroom). Similarity, Sicilia (2005) found that teachers want to learn how to use new technologies in their classrooms but the lack of opportunities for professional development obstructed them from integrating technology in certain subjects such as science or maths. Moreover, as Farrell (1999, cited in Sife et al, 2007) reported that ICT training and workshops are needed not only to improve the skills of the instructors, but also as a means of getting them involved in the process of integrating ICT in teaching and learning.

2.10.2.2 Lack of time

Several recent studies indicate that many teachers have competence and confidence in using computers in the classroom, but they still make little use of technologies because they do not have enough time. A significant number of researchers identified time limitations and the difficulty in scheduling enough computer time for classes as a barrier to teachers' use of ICT in their teaching (Al- Alwani, 2005; Becta, 2004; Beggs, 2000; Schoepp, 2005; Sicilia, 2005). According to Sicilia (2005), the most common challenge reported by all the teachers was the lack of time they had to plan technology lessons, explore the different Internet sites, or look at various aspects of educational software.

Becta's study (2004) found that the problem of lack of time exists for teachers in many aspects of their work as it affects their ability to complete tasks, with some of the participant teachers specifically stating which aspects of ICT require more time**.**

2.10.2.3 Lack of accessibility

Several research studies indicate that lack of access to resources, including home access, is another complex barrier that discourages teachers from integrating new technologies into education. Moreover, according to Becta (2004), the inaccessibility of ICT resources is not always merely due to the non-availability of the hardware and software or other ICT materials within the school. It may be the result of one of a number of factors such as poor organization of resources, poor quality hardware, inappropriate software, or lack of personal access for teachers (Becta, 2004).

In addition, The barriers related to the accessibility of new technologies for teachers are widespread and differ from country to country. Empirica's (2006) European study found that lack of access is the largest barrier and that different barriers to using ICT in teaching were reported by teachers, for example a lack of computers and a lack of adequate material. Similarly, Korte&Hüsing (2007, p.4) found that in European schools there are some infrastructure barriers such as broadband access not yet being available. They concluded that one third of European schools still do not have broadband Internet access. Pelgrum (2001) explored practitioners'

views from 26 countries on what were the mainobstacles to the implementation of ICT in schools. He concluded that four of the top ten barriers were related to the accessibility of ICT.

These barriers were insufficient numbers of computers, insufficient peripherals, insufficient numbers of copies of software, and insufficient simultaneous Internet access. Toprakci (2006) found that low numbers of computers, oldness or slowness of ICT systems, and scarcity of educational software in the school were barriers to the successful implementation of ICT into education in Turkish schools. Similarly, Al-Alwani (2005) found that having no access to the Internet during the school day and lack of hardware were impeding technology integration in Saudi schools. Recent research on Syrian schools indicated that insufficient computer resources were one of the greatest impediments to technology integration in the classroom (Albirini, 2006).

2.10.2.4 Lack of technical support

Without both good technical supports in the classroom and whole-school resources, teachers cannot be expected to overcome the barriers preventing them from using ICT (Lewis, 2003). Pelgrum (2001) found that, one of the top barriers to ICT use in education was lack of technical assistance. In Sicilia's study (2005), technical problems were found to be a major barrier for teachers. These technical barriers included waiting for websites to open, failing to connect to the Internet, printers not printing, malfunctioning computers, and teachers having to work on old computers. "Technical barriers impeded the smooth delivery of the lesson or the natural flow of the classroom activity" (Sicilia, 2005, p. 43).Korte&Hüsing (2007) argued that ICT support or maintenance contracts in schools help teachers to use ICT in teaching without losing time through having to fix software and hardware problems. The Becta (2004) report stated that "if there is a lack of technical support available in a school, then it is likely that technical maintenance will not be carried out regularly, resulting in a higher risk of technical breakdowns" (p. 16). Many of the respondents to Becta'ssurvey (2004) indicated that technical faults might discourage them from using ICT in their teaching because of the fear of equipment breaking down during a lesson.

2.10.2.5 Lack of administrative Support

Administrative support is stated as the presence of encouraging ICT using role models, such as the principal (Baylor & Ritchie, 2002). These principals need to become proficient in the use ICT in order to provide technology leadership in administrative, instructional, and learning functions (Afshari, Bakar, Luan, Samah, &Fooi, 2008).

According to Baylor and Ritchie (2002), administrators' support plays a role in influencing the teachers to use the technology. It appeared that the administrators who support the use of technology not merely in words but also in action lead to accept the use of technology as a culture. Based on this, Baylor and Ritchie concluded that if administrators were to cultivate a technology culture, they would need to figuratively ''roll up their sleeves and join in'' instead of sitting by the side (p. 412). As such, the success of integrating ICT into teaching-learning practices is largely dependent upon the support provided by the principal of the school (Samuel &Bakar, 2006). Based on the literature review, administrative support can therefore influence the success of integrating ICT into the teaching-learning process among the school teachers (Ali et al., 2009; Baylor & Ritchie, 2002; Samuel & Bakar,2006). Therefore, administrative support is crucial in the utilization of ICT in a school environment.

As Hawkins (2002) reported that school administrators offer very little structural support and incentives to teachers in effective use of ICT in the classroom. Though lecturers enthusiastically engage in collaborative projects and constructivist pedagogy, administrative support given in reference to ICT is not adequate.

Teachers use computers more often for their teaching-learning process if they perceived an adequate support from the school administration. Teachers who receive adequate ICT support from the administrators are more likely to use ICTs in their teaching practice while those who do not receive ICT support from the higher authorities in school are less enthusiastic in using computer or do not integrate technology at all. Administrators in school, such as the principal acts as a mediator to integrate ICT into the educational system by playing a key role in encouraging, supporting, and helping the teachers to use computers in their teaching-learning

process. The support of the school principal or administrator can encourage and promote teacher's willingness to use the computer as a medium to deliver instruction.

2.11 Theoretical Framework

In many of the countries targeted with this curriculum, ICTs are in the early stages of development in commerce, industry, and particularly, in society. Communities and regions may have very limited resources, so it is important to undertake a careful analysis using an ethnographic approach to develop an organic strategy for the growth and development of education and teacher education that takes advantage of ICTs. The vision is not simply of ICTs, but of better education facilitated through the adoption and promotion of ICTs. An explanation of this vision is attempted in a limited way in the illustration provided in the framework section. The Society for Information Technology and Teacher Education has identified basic principles for development of effective ICT teacher education (SITE,2002).

Throughout their teacher education experience, students should learn about and with technology and how to incorporate it into their own teaching. Restricting technology experiences to a single course or to a single area of teacher education, such as methods courses, will not prepare students to be technology-using teachers. Pre-service teacher education students should learn about a wide range of educational technologies across their professional preparation, from introductory and foundations courses to student teaching and professional development experiences.

Technology should be introduced in context. Teaching pre-service students basic computer literacy-the traditional operating system, word processor, spreadsheet, database, and telecommunications topics is not enough. As with any profession, there is a level of literacy beyond general computer literacy. This more specific or professional literacy involves learning to use technology to foster the educational growth of students. Professional literacy is best learned in context.

Pre-service students should learn many uses of technology because they are integrated into their coursework and field experiences. They should see their professors and mentor teachers model innovative uses of technology; they should use it in their own learning, and they

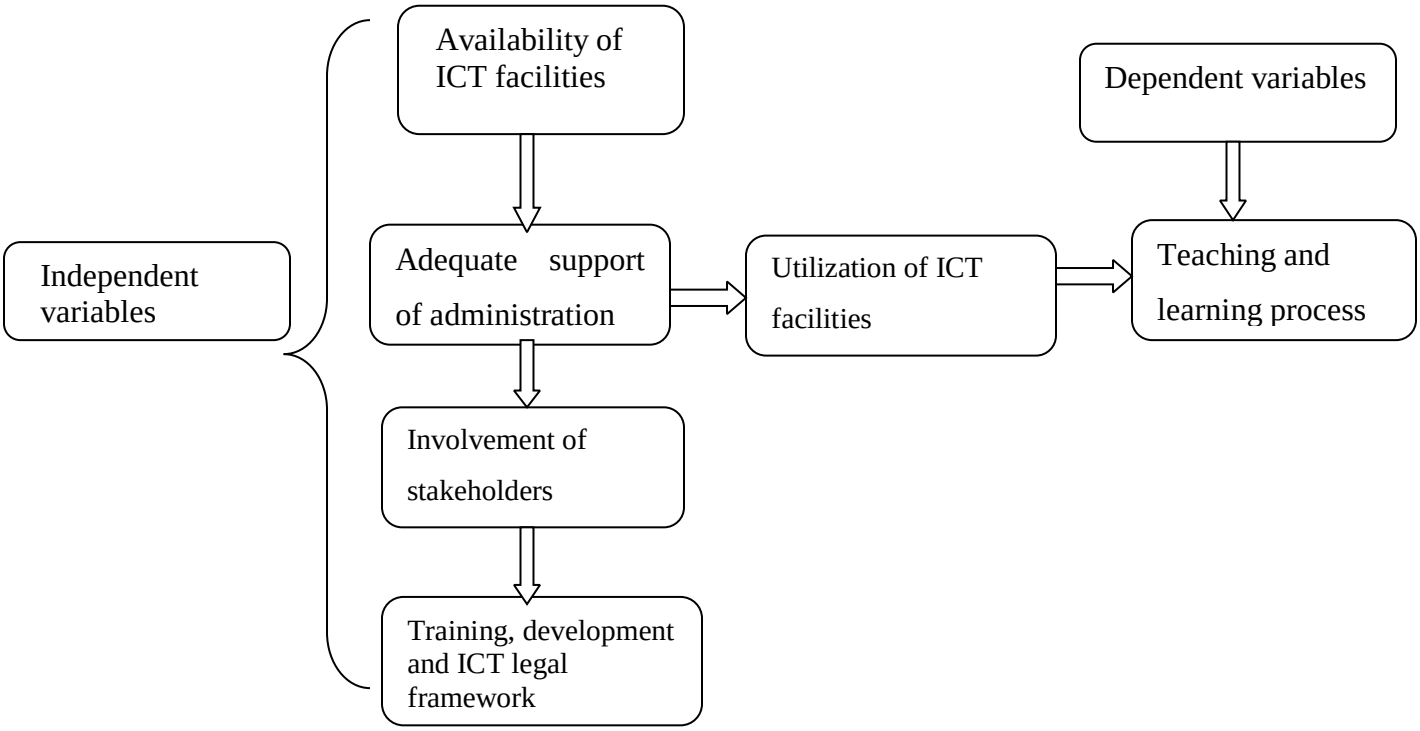
should explore creative uses of technology in their teaching. Teacher educators, content specialists, and mentor teachers should expose pre-service teachers to regular and pervasive modeling of technology and provide opportunities for them to teach with technology in K-12 classrooms.

Students should experience innovative technology-supported learning environments in their teacher education programme. Technology can be used to support traditional forms of learning as well as to transform learning. A PowerPoint presentation, for example, can enhance a traditional lecture, but it does not necessarily transform the learning experience. On the other hand, using multimedia cases to teach topics that have previously been addressed through lectures may well be an example of a learning experience transformed by technology. Students should experience both types of uses of technology in their programme; however, the brightest promise of technology in education is as a support for new, innovative, and creative forms of teaching and learning (SITE,2002).

While the proposed ICT in teacher education curriculum should aspire to no less, the trajectory of the development for countries, regions, and organizations should be appropriate to the level of resources, including expertise, leadership, and ICTs themselves. A widespread approach to reach a scattered population of teachers and organizations that are ready to move a small step forward with very limited resources may be helpful at an early stage. Creating centres of transferable excellent practice that encourage 'reference site' visits, and mentoring teachers in other locations, are also approaches that may be effective. This section will review the stages of teacher education and provide examples of approaches for teacher education in ICTs and through ICTs.

2.12. Conceptual framework

According to Ogula, P. A. (2005).conceptual frame work is a description of the main independent and dependent variables of the study and relationship among them.



Adapted from Literature Review

Figure.1 Conceptual framework of the study

The above conceptual framework indicates that teaching and learning process be effective whenever the availability of various ICT infrastructures and the provision of adequate support from administrative bodies is continuously provided to instructors and student- teachers.

CHAPTER THREE:RESEARCH DESIGN AND METHODDOLOGY

This chapter describes the methodology that was employed during the study on the practices and challenges of ICT utilization in teaching-learning process at Bongacollege of teacher education. It encompasses the research design, study population, sampling procedures and sampling techniques, data collection techniques, Procedures of data collection, Validity and Reliability of the instrument, ethical considerations and methods of Data analysis.

3.1. Research Design

Research designs are plans and procedures that span the decisions from broad assumptions to detailed methods of data collection and analysis (Creswell, 2009). For this study, mixed methods approach was employed. This is because, mixed research design provides more comprehensive evidence for studying a research problem and better understanding than either quantitative or qualitative research alone (Johnson and Christensen, 2008). Therefore, the rationale behind the use of mixed method is because it helps to understand the problem with the use of different methods or instruments.

Mixed method approaches (qualitative and quantitative approach)have been used to collect the relevant data .The integration of both qualitative and quantitative approach have been intended to explicate the researcher's investigation with the intention that one does not fault the strength of another, but rather complement each other to make stronger interpretation. Hence, among the mixed research strategies, concurrent embedded or nested was employed. Concurrent embedded model is a type of mixed research strategy that the researcher used when there is a need to employ different methods to study different groups (Creswell, 2014).According to Creswell(2009),the concurrent embedded strategy of mixed methods can be identified by its uses of one data collection phase during which both quantitative and qualitative data are collected simultaneously. This model is relevant to gain data from different angles as a result of using multiple methods.

3.2. Participant of the study

The participants of this study were student teachers those who taken from third year, Instructors those who are currently (2020/21) academic year engaged in teaching third year student teachers, administrative staff, department heads, Stream officers, vice academic dean, vice administrative dean and Dean of the particular college. Third year student teachers were targeted to the study using purposive sampling techniques because , they are going to be assumed that due to their three year of accumulated experience in the college they know well about college ICT facilities utilization and practice than first and second year student-teachers. In addition, Stream officers, department heads, Dean, Vice academic dean and Vice administrative dean of the particular college were few in number and their response are crucial to the study, they were selected by using purposive sampling method. Moreover, they were interviewed due to their experiences, active involvement in the college activities, having better understanding on ICT utilization and the position that they hold.

3.3. Sampling Procedure and Sample Size

A sample is a small proportion of a population selected for observation and analysis (Best and Kahn, 2000). The study was conducted in Bongacollege of teacher education. A sample of 287 respondents were identified and selected for the present study with the guide of a table for sample selection from Sekaran (2003) tables of sample. Depending on this, from the total of 657 third year student- teachers and 52 instructors engaged teaching in 2020/21 academic year, the researcher took 224 (34.09 %) student- teachers because of their large number it is difficult to manage and administer the questionnaire and 36(69.23%) instructors respectively using stratified sampling and simple random sampling techniques by considering their department and number of each department. Based on the strata(department) the required number of samples were determined for both student- teachers and instructors. Therefore, the number of sample student- teachers and instructors from each department varies according to their quantity. Another participants were the instructors. Since, these instructors were considered to be key implementers and expected to have direct relation and familiarization with ICT tools and their response in this study would have great value than student-teachers. As a result, the researcher took high percentage of instructors than student-teachers. Moreover, administrative

staff members were the other participants of this study because they are considered as policy implementers and closely related to the ICT tools. Without their contribution the college couldn't realize its goal. Accordingly, from the total of 88 administrative staff members in the college, the researcher selected 27 (30%) by using simple random sampling technique. Because, in this type of sampling technique every individual in the sampling frame (i.e. desired population) has an equal and independent chance of being chosen for the study.(source; BCTE registrar & administrative office).Furthermore, of the total of 6 stream officers, the researcher selected 2 (33.34%) of them by purposive sampling technique. Since, they are more experienced and served for several years in the position ,where as the others were recently assigned and new to the position. As a result, the researcher believes that they couldn't provide the required information as it has intended.

The other participants of this study were department heads those who selected purposively for the interview. Accordingly, of the total of 14 department heads, the researcher took only 6(42.85%) those who are only served as heads in the particular department for more than five years were directly taken for the interview because, most of the departments were newly organized and also the heads are delegates and were not permanently assigned to the position. Then, vice academic and administrative deans and dean of the college were purposively taken for the interview because of their position and their response is crucial for the study.

Table 4.Participants, sample size and sampling techniques that employed in the study.

Participants	Population	Sample size	Percent (%)	Sampling techniques
Instructors	52	36	69.23	Stratified&Simplerandom sampling
Student-teachers	657	224	34.09	Stratified& Simple random sampling
Administrative staff	88	27	30	Simple random sampling
Dean	1	1	100	Purposive sampling
V .academic dean	1	1	100	Purposive sampling
v. administrative dean	1	1	100	Purposive sampling
Stream officers	6	2	33.34	Purposive sampling
Department heads	14	6	42.85	Purposive sampling

3.4. Data Collection Instruments

In order to achieve the objectives of the study, data collection instruments such as questionnaire, semi-structured interview and observation were employed.

3.4.1 Questionnaire

Questionnaire is widely used in educational research to obtain information about certain conditions and practices to inquire into opinions and attitudes of individuals and groups. According to Best and Khan (2006), questionnaire enables to secure factual information about opinions and views and also appropriate instrument to obtain a variety of opinions with a relatively short period of time. This instrument is preferred because of it can best answer the research questions: How do the student teachers, instructors and educational administrators perceive information and communication technologies (ICT) in teaching and learning process at the particular college? And to identify challenges those hinder the effective utilization of information and communication technology at Bonga College of Teacher Education(BCTE).

In addition, they have an ability to collect a large amount of information in a reasonably quick space of time, ensure confidentiality and they are easier to complete (Orodho,2009). Moreover, according to Orodho (2008) questionnaires are extensively used to gather data on current conditions, practices, opinions and attitudes quickly and in a precise way. Mugenda (2003) argue questionnaires provide a cheap way of obtaining information from a large number of populations. Furthermore, it will be used simply because they can reach a large number of respondents within a short time, it gives the respondents adequate time to respond to the items, offers a sense of security and confidentiality to the respondents and lastly it tends to be objective, since there is no bias resulting from the personal characteristics (Ogula, 2005).

Therefore, the questionnaire was developed after intensive review of related literatures for research topic. Both closed-ended and open-ended questionnaires were employed in this study. Most of the questionnaire was closed ended, while some questionnaire items were open-ended in order to give a chance for respondents to express their views, ideas and opinions using their own words. The first closed ended questions were prepared in five likert scales valued: strongly disagree (SDA), disagree (DA), undecided (UND), Agree (A) and strongly agree

(SA) to explore student-teachers, instructors and administrative views/opinions regarding the use of ICT in teaching learning process. The next ten closed ended items were prepared in five likert scale to investigate the levels of availability of ICT infrastructures in the college. The other part of the questionnaire consists of six items prepared to examine the practice of ICT in the college.

Moreover, there are also closed ended questionnaires prepared to assess factors that hinder ICT utilization in teaching learning process. The last part of the questionnaires consists of three open ended items to assess the major factors that hinder ICT utilization and the means of improving the current conditions in ICT utilization in Bonga college of teacher education. Before the questionnaires were distributed to the study participants, the coherence of language for the prepared items was checked by colleagues.

3.4.2 Semi-Structured Interview

An interview schedule is a method of collecting data that involves presentation or oral-verbal stimuli and reply in terms of oral-verbal responses (Kothari 2011).Research interviews comprise three different forms: structured, semi-structured and unstructured. Among these the researcher has used a semi-structured interviews, because it gives participants room to elaborate experiences and to express their own ideas and suggestions which would not be achieved by structured interviews(Punch 2005). Moreover, different scholars noted that the strength of semi-structured interviews tends to be one of the most favored by educational researchers as it allows respondents to express themselves at some length, but offers enough shape to prevent aimless rambling and help researchers to get themes and topics which may not have been anticipated while designing the interview. Therefore, so as to get additional information and strengthen the data obtained via questionnaires, the researcher prepared semi-structured interview under the guidance of two language instructors and conducted to college deans ,stream officers and selected department heads regarding the practices and challenges in ICT utilization in teaching learning process in the study area.

3.4.3 Observation guide

An observation guide was used by the researcher to collect information on the levels of availability and accessibility of physical ICT infrastructure and their use in teaching-learning process. In addition to in-depth interview and questionnaires, the researcher used direct observation technique to get contextual information for the data collection conducted.

As Creswell (2007) wrote contexts are important for understanding what the participants are saying. Observation provided knowledge of the context in which events occurred, and enabled the researcher to see things that participants themselves were not aware of. Accordingly, this observation has been employed as a method of data collection to provide an accurate description of the research question "To assess the current practices of information and communication technology (ICT)" and to best answer the research question "to identify the availability level of information and communication technologies (ICT) infrastructures at Bonga college of teacher education.

3.5 Procedures of data collection

In order to obtain adequate data on the practice and challenges of ICT utilization in the study site, the researcher has gone through a series of data gathering procedures. These procedures helped the researcher to get accurate and relevant data from the sample units. Thus, after having letters of authorization from Jimma University college of Education and behavioral Science for ethical clearance, the researcher directly went to Bonga college of teacher education. The first step towards collecting the necessary data was making face to face contacts with college deans and officials in order to introduce the purpose of investigation and facilitating conditions for the data collection activities. Next, the investigator with deans and officials were arranged the time and place to make contact the respondents. Accordingly, the distributions of the questionnaires, the interview schedule and an observation programs were fixed on which an agreement was made.

Then, the questionnaire papers were distributed to sample student-teachers, instructors and administrators of the particular college. After distributing questionnaires to all respondents of the study area, the researcher stayed for about a week in order to collect the

distributed questionnaires from respondents. Simultaneously, the researcher carried out the interviews with dean, academic and administrative deans, selected stream officers and department heads while the questionnaire was returned from the study participants. From the total of (224,36,27)student-teachers, instructors and administrators took the questionnaires (212,31 and 23) respondents were respectively returned the questionnaires. and the questionnaire returned be ready to be analyzed.

3.6 Validity of the instrument

The validity of the research instruments represents the degree to which a test measures what it is supposed to measure, (Kombo and Tromp 2006). Mutai (2000) further indicate that for a research instrument to be considered valid, the content selected and included in the questionnaire must be relevant to the variable being investigated. First of all, the researcher prepared a pool of questionnaires for the respondents through an intensive reading of the literature. Secondly, to check appropriateness, clarity and objectivity of the instruments, the researcher gave the questionnaire for two colleagues those who have better understanding in the area.Then,depending up on the comments and criticisms on the strength and weakness of the items gained from the colleagues ,the researcher made modifications and submitted to advisor. Then, the advisor also evaluated and commented on the items with weaknesses of concepts and grammatical errors. Accordingly, some modification was made on the instruments. Finally, the content of the questionnaire was then corrected appropriately according to their guidance and structured in a simple language to facilitate easy understanding.

3.7 Reliability of the instrument

Having validated the questionnaire, a pilot testing was carried out in advance in four (4) college instructors, twelve (12) student-teachers and two (2) administrative members(other than those who would be in the sample of the main study) purposively selected from the particular college. However, from the pilot test, the researcher was able to understand the ambiguity of some items and so had to modify the level of the questionnaire. That is, the researcher resorted to use simple English. Hence, some items were rejected from the questionnaires. Consequently, the total reliability of the instruments was tested by Cronbach Alpha method by using 'SPSS soft ware 20 versions' and reliability calculated for each of the items prepared for study participants.

Thus, the alpha result for the items prepared to student-teachers, college instructors and administrative staff members were:0.778,0.759 and 0.790 respectively. Thus, the instrument was found valuable to collect the data for the main study (Yalew,2005).

3.8 Ethical Considerations

A research ethics describes the various actions carried out by the researcher in a study. Ethical rules in a study according to Cresswell (2014) contain two main areas, such as; research requirements and individual protection requirements. Moreover,Orodho(2009) observes that ethical considerations in research involve outlining the content of research and what was required of participants, how informed consent was obtained and confidentiality ensured. Ethics has been defined as that branch of philosophy which deals with one's conduct and serves as a guide to one's behavior, and so, most professions have ethical guidelines which govern their profession. Participants were informed that the main aim of the study was strictly for academic purpose and the data was going to be treated with a high degree of confidentiality and would not be shared with third parties.

3.9.Methods of Data analysis

According to Johnson(2011),data analysis is a process used to transform ,remodel and revise certain information(data) with a view to reach certain conclusion for a given situation or problem. Both quantitative and qualitative data analysis techniques were used for the data collected. Data which were collected through close-ended questions were analyzed quantitatively using frequency, percentage and means. Moreover, the data obtained through open ended questionnaires, observations and semi-structured interviews were categorized in to themes based on research questions. On the other hand ,in order to answer all basic research questions, the five likert scales were converted in to three for the sake of convenience to deal with. Accordingly, the first two scales(strongly agree + Agree)were grouped together to agree. In the same way, the last two(strongly disagree + disagree) were grouped together in to disagree. The intermediate scale (undecided)was taken as it is.Additionally,the interviews and observation results were nested to the quantitative findings in order to support and strengthen it. Finally, based on the data collected, summary and conclusion were drawn and recommendations were forwarded.

CHAPTER FOUR:DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter contains two major parts; the first part presents demographic characteristics of respondents. The second part deals with the results of findings from the data gathered through the questionnaire, semi-structured interview and observation.

4.1 Demographic Characteristics of the respondents

For this study the researcher attempted to examine the practices of using ICT in teaching learning process and its major challenges. Since the participants were taken from different field of study, work experiences and educational qualification as indicated below.

Table 5. General Characteristics of the Study participants

Items	Categories	Respondents							
		Instructors		Student-Teachers		Administrative		Total	
		N	%	N	%	N	%	N	%
Sex	Male	27	87.09	96	45.28	15	65.21	138	51.87
	Female	4	12.9	116	54.71	8	34.78	128	48.12
	Total	31	100	212	100	23	100	266	100
Stream	Language	5	16.12	45	21.22	-	-	50	20.57
	N.Science	7	22.58	66	31.13	-	-	73	30
	S. science	7	22.58	35	16.5	-	-	42	17.28
	Prof. science	8	25.8	40	18.86	-	-	48	19.75
	Aesthetics	4	12.9	26	12.26	-	-	30	12.34
	Total	30	100	212	100	-	-	243	100
Educational qualification	Diploma	-	-	-	-	2	8.6	2	3.7
	Degree	2	6.4	-	-	21	91.3	23	42.6
	Master	29	93.54	-	-	-	-	29	53.7
	PHD	-	-	-	-	-	-		
	Total	31	100	-	-	23	100		100
Work experience	0-5	6	19.35	-	-	2	8.6	8	14.81
	6-10	13	41.93			12	52.17	25	46.29
	11-15	7	22.58			6	26.08	13	24.07
	16-20	5	16.12			2	8.6	7	12.96
	21+	-	-			1	4.3	1	1.85
	Total	31	100			23	100	54	100

Source:BCTE Registrar OfficeN= Number of participants

As clearly seen from the above table, the characteristics of student-teacher respondents in terms of sex revealed that, majority (54.71%) female while the rest(45.28%) were males. As coming to the instructor respondents, majority (87.09%) were male while only (12.9%) were female instructors.

As coming to the streams of the respondents of the total of 212 student-teacher participants 45(21.22%) were taken from language stream,66(31.13%)student teachers from natural science,35(16.5%)Social science educationstream,40(18.86%) student-teachers from professional education stream and 26 (12.26%) Student-teachers were from Aesthetics/ HPE streams. Regarding instructor respondents;5(16.12%) were taken from Language stream, 7(22.58%) from Natural science stream, 7(22.58%) from Social science stream, 8(25.8%) from professional science streams and 4(12.9%) from Aesthetics/ HPE were involved in this study. Regarding qualification,29 (93.54%) are second degree holders and 2(6.4%) were first degree holders. In addition to them, the administrative staff members were the other participants of the study.Hence,21(91.3%) are degree holders and very few 2(8.69%) are diploma holders.

Concerning respondents' work experience,19.35%,8.69% of instructors and administrators have a service of 1-5 years,41.93%,52.17% of instructors and administrative staff respectively were ranged between 6-10 years.22.58%,26.08% of instructors and administrative respondents were served for 11-15 years. Furthermore 16.12% and 8.69% instructors and administrators respectively have service of 16-20 and only 1 (4.34%) of the administrative respondent have work experience of above 21 years. Moreover, qualitative data also collected from the college deans, stream officers and selected department heads in order to supplement quantitative one. The questionnaire was distributed to 224 student teachers,36 instructors and 27 administrator bodies.Accordigly,majority(94.64%)student-teachers,86.12%instructorsand85.18%administrator respondents were returned the questionnaire and to the contrary, 5.35% student teachers,13.88% of instructors and 14.81% of the administrators respectively were not returned and the average response rate was 88.64%.According to Edward, Roberts, Clarke and Diguiseppi, P (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 sufficient to provide reliable response.

4.2 Perception of stakeholders on the use of ICTs in teaching-learning process.

Table 6.The responses of stakeholders on their perception of ICT usage in teaching learning process.

No	ICT Infrastructures	Reespondents	Scales										Mean
			SA		A		UND		DA		SDA		
			N	%	N	%	N	%	N	%	N	%	
1	ICT makes the subjects more interesting	Ins	19	61.3	12	38.7	-	-	-	-	-	-	4.64
		Stu	186	87.7	21	9.9	5	2.3	-	-	-	-	
		Adm	14	60.86	7	30.43	-	-	2	8.7	-	-	
2	ICT makes the subjects easy to understand	Ins	24	77.41	5	16.12	-	-	2	6.4	-	-	4.57
		Stu	201	94.81	11	5.18	-	-	-	-	-	-	
		Adm	16	69.56	4	17.39	-	-	3	13.04	-	-	
3	It is cost effective or minimizes educational costs	Ins	28	90.32	3	9.6	-	-	-	-	-	-	4.87
		Stu	206	97.16	6	2.83	-	-	-	-	-	-	
		Adm	17	73.91	6	26.08	-	-	-	-	-	-	
4	It allows online collaboration with academics	Ins	30	96.77	1	3.22	-	-	-	-	-	-	4.71
		Stu	166	78.30	43	20.28	3	1.41	-	-	-	-	
		Adm	14	60.86	7	30.43	-	-	2	8.7	-	-	
5	ICTenhances monitoring of educational facilities	Ins	25	80.64	6	19.35	-	-	-	-	-	-	4.52
		Stu	146	68.86	60	28.3	-	-	6	2.83	-	-	
		Adm	13	56.52	4	17.4	2	8.6	4	17.4	-	-	
6	ICT facilitates educational administration	Ins	29	93.54	2	6.45	-	-	-	-	-	-	4.77
		Stu	122	57.54	88	41.5	2	0.94	-	-	-	-	
		Adm	19	82.6	4	17.4	-	-	-	-	-	-	
7	ICT saves time and man power	Ins	28	90.32	3	9.67	-	-	-	-	-	-	4.93
		Stu	208	98.12	4	1.88	-	-	-	-	-	-	
		Adm	21	91.3	2	8.7	-	-	-	-	-	-	
8	Using ICT reduces workload and provides the latest information	Ins	27	87.09	4	12.9	-	-	-	-	-	-	4.64
		Stu	102	48.12	98	46.23	4	1.88	8	3.78	-	-	
		Adm	16	69.56	6	26.08	1	4.34	-	-	-	-	

N =Number of participants Ins=Instructors, St= Student- teachers Adm=Administrators

As illustrated in the table above, majority of the groups of respondents strongly agree on the statements ICT is cost effective or minimizes education cost(item3) with calculated mean=4.87,ICT allows online collaboration with academics(item 4) with calculated mean=4.71, ICT facilitates educational administration and teaching learning process (item 6) with calculated mean 4.77 and ICT saves time and man power (item 7) with calculated mean =4.93.Furthermore, the groups of respondents were requested to indicate their level of agreement on the items: ICT makes the subjects more interesting for both teachers and students, ICT makes the subjects easy to understand, ICT enhances monitoring of educational facilities and resources and Using ICT reduces workload and provides the latest information.Accordingly,majority of the respondents replied their agreement. Hence, the calculated mean of each item was(item1 mean=4.64,item2 mean=4.57,item5=4.52 and item8 mean=4.64).However, very few number of the respondents were never indicated their perception on some presented statements and disagreed on few statements.

Moreover, in addition to the above quantitative data, the researcher has gathered supportive information from department heads through conducting interview. Accordingly, most of the interviewee mentioned that "even though college administrator's support on utilization of ICT in teaching-learning process was not adequate, they perceive that using ICT facilitates teaching learning process and it has the power to bring interactive and active teaching-learning environment ".

In general, from the above both quantitative and qualitative analysis of data, it can be concluded that even though the respondent's perception on very few items vary from others, majority of them strongly agree and agree on the presented statements. This in turn shows that majority of the stakeholders' perception on ICT utilization in teaching learning process as very important and has a great value to bring change within globalized world. Moreover, they believe that information communication technology is an important instrument that can transfer the present isolated, teacher centered and book centered learning environment into a student centered environment. It can also change the traditional concept of learning process.

4.3 Availability of ICT tools for teaching learning process

A proper ICT infrastructure is crucial for ICT-enabled higher education; however, developing countries often lack these infrastructures and resources (Dada, 2006). The practice of ICT utilization in teaching learning process could be realized by accessibility and availability of various tools in the institution. Lack of ICT infrastructure in developing countries was further highlighted by Cullen (2001) who emphasized ICT infrastructure as a mandatory prerequisite.So,the availability level of various ICT tools in Bonga college of teacher education replied by respondents and analyzed as follows.

Table 7.Response of instructors and student teachers on the availability level of ICT tools

(Scales:1=not available 2=inadequately available 3=adequately available**)**

No	ICT Infrastructures	Respondents	Scales						Mean
			1		2		3		
			N	%	N	%	N	%	
1	Computers, Printers and scanners	Ins	8	25.8	18	58.06	5	16.12	
		Stu	168	79.25	46	21.7	2	0.94	1.55
2	Internet,WI-Fi,B.band	Ins	4	12.9	19	61.3	8	25.8	
		Stu	184	86.8	14	6.6	14	6.6	1.65
3	Projectors (OHP,LCD)	Ins	12	38.7	17	54.83	2	6.4	
		Stu	194	91.5	8	3.77	10	4.71	1.4
4	Educational audio material	Ins	8	25.8	14	45.16	9	29.03	
		Stu	183	86.3	18	8.5	11	5.18	1.62
5	Educational video material	Ins	14	45.16	11	35.48	6	19.35	
		Stu	199	93.86	8	3.77	5	2.35	1.41
6	Video and tele-conferencing	Ins	28	90.32	3	9.67	-	-	
		Stu	206	97.16	3	1.41	3	1.41	1.06
7	ICT lab	Ins	7	22.58	18	58.06	6	19.35	
		Stu	68	32.07	126	59.43	18	8.5	1.86
	Smart classrooms	Ins	18	58.06	9	29.03	4	12.9	
8		Stu	178	83.96	31	14.62	3	1.41	1.36

N= Number of participants Ins=Instructors Stu= Student-teachers

As shown in the table above(table 7), the respondents were requested to indicate the availability level of ICT tools in the college teaching learning process. Accordingly, majority of groups of respondents indicated that Projectors (LCD or OHP),Educational Audio materials, video conferencing and tele conferencing and smart classrooms were not available with calculated mean item3 = 1.4, item 5 =1.41,item6=1.06 and item 8=1.36 respectively. Since this calculated means are below the average calculated mean=1.5 which indicates not available.However,the tools such as: ICT laboratory rooms, Educational Audio materials , Internet (Wi-FI ,broad band connection and Computers, Printers and scanners were inadequately available with calculated mean for each item was above the grand mean (1.5).Accordingly, the calculated mean of item 1=1.55, item 2=1.65, item4=1.62 and the calculated mean of item7=1.86.From this quantitative analysis it is possible to comprehend that there is no adequate ICT tools in the college. In other words, the availability level of ICT tools in the particular college found to be poor.

In order to strengthen the quantitative data gathered through close-ended questionnaire, the researcher collected data through direct observation of most of the college ICT infrastructures like computers and its peripheral parts, Internet connectivity, projectors, E-learning rooms, ICT lab rooms and smart classes were not adequate and poor. Specifically, the researcher also observed ICT laboratory rooms with their equipments. Accordingly, in a single laboratory room around 40-55 seats are placed and computers were also connected. But, most computers were not functional and also the laboratory room size was not enough to hold and freely interact the student-teachers.

Therefore, these large number of student-teachers couldn't get the necessary computer skills. In other words, in the particular college of teacher education, there was poor availability/shortage of computers in the computer lab rooms and the total number of ICT laboratory rooms in the college that currently serving in ICT practices is very few. That means the availability /accessibility of ICT laboratory rooms in the college is not as it has expected.

Moreover, as the researcher conducted interview with college academic and administrative deans and stream officers, most of the ICT tools were not functional and limited

in access, as a result, student-teachers were not accessing them as they need. In line with this one of the key informant said:

> *Because of poor availability and shortage of computers and other ICT tools in the college, most instructors are forced to use the regular/ traditional method of teaching and use power point/LCD rarely to cover large portions of their courses when they missed due to different reasons rather than to realize the objectives of the content.(Intws)*

In addition to this, the researcher also examined some ICT tools by conducting observation of different offices and classrooms. Accordingly, the head office/dean office, academic office and bursar's offices have their own computers (desk top and limited number of lap top), printers, internet connectivity, photo copy machines and different Microsoft applications. However, at departments and classroom levels they are not well facilitated and equipped and the classrooms lack some equipments like, student and teacher computer ,telephone, television, printer, scanner and digital camera. However, equipments like LCD projector, interactive white board and projection systems are available in a very few classrooms to very low extent that aid the teaching-learning process in the college.

In general, as the researcher gathered information from the three groups of respondent's questionnaires, direct observation and interview guide, it is possible to generalize that the level of availability of ICT infrastructures/facilities in the college found to be poor and to low extent. This finding is in line with a case study conducted byYasemin (2008) on "ICT usage in Higher Education pre-service teachers and instructors". Results revealed that teacher education programs fail to provide appropriate instructional technologies and computer facilities for both in and out of class activities.

4.4 The current practice of using ICT tools in the college

Colleges today should meet the growing need for highly qualified educational technologists. Educators also have to prepare themselves by increasing their skills and competencies to improve the quality of teaching learning process.

The practice of ICT tools was designed to address the concerns by providing a structured way of assessing the degree to which teachers are using technology in the classroom and most importantly, whether such efforts lead to noticeably improved teacher instructional practices and student learning outcomes.

4.4.1 The frequency of ICT usage

Table 8. Response of instructors and student- teachers on the frequency of ICT usage

(Scale:1=Never,2=Rarely,3=Undecided,4=sometimes and 5=Always)

No	ICT Infrastructures	Respondents	Scales										Mean
			Always		Sometimes		Undecided		Rarely		Never		
			N	%	N	%	N	%	N	%	N	%	
1	Computers	1	2	6.4	3	9.6	2	6.4	6	19.35	18	58.06	1.87
		2	9	4.2	17	8.01	5	2.35	63	29.71	118	55.66	1.75
2	Projectors (OHP,LCD)	1	2	6.4	4	12.9	-	-	8	25.8	17	54.83	1.90
		2	10	4.7	7	3.2	3	1.4	15	7.07	177	83.49	1.38
3	Educational audio material	1	-	-	-	-	2	6.4	4	12.9	25	80.64	1.25
		2	-	-	5	2.35	18	8.9	7	3.3	182	85.84	1.27
4	Tele-conferencing	1	-	-	-	-	-	-	3	9.6	28	90.32	1.09
		2	-	-	-	-	2	0.9	7	3.3	203	95.75	1.05
5	Online applications	1	-	-	2	6.4	6	19.35	4	12.9	19	61.29	1.70
		2	-	-	3	1.41	8	3.77	30	14.15	171	80.67	1.26
6	Video and tele-conferencing	1	-	-	-	-	2	6.4	3	9.6	26	83.67	1.23
		2	-	-	-	-	13	6.13	8	3.77	191	90.09	1.16
7	Online chat programe	1	-	-	-	-	-	-	7	22.58	24	77.41	1.26
		2	-	-	-	-	4	1.88	6	2.83	302	95.28	1.07
8	E-mails	1	2	6.45	3	9.67	1	3.22	18	58.06	7	22.58	2.20
		2	-	-	8	3.77	6	2.83	2	0.9	196	92.45	1.18
Grand mean=1.41													

N= Number 1=Instructors 2=Student-teachers %=Percentage

As indicated in the table above, the two major groups of the respondents were requested to rate their frequency on the practice and utilization of ICT tools during teaching learning process in the classroom. Accordingly, very low percentage(6.4%,4.2%),(6.4%,4.7%) and 6.45% instructors and student teachers were always using computers, projectors and e-mail respectively. On the other hand, about (9.6%,8.01%), (12.9%,3.2%), (6.4%,1.41%)and 9.67% of instructors sometimes integrate computers, projectors, on line application and e-mail. However, from the presented table, majority of instructors and student teacher respondents never practice

such listed ICT tools as aids to realize their daily contents of the lesson. Supporting the above ideas one of department head pointed out the use of ICT in teaching learning process as follows:

> *In my understanding, the concept of teaching and learning with aid of ICT means making the teacher who is the facilitator of the teaching-learning process and applying various ICT tools such as; computer,LCD, OHP and any sound equipment in the process. On the other hand, learners can also utilize the tools to clarify the daily content of the lesson. So, as me utilizing ICT tools is a two-way process and lessons should be integrated*.(Int.5*)*

In general, it can be conclude from the above analysis that most instructors and student-teachers in the college never practicing ICT tools for their daily educational activities.Because,the calculated mean for most items score is below the grand mean(1.41).

4.4.2 Student-teachers reasons for their practice of ICT tools

Computers are technological tools used to store, retrieve, and exchange information among human beings throughout the world. Particularly, it plays a decisive role in a teaching learning process However, student teachers of Bonga college use and practicing computers in the college for various purposes.

Table 9.Responses of student- teachers for the reason of their practice of ICT tools.

No	Reasons why student-teachers practice in ICT tools	Options			
		1		2	
		N	%	N	%
1.	Download and Read extra books	66	31.14	146	68.86
2.	E-mail	19	8.96	193	91.03
3.	To conduct action research	6	2.83	206	97.16
4.	For entertainment (social media)	86	40.56	126	59.44
5.	Communicate with my teachers and other student	13	6.13	199	93.86
6.	Doing assignments	68	32.07	144	67.92

1=yes 2=No N=Number of participants %= Percentage

As indicated in the table above,31.14% of student-teachers were practicing ICT tools to download and read extra books. To the contrary, majority (68.86%) of them responded never use it. In the same table above, the respondents were requested to indicate for what purpose they are

practicing computer in the college. Accordingly, very few respondents(8.96%) were, practicing e-mail. However, more than three fourth(91.03%) of the respondents explained that they do not practicing email.

The third item in the same table refers to assess whether student teachers were practicing computers to conduct action research, regarding it very few (2.83%) of them use ICT tools to conduct action research. Whereas, majority (97.16%) of the respondents were not practicing ICT tools in the college to conduct action research. As coming to the next statement(item4) ,the respondents were requested to indicate whether they are practicing ICT tools for entertainment (social media) or not. Accordingly, some(40.56%) of student-teachers were practicing ICT tools (computers) for entertainment (social media) as they access it.However,about**(**59.44%) were never practicing it.

The next item in the same table above refers to whether student teachers were utilizing ICT tools to communicate with their instructors and other students or not. Accordingly, only(6.13%)of the respondents confirmed yes.But,majority(93.86%) did not involve in the activity. The last statement focuses on whether the student-teachers were using ICT to do assignments or not. Here, some (32.07%) participate themselves in doing assignments whereas, around(67.92%) of the respondents were not active participants in doing assignments as they access it.

As a whole, one can deduce from the above data that the highest percentages of student-teachers were not practicing ICT tools utilization for different educational activities /academic purposes rather they use for entertainments (playing games),non academic activities as they access the ICT tools in the college. This indicates that the practice of ICT tools in the college teaching-learning process going to be poor and the opportunity of the student-teachers to be competent professionals those who will be able to decide the future becoming another questionable issue that needs great attention.

4.4.3 The quality of ICT tools in the classroom or in computer labs of the college

Table 10.Responses of student-teachers on the quality of ICT tools .

No	Items	Rating scales: Very poor		poor		good		v. good		excellent		Mean
		N	%	N	%	N	%	N	%	N	%	
1.	Speed of computers	9	4.24	121	57.07	67	31.6	15	7.07	-	-	2.27
2.	Smart class rooms	141	66.5	68	32.07	3	1.41	-	-	-	-	1.35
3.	Internet connection	61	28.7	145	68.4	6	2.83	-	-	-	-	1.71
4.	Electric power supply	21	9.9	65	30.66	126	59.5	-	-	-	-	2.50
5.	Access to adequate e-books in e-library	178	84	16	7.54	18	8.49	-	-	-	-	1.25
6.	Access to well-equipped comp.lab room	161	76	37	17.5	14	6.6	-	-	-	-	1.30

N=Number of participant %=Percentage scales;(very poor =1,poor=2,good=3,very good=4 and Excellent =5) As can be seen from the table above, student-teachers forwarded the quality of ICT tools in the ICT laboratory room and classroom. Accordingly, the quality of Smart rooms(well facilitated) , Internet connection, Access to adequate e-books in e-library and Access to well-equipped comp.lab room found to be very poor and to the contrary, only the speed of computers and electric power supply are found to be at good level with the calculated(mean of 2.27 and 2.50 respectively) . However, the quality of none of the listed items were found at very good and excellent level because, the result of the calculated mean of each item was below the grand mean (1.73). In general, from the above table it is possible note that the highest percentage of the respondents replied that most of ICT tools those prevailing in the classroom and ICT laboratory rooms lack quality. This in turn has a negative implication on its practice during teaching learning process.

4.4.4 ICT skills of instructors

Table 11. Responses of instructors regarding their skills on ICT

(Scale:1=Never,2=Rarely,3=Undecided,4=sometimes and 5=Always)

No	Descriptions	Rating Scales										Mean
		Very poor		Poor		Good		V.good		Excellent		
		N	%	N	%	N	%	N	%	N	%	
1	Using LCD projector for instruction	4	12.9	3	9.6	17	54.83	4	12.9	3	9.6	2.97
2	Using power point	-	-	6	19.35	14	45.16	7	22.58	4	12.9	3.30
3	Using databases systems like Microsoft access	4	12.9	11	35.48	6	19.35	8	25.8	2	6.45	2.78
4	Using e-mail	1	3.22	2	6.4	19	61.29	5	16.12	4	12.9	3.30
5	Using search engine	2	6.4	15	48.38	7	22.58	4	12.9	3	9.6	2.70
6	Using online T-L material	6	19.35	16	51.61	7	22.58	2	6.4	-	-	2.16
7	Uploading and downloading different materials	4	12.9	2	6.4	16	51.61	6	16.67	3	9.6	3.07
8	Using word processing like Microsoft word	3	9.6	2	6.4	8	25.8	11	35.58	7	22.58	3.55
9	Using spread sheet application like Microsoft excel	10	32.25	9	29.03	8	25.8	4	12.9	-	-	2.2
10	Using educational CD ROM	6	19.35	15	48.38	6	19.35	4	12.9	-	-	2.3
	Grand mean=2.82											

N= Number of participants 1=Instructors 2= Student-teachers

(1=very poor,2==poor,3=good ,4=very good ,5=Excellent)

As can be seen from the table above, the respondents were requested to indicate their skill on using various ICT skills. Accordingly, majority of the respondents indicated their skill on: Using databases systems like, Microsoft access, Using search engine, Using online T-L material,

Using educational CD ROM was found to be poor. However, some respondent's skill on Using LCD projector for instruction, Using power point, using e-mail and uploading and downloadingdifferent materials was found to be at good level. Moreover, few and very few respondent's skill on some items listed above was found at very good and excellent respectively. From this analysis it can be to conclude that some of the respondents have poor and very poor skill of ICT utilization in using search engine, using online T-L material, using educational CD ROM and in using spreadsheet application for instruction with calculated mean score of below the grand mean=2.82.

As a whole, one can clearly see from the above data (Table 11) that the skill of respondents in using ICT tools for classroom instruction was not satisfactory.

4.4.5 Training received on ICT usage

Some people excelled in the applications of computers and related functions where as others refrain from using computers for fear of failure, and still others don`t make efforts because of lack of basic skills. Many instructors are found in between and among these situations in Bongacollege of teacher education.

Table 12. Responses of instructors on the type of training they received from the college.

No	Training programs	Options				Mean
		1		2		
		N	%	N	%	
1.	Word processing	9	29.03	22	70.96	1.70
2.	PowerPoint Preparation	19	61.29	12	38.7	1.39
3.	Internet browsing	7	22.58	24	77.41	1.77
4	.E-mail	16	51.61	15	48.38	1.50
5.	e-library usage	2	6.4	29	93.54	1.94
6.	Use of web source information	13	41.93	18	58.06	1.59
7.	SPSS and other software	4	12.9	27	87.09	1.88
	Grand mean= 1.68					

1=yes 2=No N=Number of participants %= Percentage

As it has displayed in the table above, the respondents were requested to indicate the type of training programs they received from the college. Accordingly, some instructors (61.29%, 51.61%) received training on power Point Preparation and E-mail utilization respectively.
But, majority of the respondents (70.96%,77.41%,93.54%58.06 and 87.09% of the respondents did not take any training regarding ICT usage in the college about Word processing, Internet browsing, library usage, Use of web source information and SPSS and other software respectively. The calculated mean score for each of the above listed training programs was above the grand mean(1.68).

From this analysis one can comprehend that Bonga College of teacher education did not equip the instructors with necessary skills to effectively utilize ICT tools in the classroom teaching learning process. Furthermore, as coming to the extent of ICT usage, dean and academic dean of the College pointed out that:-

> *Due to shortage of budget and related constraints in the college, most of the time short term trainings were provided on latest and current issues like pedagogy that delivered for short period of time. As a result, majority of the instructors in our college did not utilize ICT facilities for teaching learning processes rather they use for different purposes such as: grading student's achievement, doing assignment, mid and final exam preparation and for office work. (*Int1 &Int 2)

Similarly, students-teachers did not utilize ICT tools to supplement their education, rather they use for vesting social sites, playing games and engaging in non academic activities. In addition to this, the researcher also has conducted direct observation of instructor's classroom instruction. Accordingly, about twelve (12) instructors those taken from different departments and filled the questionnaire were also observed by the researcher. However, none of them has used any ICT tool during their classroom instruction. This in turn implies poor practice of technology products in the actual classroom instruction.

In general, as both qualitative and quantitative data revealed, it is possible to comprehend that the practices of utilization of ICT in teaching learning processes at Bonga College of teacher education is at its infant/early stage. This finding in line with the result of the study

conducted by Shiang, Sarah, Hui-yinhsu, and Mengping (2008) designed a study on“ICT to develop teacher's global awareness”.

It was pointed out globalization an inevitable trend everywhere in the world, is an idea that must be practiced and implemented in the 21st century classroom. With the assistance of online technologies global connections are possible and indeed necessary.

4.5 Major Challenges of ICT utilization in teaching-learning process

ICTs utilization /integration in education systems may face various challenges with respects to, infrastructure, capacity building, financing, policy and knowledge. In relation to this, studying the obstacles to the use of ICT in learning and teaching environment is crucial because this knowledge could provide “guidance for ways to enhance technology integration.

The infrastructure challenges that may exist are absence of appropriate buildings and rooms to house the technology, shortage of electric supply and telephone lines, and lack of the different types of ICTs. Because of this, one need to deal with infrastructure related challenges before the planning of ICTs integration to education systems. The challenges of using ICT for teaching learning can be categorized in to different dichotomy. For example, some scholars classify as intrinsic and extrinsic; where the former refers to interest, attitudes, beliefs and resistance to ICT and the later refers to access, time, support, resource and training. On the other hand, Becta (2004) classify the challenges of using ICT for teaching learning as teachers’ level and institutional level factors; where the former refers to teachers’ lack of time, confidence, interest and skill and the later refers to institution lack of training and access to resources.

4.5.1 Responses of instructors and student-teachers on the challenges in utilization of ICT tools

The integration of ICTs in education systems may face various challenges with respect to policy, planning, infrastructure, learning content and language, capacity building and financing. According to Tino (2002), one of the impeding factors of ICTs utilization in education is the skill gap of people implementing it. However, the practices of ICT utilization in Bongacollege of teacher education hindered by various factors But, the major challenges hindering ICT utilization in teaching learning process was mentioned by respondents and analyzed in table 13.

Table 13. Responses of Instructors and Student-teachers on factors hindering ICT utilization

No	ICT Infrastructures	Reespondents	Scales										Mean
			SA		A		UND		DA		SDA		
			N	%	N	%	N	%	N	%	N	%	
1	Lack of access to hardware tools	1	21	67.74	10	32.25	-	-	-	-	-	-	4.68
		2	122	57.54	71	33.49	7	3.3	12	5.66	-	-	4.42
2	Lack of skills about how to operate computer	1	8	25.8	6	19.35	-	-	16	51.61	1	3.22	3.12
		2	136	64.15	68	32.08	8	3.77	-	-	-	-	4.60
3	Lack of knowledge about how to operate computers	1	16	51.61	12	38.7	-	-	3	9.67	-	-	4.32
		2	181	85.37	31	14.62	-	-	-	-	-	-	4.85
4	Lack of time to use ICTs integration	1	19	61.29	11	35.48	1	3.22	-	-	-	-	4.55
		2	81	38.2	126	59.43	-	-	5	2.35	-	-	4.34
5	Lack of interest to useICTs in teaching learning process	1	9	29.03	22	70.96	-	-	-	-	-	-	4.29
		2	16	7.54	38	17.92	-	-	124	58.49	34	16.03	2.42
6	Lack of technical support	1	17	54.83	13	41.93	-	-	1	3.22	-	-	4.48
		2	158	74.52	54	25.47	-	-	-	-	-	-	4.74
7	Lack of training on ICT utilization	1	24	77.41	7	22.58	-	-	-	-	-	-	4.78
		2	178	83.96	34	16.03	-	-	-	-	-	-	4.83
8	Poor internet connectivity	1	18	58.06	9	29.03	-	-	4	12.9	-	-	4.32
		2	138	65.09	46	21.69	-	-	28	13.2	-	-	4.38
9	Lack of awareness about the value of e-learning	1	8	25.8	3	9.6	-	-	9	29.03	11	35.5	2.61
		2	43	20.28	18	8.5	-	-	69	32.54	82	38.7	2.39
10	Lack of support from Administrators	1	23	74.16	6	19.35	-	-	2	6.4	-	-	4.61
		2	147	69.33	57	26.88	-	-	-	-	8	3.77	4.58

N=Number of participants Respondents (1= Instructors 2 = Student-teachers) %= percentage

(scales SA=5,A=4,UND=3,DA=2, SDA=1)

As shown in the table above, all 100%(SA+A) of instructors and (91.03%) of student-teachers respectively confirmed their agreement on lack of access to hardware tools as major hindrances. However, very few student-teachers i.e. 3.33% were ambivalent their preference and only 5.66% of the respondent student- teachers replied disagree. The calculated mean score of instructors(mean=4.68%) and student-teachers (mean=4.42) which implies poor availability of ICT hard ware materials. The next item in the same table above item 2, the respondents were requested to indicate skill as factor to operate a computer or not, accordingly, 45.15%(SA+A) of instructors and overwhelming(96.23%) of student-teachers respectively replied their

agreement.But,majority 54.83%(SDA+DA) of instructors and very few (3.77%) of student teachers responded their disagreement and ambivalent and the calculated mean score of instructors (mean=3.12) and that of student teachers(mean=4.60). It indicates skill is a factor on the parts of students and it is not a factor on the parts of instructors.

As coming to the next item 3, the respondents were requested whether lack of knowledge about how to operate ICT tools can affect its implementation or not.Here,highest number 90.31% (SA+A) of instructors and all(100%)student- teachers agreed on it and only (9.97%) of instructors were disagreed. The calculated mean score of instructors (mean=4.32) and that of student teachers(mean=4.85) respectively. It indicates lack of skill as one of hindrances for effective implementation of ICT in the college.

The respondents were also asked whether there was lack of time to use ICTs in teaching learning process or not, Accordingly, majority 96.77% SA+A) of instructors and 97.63% student-teacher respondents replied agree and very few(3.22%)of instructors were neutral. however,2.35%, student teacher respondents were explained their disagreement. The calculated mean score of instructors (mean=4.55) and that of student teachers(mean=4.34) respectively. It indicates time as one of key factor.

In the same table item 5 was about lack of interest to use ICTs in teaching learning process. As they replied, all (100%) of instructors, and 25.46%(SA+A)of student teachers agreed. However, majority 74.49% (SDA+DA) of student- teachers disagreed on it and the calculated mean score of the respondents were(mean=4.29 and 2.42)respectively. This implies lack of interest is a factor on the parts of instructors but not a factor to student teachers. As coming to the next item (6) regarding lack of technical support in the college, majority 96.76%,(SA+A) of instructors and all (100%) student teacher respondents , replied agree. However, only 3.22%, instructor respondents were indicated their disagreement and the calculated mean score of the respondents(mean =4.48 and 4.74)respectively. This mean score indicates lack of technical support as key challenge in the college.

In the next item, the respondents were requested to rate their view whether lack of training on ICT utilization for teaching learning affects its effectiveness or not. Concerning it all (100%) of instructors, and 99.99%(SA+A) of the respondents indicated agreement. Moreover,

the calculated mean result of instructors and student-teacher respondents (mean=4.78,4.83).It implies lack of training as a major factor. In the same table(13)item 8, it was concerning about Poor internet connectivity in the college, they responded that majority 87.09%,86.78%(SA+A) of the respondents were agreed. Whereas very few (12.9%, 13.2%) of the respondents disagree on the given statement. The calculated mean score (mean=4.32,4.38). It indicates such problem as one of hindrance of ICT implementation. As coming to the next item in the table above, the respondents asked whether they have lack of awareness about the value of e-learning(ICT) in teaching learning or not. To this end, some of the respondents (35.4%,28.78%(SA+A), 64.53% and 71.24%(SDA+DA) of instructors and student teacher respondents agreed and disagreed respectively. The calculated mean score of the respondents (mean=2.61, 2.39).It reveals that lack of awareness about the value of e-learning(ICT) in teaching learning is not hindrance of ICT utilization.

Finally, in the table above item(10) the respondents were requested to rate whether the support provided by an administrative bodies in the college a hindrance of ICT implementation or not. Accordingly, majority(93.54%) and 96.21% (SA+A) of the respondent(instructors and student teachers) agreed on it. However, very few(6.4%)of instructors and 3.77% of student-teachers respectively disagree on it and the calculated mean score of the respondents(mean=4.61 and 4.58) respectively. This implies it is one of series hindrance to utilize ICT in teaching learning process of the college.

In general, the practice of ICT utilization in the particular college of teacher education was affected by various factors. But, the major challenges hindering the effective utilization of ICT tools in teaching learning process in the college were: lack of access to hardware tools, Lack of technical support, lack of time to use ICTs in teaching learning process, Lack of knowledge about how to operate computers ,lack of training on ICT utilization for teaching learning, Poor internet connectivity and lack of support from administrative bodies were the major challenges with a calculated mean(4.56) of above the grand mean (4.16).However, the challenges Lack of skills about how to operate computers, Lack of interest to use ICTs in teaching learning process and Lack of awareness about the use of ICT were minor challenges affecting ICT utilization because, their calculated mean was (3.86) which scored below the grand mean(4.16).

Furthermore, in proportion to the above ideas, the data obtained from open ended questionnaires and a semi-structured interview similar with the questionnaire response and beyond these challenges, ICT department head pointed out that:

> *In our college, one hidden problem is absence of the culture of utilizing existing/accessible ICT tools in the classroom instruction and lack of adequate budget to purchase the deficient tools as an additional factor that hindering effective ICT utilization in teaching learning process.(*Int.4)

4.5.2. Responses of administrative on factors hindering ICT utilization in the college.

Table 14. Responses of administrators on factors hindering ICT utilization in the college

No	Challenges of ICT utilization	Scales										Mean
		SA		A		UND		DA		SDA		
		N	%	N	%	N	%	N	%	N	%	
1.	Poor technology availability	15	65.21	8	34.78	-	-	-	-	-	-	4.65
2.	Lack of budget to equip the tools	13	56.52	7	30.43	-	-	3	13.04	-	-	4.30
3.	Lack of Knowledge of staff	16	69.56	4	17.39	-	-	3	4.34	2	8.7	4.35
4.	Lack of skills of staff	18	78.26	4	17.4	1	4.34	-	-	-	-	4.74
5.	Absence of policy and legal frameworks	6	26.08	10	43.47	-	-	7	30.43	-	-	4.26
6.	Lack of technical support	17	73.91	4	17.4	-	-	2	8.69	-	-	4.56
7.	Poor emphasis of administrative body	13	56.52	6	26.08	-	-	4	17.39	-	-	4.21
8.	Poor internet connectivity	11	47.82	7	30.43	-	-	5	21.73	-	-	4.04
9.	Lack of staff development and training	15	65.21	8	34.78	-	-	-	-	-	-	4.65
10.	Poor supply of power	4	17.39	6	26.08	-	-	9	39.13	4	17.4	2.86
	Grand mean=3.36											

N= Number of participants %= Percentage (Scales SA=5,A=4,UND=3,DA=2,SDA=1)

As one can see from the above table item (1), the respondents were requested to rate their view on challenges in utilization of ICT tools in teaching and learning process in the particular college. Accordingly, all 100%(SA+A) of the respondents agreed and the calculated

mean score (m=4.65).In the same table item 2, about lack of budget to equip the tools as the respondents indicated majority 86.95 %(SA+A) agreed and very few respondents (13.04%) were disagreed and the calculated mean score(mean=4.30)..

The third item, the respondents were asked that whether there is lack of knowledge of staff or not .Accordingly, majority 86.9 %(SA+A) of the respondents were agreed and very few (13.04%) of the respondents replied disagreed on it with calculated mean score (mean= 4.35).This mean score implies that it is a factor. The next item in the above table was about the skill gap of the staff. Here, majority 95.65% (SA+A) of the respondents were agreed and very few 4.34% of the respondents were ambivalent. The calculated mean score (mean= 4.74).

The next challenge requested here was absence of policy and legal frameworks. Accordingly, majority 69.55%SA+A) of the respondents confirmed their agreement. However, about 26.08% of the respondents disagree on it and the calculated mean score (mean=4.26).

In the same table item 6, nearest to overwhelming(SA+A) of the respondents replied agree on lack of technical support as one challenge in the college ICT utilization and very few(8.69%) disagree on the presented statement. The calculated mean score (mean= 4.56).

In the next item, the respondents were requested to indicate their levels of agreement on the emphasis given by administrative on ICT utilization in the college. Accordingly, majority 82.6%(SA+A) of the respondents agreed very few (17.39%) of them disagreed on it.

The calculated mean score(mean=4.21).It implies a major challenge to utilize ICT in college teaching learning process.

Furthermore, the respondents asked to indicate the level of agreement concerning on internet connectivity in the college can affect ICT utilization or not. Here, majority(78.25%) SA+A of respondents were agreed and few(21.73%) of the respondents were disagreed on it and the calculated mean score(mean=4.04). The ninth item in the table above was about whether there was lack of staff development and training in the college or not. Regarding this, all(100%), of the respondents indicated their agreement. The calculated mean score (mean=4.65) which also categorized under major factor affecting the utilization of ICT in the college.

Finally, the respondents were requested to explain their level of agreement on supply of power in the college affects ICT utilization or not. Accordingly, about 43.47%(SA+A) of the respondents indicated their agreement. However, majority 56.52%(SDA+DA) of the respondents were indicated their disagreement on the poor supply of power. The calculated mean

score(mean=2.86).This mean score indicates that poor supply of power is not a challenge in the college. Because, the mean score is less than the computed grand mean(4.26). This is not a factor because of the availability of stand by generator in the college made it facilitated.

In general, from the above analysis majority of the respondents agreed on the challenges poor technology availability, lack of technical support ,lack of Knowledge and skill of staff, poor emphasis of administrative body, absence of policy and legal frameworks, internet connectivity, lack of staff development and training were found to be the major factors hindering ICT utilization in the classroom instruction those identified by majority of the respondents with average mean score above the grand mean (3.36).However, the only challenge that majority of the respondents disagreed was Poor supply of power.Since,this was not found to be the challenge in the context of Bonga college of teacher education. Because, the availability of stand by generator in the college make it possible to utilize ICT tool in teaching learning process.

This finding in line with the result of the study conducted by Hirut,2002 in Mekele University indicated that the major challenges for adopting e-learning and utilizing ICT in higher institution include the infrastructure problem, lack of awareness and motivation, lack of ICT skill, lack of training facilities, lack of administrative management and technical support and resistance of individuals to change.

Moreover, as the researcher conducted interview with some officials in the college, they stated that "currently the college is practicing ICT without clearly stated policy guide line". In addition, few of the interviewee said that they have no awareness about the presence of ICT policy in the college. In general, ICT utilization practices in teaching learning process in Bongacollege of teacher education affected by various factors. But, the most challenges those were provided by the interviewees, closed and open ended questionnaires were found to be, lack of infrastructure, lack of technical support, lack of knowledge and skill, poor connectivity, absence of ICT plan and policy and little or poor emphasis of administrative bodies in utilizing ICT tools in teaching learning process. Finally, the data obtained from open ended questionnaire revealed that the major challenges encountered during ICT utilization were: Lack of well-equipped(SMART) classrooms, Shortage of ICT laboratory rooms and Lack of commitment and carelessness among instructors to utilize ICT tools.

4.6 Discussion

Technology integration in education is one of the essential elements in educational endeavors now a days and suggests that it is almost inevitable that governments and institutions strive to adapt and integrate technology in their educational set of courses. The use of ICT in the classroom teaching-learning is very important. It provides opportunities for instructors and students to operate, store, manipulate and retrieve information. The usage of ICT tools reduce the amount of face to face lecture time, it can avoid shortage of human and material resources, they improve and acquire technological knowledge, and it could give more practical, interactive and collaborative activities to the students than just learning by rote.

The result of the study revealed that there were no adequate ICT tools in the college. This shows that the college has given less emphasis to supply adequate ICT infrastructures to run effective teaching-learning process. This on the other hand, negative implication for poor practice of instructors and student-teachers in student-centered classroom instruction in the college. Therefore, it is possible to conclude that there are no adequate ICT tools to support teaching learning activities in the study area. This finding in line with the result of the study conducted byYasemin (2008) on "ICT usage in Higher Education pre-service teachers and instructors". Results revealed that teacher education programs fail to provide appropriate instructional technologies and computer facilities for both in and out of class activities.

The current practice of integrating ICT tools in to teaching learning process at the study area found at its infant/early stage. This finding of this study agreed with the result of the study conducted by Shiang, Sarah, Hui-yinhsu, and Mengping (2008) designed a study on"ICT to develop teacher's global awareness".It was pointed out globalization an inevitable trend everywhere in the world, is an idea that must be practiced and implemented in the 21st century classroom. With the assistance of online technologies global connections are possible and indeed necessary.

ICT integration in teaching learning process in the particular college of teacher education affected by both institutional and teacher level factors. Accordingly, as the data revealed lack of

access to hardware tools, Lack of technical support, lack of training on ICT utilization for teaching-learning, absence of ICT plan and policy, inadequate support from administrative bodies shortage of budget to equip the tools, Poor internet connectivity, Lack of knowledge and skill about how to operate computers and lack of time to use ICTs in teaching learning process were the major challenges hampering the effective utilization ICT in the college teaching learning process. This finding in line with the result of the study conducted by Hirut,2002 in Mekele University indicated that the major challenges for adopting e-learning and utilizing ICT in higher institution include the infrastructure problem, lack of awareness and motivation, lack of ICT skill, lack of training facilities, lack of administrative management and technical support and resistance of individuals to change.

Generally, the qualitative and quantitative data revealed that ICT utilization in the case of Bonga College of Teacher Education has been surrounding by different problems and therefore, needs to be given due attention at a fast pace.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This part of the chapter deals with the summary of the major findings, major conclusionsdrawn on the bases of the findings and recommendations are forwarded for all concerned bodies.

5.1 Summary of the major findings

This study's main objective was to examine the practices and challenges in utilization of ICT in teaching-learning process in Bonga College of Teacher Education.

More specifically, this study was set out to seek answers for the following fundamental research questions:

1. How do student- teachers, college instructors and educational administrators perceive the use of information and communication technologies (ICT) in teaching-learning process?
2. To what extent information and communication technology infrastructures are available at Bonga college of teacher education?
3. What are the current practices of using information and communication technologies (ICT) in teaching learning process in the college?
4. What are the major challenges encountered in utilization of information and communication technology in Bonga College of Teacher Education(BCTE)?

For this study, mixed research design was employed. Among the mixed research strategies, concurrent embedded or nested was applied. The sources of data for this study were 36 BCTE instructors, 27 administrators and 224 student-teachers of third year attending in the academic year of 2020/2021. The total numbers of population in this study were 797, and out of these 287 samples were taken through stratified sampling and simple random sampling techniques.

Before the primary data was collected, the instruments were pilot tested in advance of four(4)instructors, twelve(12) student-teachers and two(2)administrative members. In total eighteen (18) participants were purposively selected from the particular college those who would not be participants for the main study. The Cronbach's alpha result for the items prepared to student-teachers ,college instructors and administrative staff members were:0.778,0.759 and 0.790 respectively.

Moreover, semi-structured interview was conducted with dean, academic and administrative dean, stream officers and department heads. The data obtained from the study participants were analyzed through both qualitative and quantitative techniques of data analysis. The quantitative data was analyzed using frequency , percentage and means. On the other hand, the data collected through semi-structured interview, open ended questionnaires and observation were analyzed qualitatively in the form of narrative description. Thus, from the analysis of both qualitative and quantitative data the following significant findings were obtained.

Stakeholder's perception on the use of ICT in teaching-learning process.

The first research question was to examine the perception of student-teachers, instructors and administrators on the use of ICT in teaching learning process in the particular college. As it has illustrated, majority of instructors, student teachers andadminstrators perceive the use of ICT in teaching learning process as very important and the need of technology in the process of teaching learning is not questionable. Accordingly, the calculated grand mean has been observed that (4.7).This score shows that majority of the respondent's perception is highly in agreement with the presented statements on importance of ICT in teaching learning process. Majority of the participants exhibited a favoring view (positive attitude towards ICT integration in to instructional process.

The availability level of ICT infrastructures at Bonga College of Teacher Education (BCTE).

From the analysis (table 7), majority of groups of respondents indicated that Projectors(LCD or OHP), Educational Audio materials, video conferencing and tele conferencing and smart classrooms were not available with calculated mean(item 3 = 1.4),(item 5 =1.41),(item 6=1.06) and (item8=1.36) respectively. Since this calculated means are below the average calculated mean=1.5 this indicates not adequate. However, the tools such as: ICT

laboratory rooms, Educational Audio materials , Internet (Wi-FI ,broad band connection and Computers, Printers and scanners were inadequately available with calculated mean for each item was above the grand mean (1.5). the calculated mean of (table 7) item 1=1.55, item 2=1.65, item 4=1.62 and the calculated mean of item 7=1.86.In general, the average calculated mean of not available and inadequately available indicated (1.48)which is below the grand mean(1.5).From this quantitative analysis it is found that there is no adequate ICT tools in the college.

As a whole, the finding of the study revealed that the availability level of ICT infrastructure in the college of teacher education found to be to low extent.

The current practices of using ICTin teaching- learning process in the college

As the data revealed that only (9.6%,8.01%),(12.9%,3.2%),(6.4%,1.41%)instructors and student-teachers and 9.67% of instructors sometimes use computers, projectors, on line application and e-mail. However, from the presented (table 8), majority of instructors and student teacher respondents never practice such listed ICT tools as aids to realize their daily contents of the lesson. The highest percentages of student-teachers were not practicing in ICT tools utilization for different educational activities /academic purposes as they access the ICT tools in the college (table 9).

As the data indicated, most of ICT tools those existing in the classroom and ICT laboratory rooms lack quality. some respondent's skill on Using LCD projector for instruction, Using power point, using e-mail and uploading and downloading different materials was found to be at good level. very few respondent's skill on some items listed was found at very good and excellent level respectively(table11). Moreover, Amazingly, the result of observation revealed that none of instructors observed has used any ICT tool during their classroom instruction. This in turn implies poor practice of technology products in the actual classroom instruction.

Majority of the respondents (70.96%,77.41%,93.54%58.06 and 87.09% of the respondents did not take any training regarding ICT usage and ICT related issues in the college.(table 12).In general, as both qualitative and quantitative data revealed, it is possible to comprehend that the practices of utilization of ICT in teaching learning processes at Bonga College of teacher education are at their beginning/early stage.

Major challenges encountered in utilization of ICT in teaching learning process

The last research question examined the challenges that hinder ICT utilization in teaching and learning process in Bonga College of Teacher Education .As both qualitative and quantitative data revealed, the major challenges hindering the effective utilization of ICT tools in teaching learning process in the college were: lack of access to hardware tools, Lack of technical support, lack of training on ICT utilization for teaching-learning, absence of ICT plan and policy, inadequate support from administrative bodies shortage of budget to equip the tools, Poor internet connectivity, Lack of knowledge and skill about how to operate computers and lack of time to use ICTs in teaching learning process were the major challenges with a calculated mean(4.56) of above the grand mean (4.16).

5.2 Conclusion

Education is a long term growth and applying ICT in education is new to most instructors therefore, it can take time for instructors to learn and apply in to teaching and learning. It is a responsibility that is ever-changing due to technological advance and it cannot be completed in a short period of time.Thus, this study has examined the practices and challenges of ICT utilization in Bonga college of Teacher Education. Based on the discussions and summary of the major findings of the study, the following conclusions were drawn.

Even though the stakeholders (Instructors, student-teachers and administrators) have positive perceptions towards the integration of ICT in education delivery andmotivated to teach and prepare learning materials using ICT programs in the college teaching learning process, there were no adequate ICT tools to integrate teaching learning activities in the college classroom instruction. This shows that the college has given less emphasis to supply adequate ICT infrastructures to run effective teaching-learning process.Thus,ICT integration in to the classroom instructional process in the study area is at its early stage and not well practiced as it has expected. Because, it isexacerbated by hindering challenges such as: lack of access to hardware tools, Lack of technical support, lack of training on ICT utilization for teaching-learning, absence of ICT plan and policy, inadequate support from administrative bodies shortage of budget to equip the tools, Poor internet connectivity, Lack of knowledge and skill about how to operate computers and lack of time to use ICTs in teaching learning process.

5.3 Recommendation

In light of the findings and conclusions drawn above, the researcher would like to recommend the following points to be taken into consideration:-

- College administrative bodies need to support technology integration of instructors and student-teachers in teaching-learning process as key activity to facilitate effective provision of teaching learning process by the aid of ICT tools.
- The college as a higher educational institution in collaboration with concerned bodies need to fulfill its ICT infrastructures/resources as mentioned on a framework for policy implementation that equip training the instructors in new pedagogical approaches.
- The instructors need to encourage student-teachers to acquire enough ICT skills at the time they are in the College by supporting them to make presentations using ICT tools, presentation of projects and action research papers.
- ICT integration in education particularly in teaching-learning process be correspond with instructor`s professional development. The college leadership also need to play a key role in the utilization of ICT in education because; lack of support from the college administration is one of serious problems in the college.
- The college need to encourage teaching and learning processes through the use of ICT as a tool not just as a curricular subject and apply various educational software and technology should be inculcated into the entire teacher education programmes.
- In order to improve the practices of ICT utilization, it is better if the college administrative/deans and vice deans in cooperation with regional education bureau arrange and search the means of providing in-service trainings, workshops and seminars for the sake of updating instructor's knowledge and skills in using the latest technology products.
- The college has to develop strategies concerning improving the usage of ICT in teaching and learning through addressing the various challenges specifically, continuous training on ICT utilization and employ competent computer technicians in the college.
- Finally, the researcher would like to recommend others to conduct further research on this topic to better improve the quality of teaching-learning process in the study area.

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Appendices

Appendix A

Questionnaires to be filled by college Instructors

Jimma University School of Graduate Studies

Department of Teacher Education and Curriculum Studies

Program of MA in Curriculum and Instruction

Data collection tools prepared to investigate the practices and challenges of ICT utilization in Teaching and Learning process in Bonga college of teacher education.

Dear respondents!

The main purpose of this questionnaire is to examine the practices and challenges of ICT utilization in teaching learning process in Bongacollege of teacher education. The data obtained from you through these questionnaires will help the researcher to identify the challenges of using ICT in your college which later help as input for further improvement of the ICT utilization practice in the college. The researcher believes that you are an important person to provide ample information about the issue as member of the staff and user of ICT for teaching learning. Taking the professional guarantee for the confidentiality of the information and your information is used only for research purpose and is kept confidential. The researcher kindly requests you to contribute your part by patiently filling the following questionnaires.

Note:

- You don't need to write your name.
- Try to write your answer for all questions as much as possible.
- Write short and precise answers for open ended questions.
- Don't forget to read the directions before you fill each question.

Thank you in advance for your cooperation!

Part I: Background Information

1. Sex: Male [ ] Female [ ]

2.Stream: A) Natural Science ( ) B) Social science ( ) C) Language ( )

D) Professional science ( ) E) Aesthetic ( )

3. Service year in teaching at a particular college

0-5 years ( )

6-10 years ( )

11-15 years ( )

16-20 years ( )

21 and above years ( )

Part II: Questionnaires related with Perception of instructors on ICT utilization in teaching learning process

1. Instructors perception on ICT utilization in teaching and learning process. Rate your degree of agreement on perception of ICT utilization in teaching learning process in your classroom. Description: strongly agree (SA), Agree (A), undecided (UND), Disagree (A) and strongly disagree (SDA).

No	Statements	scales				
		SA	A	UND	DA	SDA
1	ICT makes the subjects more interesting for both teachers and students					
2	ICT makes the subjects easy to understand					
3	It is cost effective or minimizes and education cost					
4	It allows online collaboration with academics					
5	ICT enhances monitoring of educational facilities& resources					
6	ICT facilitates educational administration and teaching learning process					
7	ICT saves time and man power					
8	Using ICT reduces workload and provides the latest information					

Part III. Questions related with availability of ICT tools in the college

2.1 The following are ICT tools which can be used for teaching-learning processes.

Indicate the degree of their availability in your college.

Description Scales:1=not available 2=inadequately available 3=adequately available**)**

No	ICT facilities /Infrastructures	Rating Scales		
		1	2	3
1	Computer ,Printers and scanners			
2	Internet (Wi FI ,broad band connection)			
3	Projectors (LCD or OHP)			
4	Educational Audio materials (e.g. Castes and MP3 files)			
5	Educational Video materials (e.g. Movies or VCD, DVD, VHS)			
6	video conferencing and Teleconferencing			
7	ICT laboratory rooms			
8	Smart classes			

Part IV.Questions related with the practices of using ICT tools in the college

3.1 How often do you use any of the following ICT tools for teaching learning purpose in yourclass?Description(1=Never,2=Rarely,3=Undecided,4=sometimes and 5=Always)

No.	ICT Tools	Rating scale				
		5	4	3	2	1
1	Computer					
2	Projectors/LCD or OHP					
3	Educational Audio materials(e.g castes and MP3 files)					
4	Teleconferencing					
5	on-line applications					
6	video conferencing					
7	on-line chat programs					
8	e-mail					

3.2 Indicate your skills on the practices of ICT tools in your college teaching learning.
Description (1=very poor, 2=poor, 3=good, 4=very good, 5=excellent)

No	Type of ICT skill	Rating scales				
		1	2	3	4	5
1	Using LCD projector for instruction					
2	Using power point					
3	Using databases systems like Microsoft access					
4	Using e-mail					
5	Using search engine					
6	Using online T-L material					
7	Uploading and downloading different materials					
8	Using word processing like Microsoft word					
9	Using spreadsheet application like Microsoft excel					
10	Using educational CD ROM					

3.3 Have you ever received training on how to use the following programs by your college?
Description(1=Yes,2= No)

No.	Training Programs	Options	
		1	2
1	Word processing		
2	PowerPoint Preparation		
3	Internet browsing		
4	E-mail		
5	e-library usage		
6	Use of web source information		
7	SPSS,STATA and other software		

Part V.Questions related with Challenges in utilization of ICT tools in teaching and learning process in the college

4.The following are factors hindering the practice of using ICT in teaching learning. Please indicate the degree to which you agree with these factors. Description: strongly Agree (SA), Agree (A), Undecided, (UND), Disagree (DA) and strongly Disagree (SDA).

No.	Challenges in ICT utilization	scales				
		SA	A	UND	DA	SDA
1	Lack of access to hard ware tools.					
2	Lack of skills about how to operate computers					
3	Lack of knowledge how to operate computers					
4	Lack of time to use ICTs in teaching learning process					
5	Lack of interest to use ICTs in teaching learning process					
6	Lack of technical support					
7	Lack of training on ICT utilization for teaching learning					
8	Poor internet connectivity					
9	Lack of awareness about the value of e-learning(ICT)					
10	Lack of support from administrative bodies					

Part VI Open-ended Questions

5. Please list down the constraints that you have encountered in general when you come to the usage of computers, internet and other ICT tools in your field of study. ----------
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6.What factors would improve the use of ICTs in teaching and learning process in the college?----------
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7.As a college instructor and implementer of the current curriculum what possible recommendations would you make towards enhancing the effective utilization of ICT in teaching and learning in your college?----------
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Appendix: B

Questionnaires to be filled by college Student-Teachers

Jimma University, School of Graduate Studies

Department of Teacher Education And Curriculum Studies

Program of MA in Curriculum and Instruction

Data Collection Tools to Investigate the practices and challenges of ICT utilization for Teaching and Learning process in Bonga college of teacher education.

Dear respondents!

The main purpose of this questionnaire is to examine the practices and challenges of ICT utilization in teaching and learning process in Bongacollege of teacher education. The data obtained from you through these questionnaires will help the researcher to identify the practice and challenges of using ICT in Bongacollege of teacher education which later help as input for further improvement of the ICT utilization practice in the college. The researcher believed that you are an important person to provide ample information about the issue as user of ICT for teaching learning and being primary customer of the college. Taking the professional guarantee for the confidentiality of the information and your information is used only for research purpose and is kept confidential. The researcher kindly requests you to contribute your part by filling the following questionnaires patiently.

Note:

- Do not write your name
- Try to write your answer for all questions as much as possible.
- Don't forget to read the directions before you fill each question.

Thank you in advance for your cooperation!

Part I: **Background Information**

1) Sex: Male_____ Female____

2) Department_____ 3) Year _____

Part II:Questions related with student teachers' perception on the use of information and communication technologies in teaching and learning process.

1.Rate your degree of perception on utilization of ICT or computer in your classroom teaching learning processes of your college instruction. Description: strongly agree (SA), Agree (A), undecided (UND)Disagree (DA) and strongly disagree (SDA)

No	Statements	Scales				
		SA	A	UND	DA	SDA
1	ICT makes the subjects more interesting for both teachers and students					
2	ICT makes the subjects easy to understand					
3	It is cost effective or minimizes and education cost					
4	It allows online collaboration with academics					
5	ICT enhances monitoring of educational facilities& resources					
6	ICT facilitates educational administration and teaching learning process					
7	ICT saves time and man power					
8	Using ICT reduces workload and provides the latest information					

Part III. Questions related with the extent of availability of ICT tools in the college

2. The following are ICT tools which can be used for teaching-learning processes.

Description Scales:(1=not available 2=inadequately available 3=adequately available**)**

Indicate the degree of their availability in your college.

No	ICT facilities /Infrastructures	Scales		
		1	2	3
1	Computer ,Printers and scanners			
2	Internet (Wi FI ,broad band connection)			
3	Projectors (LCD or OHP)			
4	Educational Audio materials (e.g. Castes and MP3 files)			
5	Educational Video materials (e.g. Movies or VCD, DVD, VHS)			
6	video conferencing and Teleconferencing			
7	ICT laboratory rooms			
8	Smart classes			

IV.Questions related with the practices of using ICT tools in the college

3.1 How often do your instructors use any of the following ICT tools for teaching learning purpose in your class?

Description(1=Never,2=Rarely,3=Undecided,4=sometimes and 5=Always)

No	ICT tools	Scales				
		5	4	3	2	1
1	Computer					
2	Projectors/LCD or OHP					
3	Educational Audio materials(e.g castes and MP3 files)					
4	Teleconferencing					
5	on-line applications					
6	video conferencing					
7	on-line chat programs					
8	e-mail					

3.2 If you use a computer in computer lab, for what purpose you use it? ((1=Yes,2= No)

No.	Reasons for using computers	Options	
		1	2
1	Doing assignments		
2	Communicate with my teachers and other students		
3	E-mail		
4	Download and Read extra books		
5	For entertainment (social media)		
6	To conduct action research		

3.3 If you are using computers in the classroom or in computer labs of the college, please rate the quality of service. Description (1=very poor, 2=poor, 3=good, 4=very good, 5=excellent)

No.	Items	Rating scale				
		1	2	3	4	5
1	Speed of computers					
2	Smart rooms					
3	Internet connection					
4	Electric power supply					
5	Access to adequate e-books in e-library					
6	Access to well-equipped computer lab					

Part V:Questions related with challenges in utilization of ICT tools

4.The following are factors hindering the practice of using ICT for teaching learning. Please indicate the degree to which you agree with these factors. Description: strongly agree (SA), Agree (A), Undecided, (UND), Disagree (A) and strongly Disagree (SDA).

No.	Challenges in ICT utilization	Scales				
		SA	A	UD	DA	SDA
1	Lack of access to hard ware tools.					
2	Lack of skills about how to operate computers					
3	Lack of knowledge how to operate computers					
4	Lack of time to use ICTs in teaching learning process					
5	Lack of interest to use ICTs in teaching learning process					
6	Lack of technical support					
7	Lack of training on ICT utilization for teaching learning					
8	Poor internet connectivity					
9	Lack of awareness about the value of e-learning(ICT)					
10	Lack of support from administrative bodies					

Part VI Open- ended Questions

5. Please list down the constraints that you have encountered in general when you come to the usage of computers, internet and other ICT related tools in your field of study.

_____

_____

_____

_____

6. What factors would enhance the use of ICTs in teaching and learning process in your college?

_____

_____

_____

_____

7. What possible recommendations would you make towards improving the use of ICTs in enhancing teaching and learning in your college?

_____

_____

_____

Appendix: C

Questionnaires to be filled by college administrators

Jimma University, School of Graduate Studies

Department of Teacher Education and Curriculum Studies(TECS)

Program of MA in Curriculum and Instruction

Data collection tools to Investigate the current practices and challenges of ICT utilization for Teaching and Learning process in Bonga college of teacher education.

Dear respondents!

The main purpose of this questionnaire is to examine the practices and challenges of ICT utilization in teaching and learning process in Bonga College of Teachers Education (BCTE). The data obtained from you through these questionnaires will help the researcher to identify the challenges of using ICT in your college which later help as input for further improvement of the ICT utilization practice in the college. The researcher believes that you are very important person to provide an ample information about the issue as administrative staff member and user of ICT for teaching and learning. Taking the professional guarantee for the confidentiality of the information and your information is used only for research purpose and is kept confidential. The researcher kindly requests you to contribute your part by filling the following questionnaires patiently.

Note:

- No need of writing your name
- Try to write your answer for all questions as much as possible.
- Write your answer for open ended questions to the point
- Don’t forget to read the directions before you fill each question

Thank you for your cooperation!

Part I: Background Information

1. Sex: Male ( ) Female ( )
2. Department _____
3. Service year of working at a particular college

0-5 years ( ) 11-15 years ( )
6-10 years ( ) 16-20 years ( ) 21 and above years ( )

Part II: Question related with your perception on the use of information and communication technologies in teaching and learning process.

1. The followings are the statements those prepared to assess your perception on ICT utilization in your college. So, please indicate the degree of your agreement with each item in your context (Bong college). Description: strongly agree (SA), Agree (A), Undecided (UND) , Disagree (DA) and strongly Disagree (SDA).

No	Statements	Scales				
		SA	A	UND	DA	SDA
1	ICT makes the subjects more interesting for both teachers and students					
2	ICT makes the subjects easy to understand					
3	It is cost effective or minimizes and education cost					
4	It allows online collaboration with academics					
5	ICT enhances monitoring of educational facilities& resources					
6	ICT facilitates educational administration and teaching learning process					
7	ICT saves time and man power					
8	Using ICT reduces workload and provides the latest information					

Part III:Questions related with challenges in utilization of ICT tools in teaching and learning process in the college

2.The followings are Key Challenges for ICT utilization in higher education institution. Indicate the degree to which you agree with each challenges in the context of your college. Description: strongly disagree (SDA), disagree (DA), Undecided (UND) , Agree (A) and strongly Agree (SA).

No	Challenges	Scales				
		SA	A	UND	D	SDA
1	Poor technology availability					
2	Lack of budget to equip the tools					
3	Lack of Knowledge of staff					
4	Lack of skills of staff					
5	Absence of policy and legal frameworks					
6	Lack of technical support					
7	Poor emphasis of administrative body					
8	Poor internet connectivity					
9	Lack of staff development and training					
10	Absence of electric supply					

Part IV. Open-ended Questions

3. What are general challenges in using ICT for teaching and learning in your college?

_____

_____

_____

_____

4.As one of the college administrative staff member what would you suggest to be done so as to improve the challenges in using ICT in teaching-learning process in your college?

_____

_____

_____

_____

Appendix: D

Jimma University

College of Education and Behavioral Sciences

Department of Teacher Educational And Curriculum Studies

Semi-structured interview questions prepared for Dean, academic and administrative deans, stream officers and selected department heads.

The main purpose of this interview is to collect relevant information to examine the practices and challenges of ICT utilization in teaching-learning process in your college. so, you are kindly requested to give your genuine response. Your response will be used only for academic purpose and the responses will be kept confidential.

Thank you in advance for your cooperation!

Part I: General information and respondents' personal data

1.Position_____

2.Sex_____

3. Educational Background_____

4. Qualification of subject:_____

5. Service year_____

Part II: please, answer the following questions briefly based on the current practice of your college context.

1.How do you perceive the use of Information communication technology in your college teaching learning process?

2.To what extent ICT infrastructures are availability and for what purpose is ICT being used in your college?

3.How do you describe the practices of ICT utilization in your college activities?

4.What are the challenges of using ICT for teaching learning and what is your future plans?

5.What is your general comments regarding effective utilization of ICT in your college teaching learning process?

Appendix: E

Jimma University

College of Education and Behavioral Sciences

Department of Teacher Educational And Curriculum Studies

Part I: General information and respondents' personal data

1.Name_____

2.Sex_____

3. Educational Background_____

4.Major subject_____minor_____

5. Service year_____

Observation of Classroom instruction

No	Items of ICT tools integrated during teaching learning process	Extent of ICT utilization				
		To very great extent	To a great extent	To some extent	To low extent	Nothing at all
1	LCD					
2	Overhead projector(OHP)					
3	Teacher Computer					
4	Student Computer(s)					
5	Interactive whiteboard					

Appendix:F

Jimma University

College of Education and Behavioral Sciences

Department of Teacher Educational And Curriculum Studies

Observation Checklist

Part 1. Researcher's observation checklist on availability of ICT infrastructures

Department/ Office	ICT tools and facilities	Available and adequate	Available and Not adequate	Not available
Head office	Computer(Desk top/Lap top			
	Printer and Photocopy machine			
	Internet			
	Electricity			
	Microsoft office application			
Academic office	Computer(Desk top/Lap top			
	Printer and Photocopy machine			
	Internet			
	Electricity			
	Microsoft office application			
Department office	Computer(Desk top/Lap top			
	Printer and Photocopy machine			
	Internet			
	Electricity			
	Microsoft office application			
Bursar's office	Computer(Desk top/Lap top			
	Printer and Photocopy machine			
	Internet			
	Electricity			
	Microsoft office application			
ICT Infrastructures	ICT Laboratory			
	SMART classrooms			
	E-Library			
	E-learning room			
	Liquid Crystal Display(LCD)			
	Overhead projector(OHP)			
	Connectivity(Wi-Fi, broadband)			

Part 2. Technology resources checklist in the college classrooms

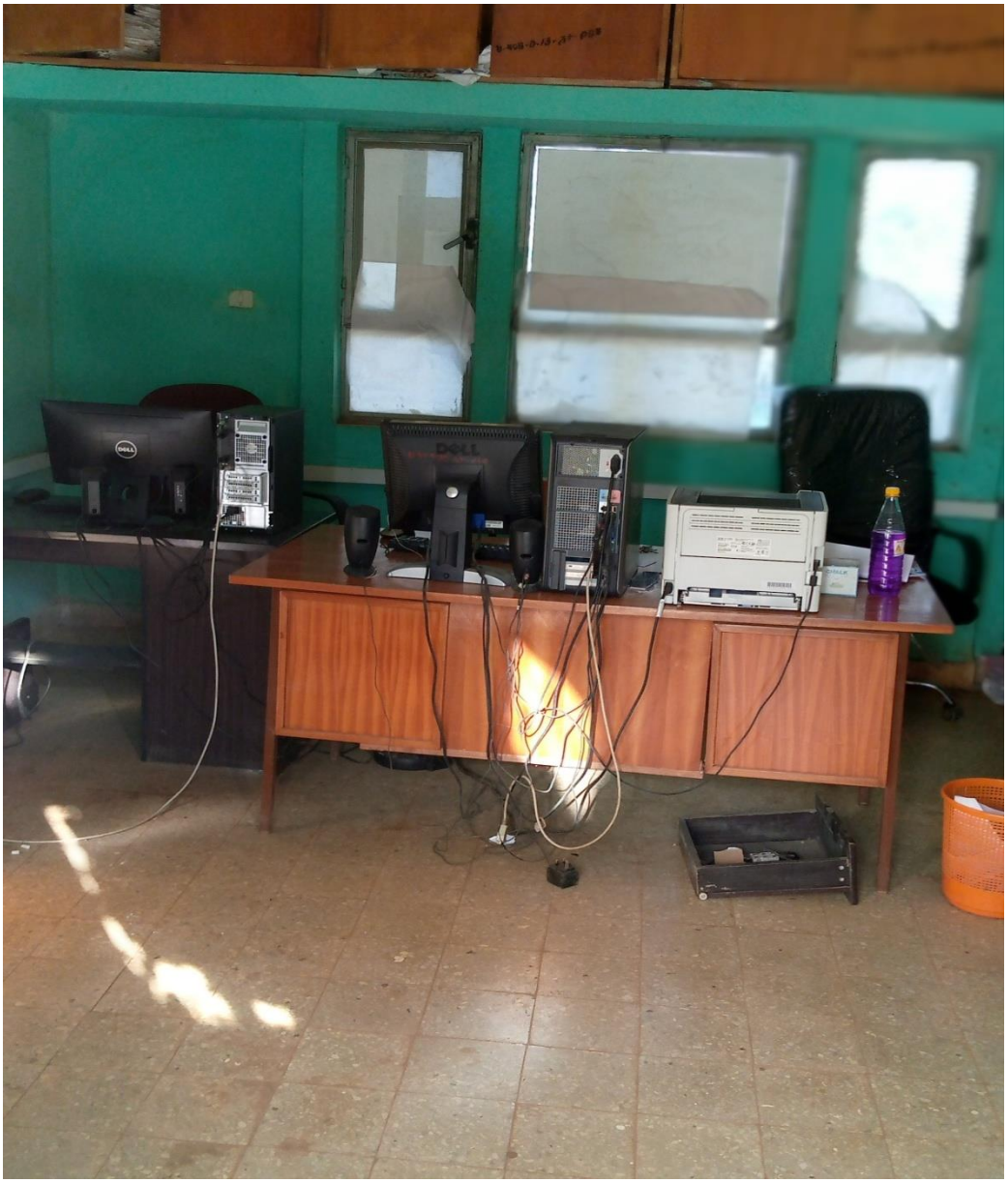
No	Items of ICT tools	Extent of availability				
		To very great extent	To a great extent	To some extent	To low extent	Nothing at all
1	Telephone					
2	Television					
3	Teacher Computer					
4	Student Computer(s)					
5	Projection System					
6	Overhead projector					
7	Scanner					
8	CD-Rom					
9	Printer					
10	Interactive whiteboard					

Attachments

Picture:1Bonga College of Teacher Education

Picture:2 A Newly constructed digital library in the college

Picture:3 A sample of ICT Laboratory room and students practices



Picture:4 A sample of department head's office

Picture:5 A sample classroom