

**ASSESSMENT ON EFFECTIVENESS ICT OF USE
IN EDUCATION**

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GRADUATE STUDIES**

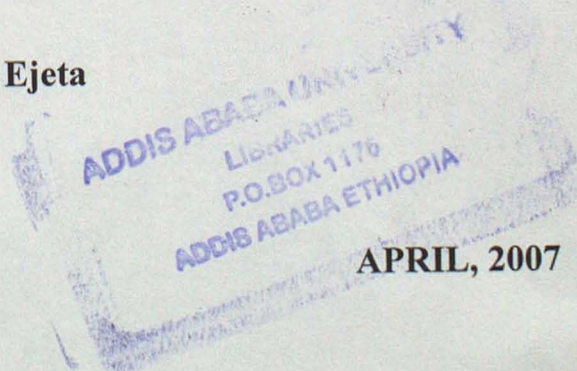
**ADDIS ABABA UNIVERSITY
COLLEGE OF EDUCATION**

Department of Educational Planning and Management

**In Partial Fulfillment of the Requirement for the Degree of Masters of
Arts in Educational Planning and
Management**

By:

Asfaw Ejeta



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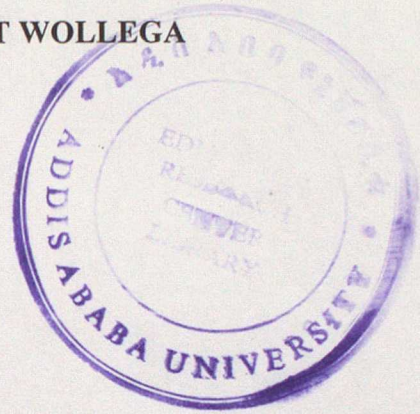
SCHOOL OF GRADUATE STUDIES

ASSESSMENT ON EFFECTIVENESS OF ICT USE IN

EDUCATION: THE CASE OF WEST WOLLEGA

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ASFAW EJETA



COLLEGE OF EDUCATION

DEPARTEMENT OF EDUCATIONAL PLANNING AND

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Abstract

The aim of this study was to identify the current status of information communication technology (ICT) use in education in high schools of area under study. The components of ICT that the study considered includes: instructional television (Plasma display panels), compacter and internet use that were introduced by Ethiopian government to improve quality of education especially in Preparatory level high schools. The primary objective of the study was to find out perceptions, opinion, and attitudes of students and teachers towards the advantage these package ICT use can offer in general and the importance ITV program offered in the following aspects that have major role to improve quality of education. The secondary objective of study was to find out whether basic factors that are useful to create ICT enabled learning and teaching environment to properly implement the technologies are available. Descriptive survey method was used to identify the attitudes of students and teachers towards the advantage the integrated ICT use offered in five major aspects including introducing, new pedagogical methods, enabling collaborations, accessing remote resources, extending new educational opportunity, and enabling knowledge for the work place. It was used also to assess the attitudes of teachers and students towards the importance that TV program offered in the learning-teaching process. The development level of provision of some features (e.g. human resource, equipment supply, content development of teaching and learning materials) related to proper implementation of the technologies were identified through perception of the users and document analysis. For analysis, the data was secured from samples of 134 students of grade 12, and 52 teachers who teach different subjects on ITV, Likert's scales were used to see opinion, perceptions, and attitudes of the respondents. For basic knowledge and skill of computer /Internet use, self rating scales were used. Results of the study indicates that, attitudes of the students towards the advantages of integrated use of ICT in education, and towards the importance of ITV program is positive except that, some students and teachers claim that some students could not cope with the speed and pronunciation of the TV instructors. On average, slightly both the students and teachers have positive attitudes towards the advantages establishment of the ICT components offered in improving quality of instructions and in accessing remote resources; and there is a better students' achievement after introduction of ITV for instruction. The results indicate also that insufficient skilled personals and inadequate supply of equipments. From this it was recommended that the government and other stakeholders have to provide shortages revealed, has to expand the technology to more improve and make sustained quality of education in the country.

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Abbreviations

AIME-Amount of Invested Mental Effort

CAI- Computer Assisted Instructions

CMI- Computer Managed Instructions

CRTVU- China Central radio and Television Universities

CTVTC- China Television Teachers' College

EMA- Educational Media Agency

ICT-Information Communication Technology

LCE-Laws of Compulsory Education

MOE- Ministry of Education

PDP- Plasma Display Panels

UNESCO- United Nation's Education, Scientific and Cultural Organization

UNECA-United Nation's Economic Commission for Africa

UNDP- United Nation's Development Program

CHAPTER ONE

THE PROBLEM AND ITS APPROACH

1.1 Background of the Study

Education plays a vital role in economic growth and development of a country. It develops human capital by providing basic knowledge, ability, skill and attitude. Because of this fact, all governments of all countries invest large share of their budget on education sector.

Growth and development of an economy could be achieved more by the skilled labor forces than by unskilled ones. Therefore, to sustain and secure its growth and development, well skilled human resource that the economy demands. However, this could be achieved if and only if all concerned bodies are committed to improve the quality of education that helps the acquisition of knowledge, skills and attitudinal change that can address the development goals of a country.

The education system of most developing countries- specifically in sub-Saharan African seems to be addicted to quality deterioration and high rate of illiteracy. Newhouse (2002) cites a report of World Bank (1988) that shows quality of education is below standard in these countries. Besides, it is not as such controversial that providing access to quality education in levels is almost recognized as human rights (Sharma 2002:167).

The disparity among different countries in providing basic education to all citizens simultaneously with good quality has its own factors. These factors could be born of lack of political commitment, financial constraint, weak education system lack of competent professional teachers and educational management personnel's or/ and lack of access to new technologies and so on. On the contrary, advanced countries are attempting to provide quality education for their citizens (USAID 2000, Deighton 1971). In these countries, such an attempt is supported by factors like: designing, adopting, innovating, or reforming of good policy, new technology, and education system with effective implementation.

In this regard, now-a-day, the introduction and development of information communication technology in teaching learning process is taken to be as one of the methods through which access and quality of education could be improved. As UNESCO (2005:3) report also shows, equal access to educational opportunities and quality education for all must be ensured through wide ranging education reforms, new teaching learning methods, and techniques.

In light of this, many countries have introduced different components of ICT to strengthen the teaching learning process in their schools.

It is obvious that technology is developed or adopted to solve problems associated with human need in more productive ways. That is why new technology is needed to be integrated in education systems as far as using of the technology could be effective in this sector.

Despite its advantages, integration of ICT in to the teaching – learning process has some constraints to adopt particularly in developing countries. The main factors that hinder the adoption and implementation of ICT in schools are problems of in affordability and lack of infrastructure. Apart from these, still there are also problems in countries, which have access to the technology. According to Reeves (1999), some of these problems are lack of computer literate teachers and students; evident guidelines available to be used to implement in schools and lack of integrated ICT curriculum.

Even though there had been some deficiencies and interference of external forces (e.g. Italy), Ethiopia has made efforts to provide relevance and quality education since the introduction of modern education in the country. However, until the development of the new Education and Training Policy, education's contribution was less to improve the lives of the society and the development of the country.

The Education and Training Policy of the Transitional government of Ethiopia (TGE: 1994) claims that the past education and training policy lacks quality, relevance and diversified objectives that have led to high education wastage.

In light of improving this objective, the current government launched different schemes to improve quality of education. As it is depicted in a report presented to UNESCO (2001), ICT is introduced in the education system to strengthen the expansion of quality education. The ICT project includes educational TV program, installation of satellite receiving devices known as plasma display panels (PDPs) for secondary schools (grade 9-12) transmission system at the center from Education Media Agency and a satellite network system. In doing so, currently six subjects have already been selected and are being delivered via satellite. The subjects are English, Mathematics, Physics, Chemistry, Biology, and Civics and Ethical Education.

Importing such new technologies does not make an education system effective, efficient, and adequate unless properly managed and implemented. Even though it is very necessary to produce skilled human resource that can cope up with to what the current and future economy of this world demands, managing the risk of technological innovations in the education systems call for committed concerned bodies.

It could be understood that the development of ICT passed through different success and failure in the teaching learning process. USAID (2000:1) explains that using educational television in the teaching learning process of Chinese education system succeeded throughout its history with minor constraints. But in some other countries the one-way communications of educational media are criticized because there is no interaction between the students and teachers (Jacob 1995; Deighton, 1971).

Therefore, ICT could be effective in an education system based upon different conducive factors and could not be effective; even could be resisted because of one or more of the factors described earlier.

It is with this aim that, the student researcher planed to assess attitudes of the students and teachers towards the effectiveness of introduction and development of ICT in teaching and learning process in the area under the study.

1.2 Statement of the problem

The introduction of information communication technologies in Ethiopia for educational use goes to early 1970s. For instance broadcasting educational television program started in 1965 and educational radio broadcasting started in 1971. However, due to lack of adequate resources like studio and transmission facilities the educational television broadcasting interrupted for about a decade until its return for Junior Secondary schools in 1988 (Teshome 2001).

The introduction of the technologies was to address specific issues related to access and quality as supplementary to the face-to-face learning and tutorial programs of distance education. Reviews of some studies (Teshome 2001 and Yared 2001) and a report to UNESCO (MoE 2004) aware us that Ethiopia continued to use different ICTs to solve the problems its education systems have been suffering from since then. In such away, like some of the developed and developing countries, Ethiopia also has been attempting to use integrated information communication technologies in education since 1966 E-C to improve quality of education and to harness the potential the technology has in education. However, some studies (Blurton in UNSCO 1999, Tinio2002, Teshome 2001) show that effectiveness of ICT use in education to meet the intended objectives could be influenced by different factors including infrastructures, capacity building, appropriate and relevant content development, capital investment to finance costs required to provide and implement the technologies. They also state that sustainability of these technologies should be given attention starting from the planning stage to its implementation, and then that it should be followed and monitored continuously.

To this end, the researcher tried to assess the current status of integrated ICT use in education. Thus, the main objective of the study was : to assess attitudes of the students and teachers towards the importance of TV program to improve quality of education, to assess perceptions of the students and teachers on the educational advantages ICT use in education offers, to assess opinion of students on presence of teachers support to enrich effectiveness of the TV program, to assess opinion of the teachers on appropriateness and similarity of content between TV program lessons and students' Text books to identify

infrastructure development level that create ICT enabled teaching and learning environment, and to identify major factors that hinder implementation of ICT use for general education in the area under study.

In light of the above statement, the study attempted to find appropriate answers to the following basic questions. These are:

1. What is the perception of students and teachers on educational advantage of using integrated ICTs in education?
2. What are the attitudes of students and teachers towards the importance of ITV program in improving quality of education?
3. What are the current impacts of using ITV Program for the teaching learning process?
4. To what extent are the required factors provided in integrating the ICT into general education?
5. What possible solutions that could be recommended for the major problems prohibiting effectiveness of ICT use in education?

1.3 Significance of the study

The attempt to provide quality instruction for high school students of Ethiopia through instructional television from a centre at a time was started in 1996 E.C. The intent of this program is to easily provide well trained and experienced educational experts, to access various pedagogical methods, and to access scarce and expensive laboratory equipments to improve quality of education and to narrow difference in education. Although Ethiopia has about three decades of experience in using television broadcasting in education, very limited research has been conducted as to the effectiveness of the programs. In addition to this, the basic objectives to be addressed and the way in which the objectives were designed to be addressed differ in some features. Thus, the current ICT package established to overcome short comings of the education system and to narrow the technology gap between the developing countries and developed countries calls for continuous research to identify effectiveness of the technology use. In this regard, the student researcher believes that the study is significant for the following reasons:

1. It provides information for policy makers, planners, and others stakeholders about the current status of ICT introduction and development in teaching-learning process to

expand to all education levels or to take corrective measures that enable for efficient and effective use of the technologies.

2. It provides a guide for schools, teachers and the school system in how to optimize the potential advantage of ICT for students' learning through the recommendations to be given based on the success or failure of the technology in achieving the intended objectives.
3. It points the major factors hindering the proper implementation of the technologies.
4. It can contribute to literatures that would be reviewed concerning "ICTs use in Ethiopian high schools."
5. It helps to encourage others to undertake similar concrete studies in all the components of ICT projects and even to make comparison among the different components of the technology to suggest the effective one in all aspects.

1.4 Delimitation of the Study

Even though it would have been good had it been made the case of all secondary schools in the region or in the country to arrive at meaningful indicators of success or failure of ICT, in the teaching learning process and the attitudes of the stakeholders, the study is delimited to West Wollega. The study mainly focused on the preparatory level where the plasma display panels and the computer networks are available simultaneously. This was preferred under the assumption that both cases could be studied using the same questionnaire and respondents at the same time.

1.5 Limitations of the Study

Introduction of ICTs in to the Ethiopian education system is a recently of measure being underway to improve quality of education. To this regard, the research is limited to review relevant literatures in context of Ethiopia. In addition to this there are no adequate materials to refer concerning the topic under the study.

1.6. Organization of the Study

The main objective of the study was to assess the current status of integrated ICTs use in education. In this regard, the first chapter of this paper introduces background of the study; the second chapter deals with review of related literatures; the third chapter deals with the design and research methodologies used; chapter four deals with description, presentation, analysis and interpretation of the results. The last chapter deals with summary, conclusion and possible solutions recommended for solving the major problems identified.

1.7 Definitions of key terminologies

1. ICT- enabled learning teaching environment – the condition in which infrastructure suitable for the effective of ICT are well developed in which professional teachers and technological specialist and capital for the investment are sufficiently available to facilitate the teaching- learning process.
2. Instructional television program – refers to the program recently launched by the Ethiopian government to provide quality instruction through Plasma display panels (TV) from a centre to all high schools of the country at a time in similar way.
3. Importance of ITV program- refers to the role ITV program had in improving quality of education to meet objectives of Ethiopian education and training policy
4. Computer Network and Internet using ability-awareness, knowledge and skills of students and the teachers that enable them to save time, to ensure quality of words, to retrieve, process communicate .
5. Advantage of ICP use in education- refers to the advantage package of the three components of ICT– Instructional television, Computer and Internet use in education that enables the users. It includes, new pedagogical method, collaborative work, access remote resources, new opportunity to education, and skill for the work place.

CHAPTER TWO

2.1. Information Communication Technology: An overview

2.1.1. Definitions of Information Communication Technology

The everyday attempt of human beings to overcome economic and social challenges-driven by different factors, forced them to search different alternative ways to escape the socio-economic problems that often arise. Throughout the world whether in developed or developing countries, given the limited resources, it is too difficult to satisfy the unlimited human wants. Therefore, to find best alternative use of resources including the human capital it self is determined by level of the skills, knowledge, and attitudinal change the citizens acquired through education and training. Therefore, providing quality education for all citizens at all education levels helps to enhance the development goals. To this end, many governments want to promote education with the pressure they are facing from the sprawling globalization.

However, the major problems of our world particularly of the developing countries, is lack of ability to provide quality education to cope with the more advanced countries. Most developed countries have been and are on attempt to introduce new information technologies (ICTs) in innovating teaching methods that enrich learning and enhance education quality.

Different scholars defined information communication technology in different ways. For example, Isaacs and others in UNECA (2003) generally defined ICT as, all tools that facilitate the production, transformation and processing of information including both the older technologies (radio and television), and digital technologies (computers and the internet). Blurton (1999) puts that, ICTs are a diverse set of technological tools and resources used to communicate and to create, disseminate, store, and manage information. Farrell in USECO (2003) meta -survey on the use of technologies in education described comprehensively that ICT is both newer digital technologies (i.e. computes, internet, e-mail, world wide web, wireless, etc) and the older technologies of Print, Radio, and Television that have been used extensively in both distance education

and classroom instruction. Again, a set of E- primers presented by UNDP (2003) to the world summit on the information society under the topic Application of Information Communication Technologies (ICTs) to Development defines as, “a diverse of technological tools and resources used to communicate, create and disseminate, store, and manage information including computers, internet, broadcasting technologies.” In a diversified way, Anderson (UNESCO 2005) referred it as, technologies for learning, that are the products and the process of technologies including interactive video, computer based instruction, and hyper media, which have been developed over time.

✓ 2.1.2. Types of ICT

Even though it could be difficult to firmly categorize the dynamically emerging and developing information communication technologies (ICTs), some authors and researchers categorize in to “old “and “new” ICTs. According to this category the so called old ICT includes print, films, video tapes, telephones, television and radio where as the new ICT include computer or the internet, world wide web, and so on (Blurton 1999; Tinio 2003; UNESCO 2004; Farrell 2003). Some also differentiate it into interactive and non-interactive, based up on the way the communication takes place between students and teachers, and between students of different class or geographical location (Yared 2001). The notion of interactivity of the ICT in this case goes with communication that can exist between the students of different areas or between teachers and students to more facilitate the teaching and learning process taking place. According to this classification ICT is classified into One-way communication- one-way audio, and one-way audio and video; and two- way- communication to mean two way audio, two way audio and two way video, and in some cases two –way videos and one way audio. However, the notion of interactivity could go apart from the above explanation when instructional materials are considered. Here, it denotes the interaction between the student and the material while the student is being engaged in the self-study of the material. This depends on the potential of the learning material whether it evokes successive responses from the student as the student progress through the contents of the materials or not. Furthermore, even, there is such a distinction which classifies into single ICT and digital ICTS.

Therefore, in respect to what the above scholars used to classify, the paper highlights some types and components of ICTs commonly used in education in both developed and developing countries.

1. **Print** - refers to instructional materials that can be used as a medium of instruction to transmit knowledge from sender to receiver. It could be provided in form of books, newspapers, guidebooks or printed medium to realize certain educational objectives. Printed materials especially text books have long been the foundation of classroom instruction (Heinich 1996) explain that the most common application of it is the presentation of content information and that it has some advantages and limitation at same time. Printed materials unique advantage that has to be noted is, its flexibility. This enables the users adapt to many purposes, may use in any lighted environment, and it can be used along with any other instructional media.
2. **Radio**-Radio is one of the technologies through which information reaches its receivers or users in such away that communication can take place when and where the sender and the receiver/s of the message; even when they are not contacting face- to face. It is a powerful medium for mass communication. It can also play, and has been playing a major role in imparting instruction to school children and enriching objectives of distance education. Therefore, it has been used widely as educational tool since the 1920s (V.Demiray, and A.Isman. 1999, Santhanam. S, A.Aanneerselvan, and K.Sanpuh 1954). However, coverage area of its broadcasts depends up on the power of the transmitters used. The ability of covering large and distant area is directly related to power of its transmitter.
3. **Educational Television** – The evolution stage and process of educational television had passed in different circumstances in different countries. As it is the case now days for the new technologies, a technology that might be old for the developed nations could be new for the developing countries from the perspective of adaptation, ease of use, integration of it in to respective economic development system in general and to the education system in particular. Therefore, challenges

facing diffusion of a technology in a country also may not be similar in the other country or the other technology in the country. In other words, it is to mean that, the invention of television didn't take place in all countries over the world at the same time. Its integration into education system and its development also takes the same concept. Transmitting information through television was first experimented in 1974, when Raul Ripkow invented a mechanical system for transmitting views by direct wires. After further development educational broadcasts were started for some schools through television. The first educational broadcasts began in Iowa in 1933. However, because of the economic depression and world war it didn't sustain and be effective. It was after the world war that educational TV broadcasting was re-emerged and defused through out the world, mostly from early 1950s to early 1960s (Murray 1987; Demiray, V. and Isman, A. 1999; Santhanam, S. K. Kanpath, A. and Anneer selvan 1984).

Despite its role in solving access, equity and quality related problems resulted from insufficient budget; lack of qualified teachers; geographical dispersion of the community; lack of basic infrastructure like road the educational television has not attained the promises expected by many educators. Gradually, it appeared less appreciated by the users. Some of its weak back ground was attached to the monochrome counterparts of the television, low quality, non versatility, and its unaffordability, unease of transportation, and so on. Therefore, it didn't meet the dynamic demand of the society that goes with a set of changing social and technological circumstances. But this had been solved through the emergence of other components of technology including the video, that when integrated with television can minimize the deficiencies (Murray 1987).

Even though, many other new technologies (like video conferencing and computer based) are emerging with more dispensable characteristics that are pedagogically conducive for active learning, TV broadcasting has been widely used as educational tools in both distance and conventional education since the 1950s.

Educational uses of television in education may be applied in the form of audio teleconference, audio graphic teleconference, viewing of pre-recorded video cassettes

and video discs, viewing of programs without direct feed back to the presenter, inform of both video and audio which can be take as good example of two- way-communication and one- way video and two-way audio (Heinich1986) . The author also mentioned that, there are five principal types of delivery systems for television. These are:

I. Broadcast Transmission

Broadcasting the transmission of powerful electromagnetic waves through the air are the delivery system that made television a popular home entertainment medium and are often useful as adjuncts to instructional television (ITV).

The programs are transmitted for direct classroom to enrich specific curriculum objectives through instructional television (ITV).To this end, ITV broadcaster has the role

- To assist classroom teachers
- To supplement classroom instruction
- To bring out side stimulation

II. Microwave Transmission

Is television signal broadcast in the microwave spectrum of above 2, 000 MHz for which license is required to transmit. Despite its reception is limited to a line of sight radius, it is large enough to cover some school districts nearer to each other.

III. Closed-Circuit Television

It refers to a private distribution system connected by wire that carries electrical impulses or thin glass optical fiber that carries impulses in the form of light. For that the signals can not be received outside the private network, it is used mainly to connect the building on an individual school or college campus and gives a private multi channel capability within those confines. Since it does not have regularity and central information source, and the high distribution cost, it is less effective to address quality and access related issues.

IV. Cable Television

Cable television concept is related to the attempt made to solve the weak signals of the first television due to interference from mountain over shadowing program delivery. As a solution to amplify and feed into a coaxial cable, that ran down the mountain into the nearest places, the idea of building a master antenna at top the mountain was developed and evolved to be called cable television since 1950s.

The availability of multiple channels with cable facilitates a number of special services like transmissions of several programs simultaneously, repetition of programs at different hours for more flexibility with classroom schedules, allows teacher or student access to materials and provides schools with special programming, teacher's guides and computer services which many of these program sources are not retransmitted from broadcasts (Heinich and others 1986).

V. Satellite Transmission

It is one of the means of communications that refers to an orbiting device in space that receives signals from stations on earth and retransmits them to distant location (Heinich 1986: 295). Satellites, as one of the major instructional tools, are the recently merging technology in higher education, school districts, and educational conferences (Wang 1995 XX11). Every satellite has the exact cover area of its own to set it appropriately and make the receiving signal of the ground station stable.

On the basis of their applications satellite systems can be categorized into two: those are used for remote sensing by taking pictures, capturing scientific data, etc, and those are used purely to transmit information. As the result of attempts to build larger and more powerful satellites along with making the ground reception equipment small and simple, it could be arrived at having satellites that allow home reception with dish receivers not more that eighteen inches across (Wang 1995 XX11, Heinich 1986).

Satellite system has unique characteristics which enabled it to rise on the horizon of educational field. These are: potential of covering a wide geographical area, carrying high volume of information, offering increased number of channels, most easily seen with

television, has potential of creating interaction when adjustment is done in collaboration with other technologies (Wang XX11, Heinich 1986)

4. Computers and Internet

Computer is a widely used medium of instruction since the 1970s (Newshous 2002:9). It can record, analyze and react to an individual response that are typed on key board or selected with a mouse. It also has the ability to control and integrate a wide variety of media like pictures, graphics, moving images, and printed information (Demiray and Isman 1999).

The potential it posses to integrate the wide variety of media and its flexibility of being used along with other technologies enable it to have more applicability in education. The way New house (2002: 66) defined computer "as an electronic machine which is used for strong , organizing, and finding words, numbers and pictures for doing calculations and for controlling other machines" also justifies good applicability of it in education. Some scholars put that there are also major applications of computer in instruction (Heinich 1986, Reeves 1998) where there are still others saying in three ways. Those classify it into two describes it in the following first two manners:

Computer assisted instruction (CAI) - In CAI the student interacts directly with the computer as part of the instructional activity.

computer- managed instruction (CMI) – In CMI the computer helps both the instructor and the student in maintaining information about the student and in guiding the instructional process.

Computer as an object of instruction - In this case it is directed to facilitate the ease use or friendliness of the technology. Computer can be an object of instruction, as in courses on computer science and computer literacy. Tinio (2002) shows that most computer literacy instruction incorporates three types of objectives:

- Knowledge - typically includes understanding terminology, identifying components, describing applications, and analyze social and ethical concerning the use of computers.

- Skill- include keyboarding and the ability to use computers for a variety of applications like word processing , searching data bases and retrieving information
- Attitude – focus primarily on acceptance of the computer as a valuable tool in work place.

Furthermore, advanced use of computer can be held by providing the appropriate components of technology including- Compact disc, Digital video disc, Video compact disc, and VR (Heimlich 1989).

Some of the above discussions on educational use of computer focus on the major applications of computer instruction. Nevertheless, applicability of computer in education goes beyond that when simultaneously used with the Internet technology. NewHouse (2002) for example pointed that the 1990s computer assisted and information access was as the result of popularity and accessibility of Internet based services such as electronic mail and the World Wide Web.

Thus, Internet has the potential of fostering the effectiveness of educational use of computers. The above author explained this in concrete way that internet use is one of the elements of effective ICT use in education. It offers the possibility to search for information and to meet and work together. It is also discussed in UNESCO (2004) that, internet has significant role to contribute more to some admirable importance of ICT use in education for supporting new pedagogical methods, access to remote resources, enabling collaboration, etc.

2.2. Importance of ICT in Education

2.2.1 Conventional Education

Around the world applications of information communication technologies (ICTs) are making significant changes in economic and social development. Therefore, now a day, most countries are struggling to have the advantage of change ICT offers to cope with what the market economy requires. Kozma (2001) relates these economic and social changes with the terms “knowledge economy” and “learning society” and advocates the

importance of knowledge and learning in economic productivity and social development. To elaborate the role of knowledge, he points that knowledge has high value for that it can be both engine, and the product of economic and social development. He also stated that knowledge is not static but dynamic. Thus, our understanding of past trends could show us that the dynamic of knowledge calls for well committed educational leaders and stakeholders, sound educational policy, and more investment to provide quality education for all the citizens. In such case, to be fruitful, experiences of different countries show that integration of ICT in to the education system should be a focus issue of the respective country's option.

Rational for using ICT in education may vary from country to country. The difference in the objectives and in the educational setting it was intended to address could result into the variation. However, from findings of some research studies and from most commonly used exemplary rationale of it, ICT may be generalized as bellow. Tinio (2002:6) lists rational for using of ICT as:

- 1 for extending educational opportunities;
- 2 to prepare individuals for the work place ;
- 3 to improve the quality of education ; and
- 4 creating learner – centered learning environment

Blurton in UNESCO (1999:7-11) in virtually similar way indicates that importance of ICT in education as:

- 1 to improve student out comes;
- 2 to support new pedagogical methods;
- 3 for accessing remote resources ;
- 4 to enable collaboration ;
- 5 for extending educational programs; and
- 6 developing skills for the work place.

Referring to it “education media”, Teshome (1998:11) also listed the importance of ICT with particular concern to developing nations as.

- 1 improving educational access
- 2 promoting equity in schooling
- 3 promoting educational quality
- 4 improving educational efficiency
- 5 political socializations and
- 6 development of technology for mass communications.

2.2.2. Distance Education

Distance education is alternative method to the conventional classroom based through which education can be delivered. Different literatures take back the concept of distance education to the period of correspondence. According to these writers the evolution of distance education begun from the time of St. Paul’s letter, that he had been writing for the ancient Christian Church members (Dimiray,U. and Isman1999).

Passing through the stage of correspondence DE developed to the current open learning style. Thanks to the human endeavors, it also evolved in the old technology delivery mode to the recently developing new technology based delivery method. In the past, the program made use of print, radio and television, but now, new ICTs are driving changes in the traditional distance education programs. The rise of these new information communication technologies resulting the development of global village, initiated governors to consider new ways to bridge the gap between developed and developing nations, and the disparity with in the nations as well.

In order to realize the intended objective of distance education programs, different delivery methods had been used and are being used around the world for different education levels.

Teshome (2001) indicates that print, Radio broadcasting, broad cast Television, non – broad cost AV Aids, face –to face tutorials and student support, computers , Telecommunication are some of the commonly used delivery methods of distance

education in higher education. Each of these tools have their own advantages and disadvantages, and relative values depending up on the educational objective to be met. There are also some researchers and scholar, who recommend the effectiveness of integrative use of the old and new technologies.

As it was stated above, distance education can be provided at the primary, secondary or/and tertiary education level. However, in respective of the education level, the core aim of it is creating educational opportunities for those other wise would not. ICT has a potential of addressing this aim. In support of this notion, Tinio explains the potential of ICTs as:

“ ICTs are a potentially powerful tool for extending educational opportunities both formal and non-formal, to previously underserved, constituencies scattered and rural populations groups traditional excluded from education due to cultural or social reasons such as ethnic minorities, girls and women, person with disabilities, and the elderly, as well as all other who for reasons of cost for because of time constraints are unable to enroll on campus (Tinio 2002:6) ”.

All educational technologies may not be equally important in a distance education program. It depends on the attempts made from the planning of it to its full implementation, and the quality and relevance of the program etc. In addition to, it also depends up on the educational problem it is aimed to address. A news letter by USAID (2004 Vol. 2, No 4) shows that ICTs are increasingly used in distance education to:

- 1 Improve educational quality where teachers have low knowledge in the subject areas they teach;
- 2 Provide learners with active and student centered lessons.
- 3 Enable to overcome urban Vs rural and males Vs female learning gaps.
- 4 Increase teachers professional development for both pre-service and in service training
- 5 Reduce education cost

2.3. Necessary factors to Introduce and Implement ICT in Education

It is when there is a problem faced that one searches for the solution. In the way of finding solution for the problems in order to be efficient and effective it is advisable to choose the best alternative which enable us to meet the target. Many problems may hinder education system of a nation to provide educational opportunities in quantity, quality, and equitable way. As a technology, ICT is developed to solve problems associated with the unlimited human want. Thus, the potential of ICT in education is forcing educational leaders, planners, and other stakeholders to use ICT in education to solve educational problems. However, the potential of each technology varies according to how it is used and the level of the investment made to provide the necessary factors that can affect the introduction and implementation of ICT in education. In order to make use of ICTs in education, there are different major factors to be considered. What some scholars (Tinio 2002, Blurton 1999) pointed is put below:

1. Careful Planning

Careful planning is the most important dimension that needs concentration during ICT use in education. Blurton shows that, a report of World Bank identifies three generic issues that planners need to consider when developing ICT use in education. These are educational policy and goals setting, teaching and learning, and institutional development and capacity building. In similar way Tinio (2001:2) listed some essential elements of planning for ICT as: a rigorous analysis of the present state of the educational goals at different education levels as well as different modalities of use of ICTs that can best be employed in pursuit of these goals; the identification of stakeholders, the piloting of the chosen ICT based model, the specification of existing sources of financing and developing strategies to sustain use of the ICT.

2. Infrastructure Development

This refers to sufficient amount of appropriate equipments that can be directly used or be used to facilitate the educational use of the chosen technology. It may vary accordingly with the type- older or newer technology used. Blurton in (UNESCO 1999), specifically

for the use of digital ICTs, lists that schools must be equipped with internet connection by means of telephone, cable network and modem or a direct connection. While, Newhouse (2002) discussed in four broad ways. The first is in terms of the hardware including computer, television sets, radios, etc. The second category as the libraries, where information is stored (example servers). The third, the networks, that enable information to move between and among machines and libraries including satellites, wires and cables and wireless networks. Further, as the operating system like windows and Linux, that allows the interaction to take place.

3. Content Development

Appropriate content in light of the objectives the education system intends to meet is necessary for effective use of ICT in education. When students use online resources to enrich their classroom learning as reference or the information for their project works or others purposes may face challenge on which one to rely on or not, since the bulk amount of information available on the internet could easily be accessed. In order to solve such problems different measures has been experienced. That is, regional collaboration between countries with similar language and cultures to develop ICT based content and different tools for creation of school nets on basis of agreement between countries or locally to provide services to teachers and students using locally produced content prepared by local educational groups.

4. Capacity Building

To create ICT enabled teaching and learning environmental and to make successful ICT integration through out the education system, all the implementing bodies must be developed. These individuals' collaborated efforts have potential of influencing the success of the activity. These individuals are Teachers, educational administrators, technical support specialists, content developers, etc (Tinio 2001, Blurton 1999).

5. Transferability

In order to make effective the educational use of a technology, particularly in developing countries- where resources are too scarce, institutionalizing the use of ICT

needs more concentration (Yared 2001). To guarantee transferability of a technology use in education, there must be effective use of it to harness the potential of that technology. It is after proper implementation that a technology could be appreciated being best alternative delivery mode of quality education or not. In consistent to this, sustainability consideration could direct as to realize transferability of information communication technology use in education to attain the short term and long term objectives it was set to achieve. However, sustainability of ICTS use in education can be influenced by economical, social, political, and or technological factors. Because, the presence of barrier caused by these factors may lead to lack of adequate infrastructure, lack of adequate developed human resources (Educational administrators, technical supporters, content developers and professional teachers challenges) related to financing cost of providing the technology (Tinio 2002, Isaacs and others 2005). To this end, the authors recommend that ICT program innovators should institutionalize the technology use to sustain it through partners ships building; restructuring management of the ICT organization independently; awareness creation for the community on importance of the technology on: how to implement, their clearly defined roles; and that the respective government should allocate sufficient budget to properly implement it.

2.4. Effectiveness of ICT in Education

Even though there is no standardized optimum use of ICT to assess the extent to which a given technology is effective in the education system, it could be assessed in light of the objective the technology is intended to meet .

So far, relative attainments of some variables have been used as effective utilization of different ICTs. Some of these variables range between qualitative factors, which one cannot use and empirically explain to quantitative variables that have potential of explaining the significance of the effectiveness. These are student's attitude, teachers and student ease of use, student out comes, student achievement, student's motivation and engagement, so on (Murray 1987). Still, however, it is difficult to generalize effectiveness of a technology in specific geographical location with specific educational objective for others in different situations. Neal (2005) discuss that, the way a

technology is used may create different learning approach resulting in different attitudes to learning , levels of motivation and engagement and then different attainment levels.

When assessing effectiveness of ICT, Blurton in UNESCO (1999) suggest to consider some aspects like how effective ICT- mediated instruction is when compared to traditional face- to- face instruction , what ICT enables that would not other wise be possible, and that ICTs worth their costs. According to explanation of the author, the three aspects used to show the effective use of ICT in education are:

1. ICT- mediated instruction

Information communication technology mediated instruction is referred to instruction delivered through a technological channel such as television, radio, or a computer and network.

2. ICT- Enabled Education

Information communication technology- enabled education is referred to the technology that enables students and teachers to do that they would not other wise be able to do.

In this case to identify the role ICT use had in education. One can consider the following five aspects. Supporting new pedagogical methods; access remote resources; enabling collaboration; extending educational programs; and developing skills for the work place.

3. Cost- Effectiveness

Is the third issue suggested to be considered when assessing the effectiveness of ICT in education It is described that even though quantitative measures are easier to construct, qualitative differences may ultimately be more important in assessing the cost –effectiveness of ICT. This could have been reached up on by grouping incorporating ICT into education into : learning about ICT, learning by ICT, and learning with ICT. But how to measure educational goal, variable constituting

effective and sufficient integration ,and how to asses the cost effectiveness of ICT – equipped versus non ICT equipped classroom by taking in to account less tangible benefits made it difficult.

As an alternative, the author recommends to use cost comparisons, costs of alternative technologies, costs to society in line with the attempt to bridge digital divide, and related issues.

2.5. Practices of China and South Africa

2.5.1. The Case of China

China is one of the developing countries which have been undertaking different attempts to alleviate access and quality related problems in its education sector through the use of information communication Technology (ICT). A type of the ICT that had long evolved and had good experience sharing success since the 1950s in China's education system is educational Television training (Wang, 2000).

Even though discussing the whole historical development of the educational television training is irrelevant to the scope of this paper, rather mentioning some educative lessons from the challenges and success of integrating ICT use that China experienced, it might not be useless to have hint about its evaluation background. It is passing through different challenges and problems that ETV training of china could be assumed to have explainer success history in achieving the intended goal for which of was established.

Therefore, most developing counties which have similar geographic location, and will integrate or are integrating similar technology into their education system could harness the potential of the technology. It is not only from success that one can learn. But also failures and challenges encountered a nation can contribute to property plan and implement it.

The historical development of the current China's ETV training had its own evolutionary process. According to Wang, the first radio and correspondence university was set up in

1958 and followed by the establishment of Radio and Television University in the subsequent years. The universities had provided professional and skills training, teaching skills for primary school and secondary school teachers. However, until the late conventional schools remained the primary 1970s means of training in all fields of education because of the halt in 1986 by the cultural revolution. Apart from that, the national examination system during the revolution deprived hundreds of millions of qualified young people opportunities for higher education.

As an option to relying on the conventional schooling to educate these large numbers of young people, China central Radio and television universities (CRTVU) were established in October 1977. The universities network consisted of 28 provincial Radio and Television universities, 279 municipal branch schools, and 625 county level work stations. The universities offered higher education courses in: Industry, Agriculture, Liberal arts, Science, Teacher education, Finance and Economy, law and Arts (Wang, S. 1995).

For a nation it is very decisive factor, to supply education services—particularly basic education to all citizens to increase productivity and production to sustain the economic development intend. To this end China promulgated nine years of basic education to all its children as the law on compulsory education in 1986 (Yuxia and Chunjie, 1994).

Given the limited resources cumulated with rapid population growth, it is common to every country and regions that it is difficult to alleviate all the deficiencies in an education system at once. When attempt is made to solve the one which is related to access, the quality related may be emerged and so on. On one hand, following the introduction of LCE unqualified and/or individuals without teachers training, individuals with equivalent degree or diploma without teaching skill training were appointed, and primary schools teacher were promoted to secondary school without further training. On the other hand, for the assurance of quality of education to be given, government of China set standards for the level of training that would be

required for the to be teacher and already existing teacher (that is, 95 percent of primary school teachers and 80 percent of secondary school teachers should have reached the qualification requirement laid out as the year 200).

The other contributing factor to the then development of the education television was the policy change done in the late 1970s. Whether for developing nations or for the developed nations to sustain the development, accessing and improving their education system should be the key activity. China under took dramatic policy change with the focus on economic development. Thus, again the policy called for educated population to be realized. To address these challenges educational reform was one of the policy changes made in 1970s by China. These over whelming issues necessitate the government to establish the China Television Teachers' College (CTVTC) in 1987 to offer the in-service teachers training courses through educational Television (Wang, S. 1995).

In China's education system the 1986 established satellite TV communication to train primary and secondary school teachers had contributed much in supplying teachers with appropriate qualification and teaching skills the sector required. Some scholars state that, the effectiveness or in effectiveness of a technology, should have not correlated with a media, rather with the way it was used the quality of the program, altitude of the users or relevance of content of the program and other related factors(Wang, 2000). For example: In order to implement the teachers training program, China established and strengthened administration and organization of the program from the national level to the township level. Every involved body and structure had its own duties to perform. Next, it used the best key lectures, best written materials to support the trainees, best production partners for quality assurance of the program. Third, production and transmission way of the program has played significant role to the development. The programs were produced in the studio and at field as need called for it. The production was done by aboard experts and complemented by centrally produced local program. As the result of relative properly utilization of satellite communication technology to achieve training through educational Television achieved the following success or failure.

1. Effect on teaching Practice
2. Program and material development
3. Examination pass rate
4. cost minimization
5. Increase in number of teachers trained
6. Expansion of the program.

2.5.2. The case of South Africa

South Africa is one of the African continent countries which has better modality for its attempts to bridge the technology divide between the continent and other developed nations. It also shares the diverse socio-economic conditions across some counties in Africa and between African and other developed nations. As far as development and the digital gap is concerned, provision of quality education with adequate access through integration of ICT into education is essential measure. To enhance this, South Africa has been undertaking different initiatives (Isaacs and others, 2003).

Some of the initiatives objective is aimed at the core to restore a culture of teaching and learning with in new curriculum frame works as the merging of historically diverse systems into a unified democracy continues. That is, they all shared the vision of extending their reach through satellite technology in order to address the challenges of education in south Africa. One that may be considered to have educative experiences is Tele Turks.

Tele Turks – is one of the initiatives aimed to offer quality education in the more difficult aspects of the subjects for grade 11 and 12 to improve the national Grade 12 exit examination pass a rate - especially in Mathematics and science. It is offered by university of Pretoria institution via satellite.

Therefore, says Evans(2005) satellite ITV, TeleTuks, seems to have good educative experience for its effort to match the content of the instruction with the curriculum since the lesson are generic and aim to review than introduce new content. The

national core syllabus is also the main guide to planning lesson content. In addition to, mode of content delivery during broad cast seems to be integration of the traditional and the new pedagogical method. It is being delivered as, "taking head" explanations and visual material use to clarify concepts is applies further more. Even though there is no live asynchronous interaction, the possibility the learners had to ask questions at any time during a broadcast to which the presenter will then respond immediately through telephone or by fax after broadcast has potential of motivating the learners.

TeleTuks of South Africa , despite its potential of motivating and engaging learners through its interactive advantage and relevance of the instructional contention with the curriculum and syllabus has some short comings . Evans discussed its short comings in terms of lack of learners flexibility or choice of study time for that the broadcasts are transmitted after school hours ; lack supportive print materials ; lack of multi-site audio or video linkages; less learner's participation during the broad cast, etc (Isaacs 2003).

2.6. Criticism and Limitations of ICTs

2.6.1. Criticism of Instructional Television

Amare (1998), in his study aimed at examining television method of learning, reviewed scattered research results and compiled to examine the historical relationship between television method of learning and the least effort principle. His review concluded that due to transfer of learning students avoid learning materials that require high amount of invested mental effort (AIME) and seek information that fits the requirements of television method. He examined from three different perspectives and pointed that the sources of television weakness and strengthens are: source attribution (content attribution), audience attribution and technology (or media) attribution. The first attribution refers to the argument that the source, the nature and the content of the program determine the effect of television in student. The second attribution deals with how the audience (students) them selves affect their own perceptions of the requirements of the media which in turn affects their own method of learning. The third attribution, referees to as media or technology determinism. The latter is to mean to technology used has more impact than content, audience, environment, etc.

The author has given three arguments to show the hypothesis that television method of learning is the antithesis of learning with hard work ethic. There theories and justifications of the antithetical characteristics of television method of learning with hard work ethic. These are : theory of competition for attention; automation and visual distance theory where as weaknesses of television in relation to these theories are lack of application of any mental efforts necessary for critical thinking; reducing readership styles of students driving to rendering the ethical of hard working; and results in shorter visual distance implying less mental engagement are the regulative out comes respectively(Amare 1998: 1-11).

2.6.2 Limitations of Computer Based Instruction

Even though basically aim of using ICT in education is to provide quality education at affordable cost to develop competent human resource in adequate and equitable way, some educational technologies still exist with prohibiting factors that minimize the maximum advantage they would have given. In summarizing the limitation of computerized instruction, Heinich (1986) illustrates the factors and their effects as: lack of access because of in adequate provision of related infrastructures hardware and soft ware for the education program could not efficiently and effectively address the education problem; Un realistic expectation; low quality program- most computer based instruction does not teach effectively in the affective, Motor, or interpersonal skills domain; Lack of originality- creative or original leaner responses may be ignored or even rebuked if the programs designer has not anticipated such possibilities; and lack of socialization computer based instruction usually lacks socialization.

2.6.3. Criticism and Limitations of Internet

Despite of its critical role in education, internet, not yet much used compared to the older ICTs. It has the greatest educational potential and well demanded for its very well sophisticated nature to support new pedagogical method, accessing remote resources, enabling collaboration etc, much has to be invested to produce and distribute the

technology . However, internet has some limitations that hinder the users to harness the educational advantages it has. As listed in, Heinich (1986) the limitation comprises lack of access; learning curve. the telecommunications software difficulty of use; lack of good technical support; lack of immediacy; and age inappropriateness of the material discussed on the internet deteriorates the infusion power it possesses in education system.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

The study followed the descriptive survey method. The method was chosen to be the preferable design of the analysis since it is appropriate method to gather several kinds of data to identify current elements that constitute to issues in effectiveness of information communication technology (ICT) use in education Koul (1984). The approach was assumed also to help as a stepping-stone for a further in-depth study and to underway changes that could appear in the future. Adequacy and sufficiency of the existing in puts for the technology use was identified from document analysis. Accordingly, the issues the study dealt with were the students' and teachers' perception, opinion and attitudes towards the: advantages of ICT use in education, educational benefits of ITV program, computer and Internet use ability, class room teacher's role, content development of ITV program, and Infrastructure development.

3.1 Sources of Data and Sampling

There are nineteen (i.e. Seventeen existing and two new) high schools in West Wollega out of which three belong to non-governmental organization. Most of the high schools are grade nine to ten level. There are a total of grades nine to preparatory (grade nine to twelve) level high schools. However, only four of these including Boji, Gimbi, ManaSibu, and Nedjo high schools are equipped with simultaneous supply of plasma displaying instructional television, and computer or/and Internet use. There are still also, high schools with, out the ITV. For this study, the four preparatory high schools (Boji, Gimbi, ManaSibu and Nedjo) were all selected.

For the primary data collected from students, grade 12 students were chosen under the assumption that adequate, relevant and complete information could be forwarded well from them. The investigator felt that grade 12 students are relatively matured and have experience in learning both "with" and "without" ICTs. Then, quota-sampling technique

was used in order to make guaranteed that students in each high schools would be represented in proportion to their size in the population. Accordingly among the total of grade 12 students, 160(20%) were selected as sample for area in the study.

Further more, due to limited number of teachers who teach the subjects presented on plasma displaying TVs, availability sampling technique was used for the teachers. Thus, 52 teachers were involved in the study. Information about the students was collected from annual reports of Zonal Education department office. Moreover, to have information about infrastructure availability head count was made.

3.2 Instruments of Data Collection

Questionnaire

A set of both close-ended and open ended type questionnaire were prepared for the students to prevent them from giving either biased or restricted response. The questionnaire was translated in to Afan Oromo to avoid misinterpretation and misunderstanding on the part of the respondents. The questionnaire has four major parts. The first part was used to assess perception of the students on the advantage of integrated ICTs use in education, the second part to assess their attitudes toward the educational importance of Instruction TV program to improve quality of education, the third part to assess opinion of the students weather the class room teachers are playing their role, and the last part was the open-ended questionnaire part that was to strength the items in the close- ended type.

The questionnaire for teachers respondents also was the same with that of the students' with some modification on similarities of content development between the ITV program and student's Text books.

Document Analysis

Document analysis was made by the researcher to evaluate students' out come based on grade Ten National Examination result of six consecutive academic years (i.e. 1993-1998 E.C). In this case, the attempt was to see whether the students' exam pass rate during

“with out” ITV and “with” ITV was different. In other wards, comparison of 10th grade GPA Ethiopian School Leaving Certificate Examination of students before innovation of ICTs with the results after the innovation was made.

3.3 Data Collection Procedures

A set of questionnaire was prepared for students. Then, pilot test was done on grade 11 students of Gimbi high school. Based on the comments of some colleagues and students; few items were omitted; ambiguous terms were changed. Then, the questionnaire was refined and set.

Another set of questionnaire was also prepared for teachers who teach preparatory classes and teach subjects on ITV at the same time. The questionnaires were distributed to sample students and teachers through the researcher and schools’ director. Document analysis was made for the students’ achievement measure. Identification of necessary infrastructure suitable for the ICTs use was crosschecked with the documents at the presence of school directors.

3.4 Methods of Data Analysis

The analysis and interpretation of this study was based on the data secured by applying the above instruments. Responses were tallied and frequencies were calculated in percentages in accordance with each questionnaire component and shown in tables. Descriptions and interpretation were presented immediately after the tables. Responses to open-ended questions were grouped in to similar idea and presented. Finally, document analysis was described and followed by brief discussion. In such away, various statistical tools such as percentages, averages, examination pass rates and rating scales were used.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

This chapter deals with describing, analyzing and interpreting data that obtained from questionnaires and document analysis. All the basic data pertaining to the issue were summarized in tables, and responds to the open-ended questions were stated in statements. Of the total questionnaires distributed to 160 students, 134(83.75%) were completed, returned, and used for the analysis.

4.1 Characteristics of the respondents

4.1 Table 1: Characteristics of the respondents

No	Item	Teachers		Students	
		No	%	No	%
1	Sex:				
	male	52	100	104	77.61
	female	-	-	30	22.39
	total	52	100	134	100
2	Age:-16-19	-	-	96	71.64
	-20-25	11	21.15	38	28.34
	-26-30	13	25	-	-
	-31-35	5	9.62	-	-
	-36-40	7	13.46	-	-
	Over 40	16	30.77	-	-
	total	52	100	134	100
	3	Education level:			
Diploma		19	36.54		
BA/BSC		33	63.46		
over BA/BSC		-	-		
total		52	100		
4	Year of service in teaching:				
	1-5	21	40.38		
	6-10	8	15.38		
	11-15	6	11.54		
	over 15	17	32.6		
	total	52	100		

As indicated in table 1, out of 134 student respondents 77.61% were male and 22.39% were females. Again, out of the 52 teacher respondents all were males. This indicates that female students and teachers are few in number at the preparatory level. This could be resulted from deficiency of the educational system to treat female students favorably or the impact of cultural depression inherited from past generation. The table shows also that education level of 36.54% of the teachers is diploma level and of 64.64% of the teachers is first degree level (i.e. BA, BSc, and BAEd). This illustrates that, teachers' development need more financial investments and political leaders' commitments in collaboration with the all level educational offices personals.

4.2 Importance of ITV program to improve quality of Education

Table 2: Teachers' perceptions on importance of ITV program to improve quality of education

No	Items		SA	A	U	D	SD	X	Total
			5	4	3	2	1	-	-
1	Educational quality cannot improved with ITV program	f	1	2	6	24	19	1.88	98
		%	1.9	3.9	15.5	46.2	36.5	-	100
2	ITV program assists to reach populations with poorer quality instruction.	f	22	21	5	2	2	4.13	21.5
		%	42.3	40.4	9.6	3.8	3.8	-	100
3.	ITV assist to provide educational such as highly trained teachers and laboratory equipments.	f	26	22	3	1		4.38	228
		%	50	42.3	5.8	1.9			100
4.	ITV is not good to increase students' achievement.	f	-	3	8	25	16	1.96	102
		%	-	5.8	15.4	48.1	30.8	-	100
5.	ITV program lesson does not consider the slow learners.	f	1	2	7	22	20	1.88	98
		%	1.9	3.8	13.5	42.3	38.5	-	100
6.	ITV program is enjoyable.	f	24	19	5	2	2	4.17	217
		%	46.2	36.5	9.6	3.8	3.8	-	100
7	ITV program is not appropriate for authentic learning.	f	-	1	9	22	20	1.83	95
		%	-	1.9	17.3	42.3	38.5	-	100
8	ITV program is important for critical/ detail learning.	f	21	23	6	2	-	4.21	219
		%	40.4	44.2	11.5	3.8	-	-	100
9	Learning by ITV program hampers its learners to participate	f	11	17	10	8	6	3.37	175
		%	21.2	32.7	19.2	15.4	11.5	-	100
10	ITV program can develop problem solving skill of the students.	f	23	19	7	2	1	4.17	217
		%	44.2	36.5	13.5	3.8	1.9	-	100

As shown in table 2, item 3 was accepted by 92.3% (Strongly agrees plus agrees), item 8 were accepted by 84.6%, items 2 and 6 by 82.7%, and item 10 was accepted by 80.7% of the teachers. The mean rating value of all the items was more than the rating value of agrees (i.e. 4). Hence, the position of the teachers was that, ITV program could improve quality of education by assisting to reach populations who had much poorer quality instruction, by providing educational resources that were scarce and expensive to accommodate, by motivating students engagement by providing critical or detail learning, and by developing problem solving skill of the students.

The respondents did not accept items 1, 4, 5, and 7. Most of the teachers 82.7% (Strongly disagree or disagree) of 80.8% and 80.8% respectively to the idea of ITV not being helpful to learning rejected the items. This shows that, the teachers were in a position that ITV program could contribute to improve quality of education. In other words they believed that ITV program would not hamper quality of education rather it could increase student's achievement, increase authentic learning experience of the students, could access to talents of different education specialist.

On the other hand, item 9 was accepted by 53.9% of the teachers. It implies that, more than half of the teachers believed that the students were not capable of understanding fluent pronunciation of the ITV program teachers.

Table 3: Student's Perception on Importance of Instructional Television (ITV) Program

No	Items		SA	A	U	D	SD	X	Total
			5	4	3	2	1		
1.	Educational quality cannot be improved with ITV program	f	40	66	19	8	1		266
		%	29.9	49.3	14	6	0.7	1.99	200
2	ITV program assists to reach populations with poorer quality instruction	f	60	58	15	1	-	4.32	571
		%	44.8	43.3	11.2	0.7	-		100
3	ITV assist to provide educational in put such as highly trained teachers and laboratory equipment	f	67	48	9	7	3	4.26	570
		%	50	35.8	6.7	5.2	2.2		100
4	ITV is not good to increase student's achievement	f	2	5	13	75	39	1.93	258
		%	1.5	3.7	9.7	56	29.1		100
5	ITV program lesson does not consider the slow learners	f	2	7	18	74	33	2.04	273
		%	1.5	5.2	13.4	55.2	24.6		100
6	ITV program is enjoyable	f	76	40	13	3	2	4.38	587
		%	56.7	29.9	9.7	2.2	1.5		100
7	ITV program is not appropriate for authentic learning.	f	1	5	23	69	36	2.00	268
8	ITV program is important for critical/ detailing learning	f	42	62	19	10	1	4.00	536
		%	31.3	46.3	14.2	7.5	0.7		100
9	Learning by ITV program hampers its learners to participate	f	32	38	20	23	17	3.29	441
		%	23.88	28.36	14.93	17.16	12.69		100
10	ITV program can develop problem solving skill of the students	f	56	72	4	2	-	4.36	584
		%	41.8	53.7	3.0	1.5			100

As shown in table 3, the agreement (strongly agree plus agree) of student respondents on items 2, 3, 6, 8, and 10, was relatively high (i.e. above 85% except for item 8 which is 77.6%). That is, 95.5% of the students accepted items 10 and 14, 85.1% of the students item 2, 86. % item 6, 85.8%, 85.1 accepted items 3 and 4 respectively.

The mean rating value of items 6,10,2 and 3 is above 4 (i.e. 4.38, 4.36, 4.32 and 4.26 respectively). The mean rating value of item 8 is 4. The mean rating value of all of the five items is greater than the expected average mean (i.e. 3). This shows that most of the students had positive attitudes towards the importance of ITV program. They believed that, using ITV program for classroom teaching and learning could improve quality of education; that ITV program important to provide quality instruction; supply scarce and expensive educational resources; that it was motivating, it was important for critical learning, and develop problem solving skills. However, 52.24% of the respondents supported item 9. This shows that slightly more than half of the students were not satisfied with the speed and pronunciation of the online teachers.

On the other hand, 85.1% of the students rejected (disagree and strongly disagree) item 4, while 79.8%, 79.2% and 78.4% items 5, 2 and item 7 respectively. Hence, most of them were in a position that ITVP could be important to improve quality of education. Even though it may not be sufficient to firmly express the extent to which and how it could improved quality of education with out experimental research in which other factors are controlled the positive attitudes of the respondents showed that the innovation should be expanded to address the objective it was set for and what reviews of some research state. For instance, summary of research findings explained in USAID (2004) indicates that ICTs are mainly effective when used to improve educational quality, where teachers have low knowledge in the subject areas they teach. Blurton in UNESCO (1999) also indicates merit of ICT-use in education could be assessed by the improvement it enables. Examination of the study in this case revealed that provision of the ITV program is important to improve quality of education. Most of the respondents believe that ITV program use for class room instruction can enable the students to get the educational resources that can foster quality of the instruction; enable the students access to knowledgeable and skilled teachers; access to different specialists to clarify abstract

contents; and it can also develop critical learning experience, problem solving ability of the students. Above all, they also believed that ITV program has motivating potential than the ordinary face-to-face education. Hence, the positive perceptions the students acquired towards the technology could have major impact on their learning outcomes. Nevertheless, there are still other issues to be taken into account to create more conducive environment for the learners. To this regard, the unique finding about the students' attitude towards the ITV program is that they were not favored for speed and pronunciation of ITV program teachers to properly hear and take notes simultaneously.

4.3 Educational Advantage of using Integrated ICT in Education

Table 4: Teacher's Perception on Educational Advantage of using Integrated ICT

	Items		SA	A	U	D	SD	X	Total
			5	4	3	2	1		
A 1	In supporting new pedagogical method Develop critical learning of students.	F	25	22	2	3	-	4.33	22.5
		%	48.1	42.3	3.8	5.8	-		100
2	Develop problem solving ability.	F	21	24	3	-	4	4.12	21.4
		%	40.4	46.2	5.8		7.7		100
3	Help to work on real-life problem in. depth.	F	17	15	17	2	1	3.87	201
		%	32.7	28.8	32.7	3.8	1.9		100
4	Help by making learners less abstract and more relevant to their life situation.	F	14	23	5	8	2	3.75	195
		%	26.9	44.2	9.6	15.4	3.8		100
5	Develop authentic learning experiences.	F	14	25	5	8	-	3.87	201
		%	26.9	48.1	9.6	15.4	-		100
6	Develop social negotiation or knowledge.	F	7	23	13	7	2	3.50	182
		%	13.5	44.2	25.0	13.5	3.8		100
7	Help through integration of pedagogical methods.	F	37	11	4	-	-	4.63	241
		%	71.2	21.2	7.7	-	-		100
B 1	In enabling collaboration Encourage interaction and cooperation	F	25	21	1	1	4	4.19	218
		%	48.1	40.4	1.9	1.9	7.7		100
2	Provide the opportunity to work with students of different culture and ethnicity.	F	25	17	3	5	2	4.12	214
		%	78.1	32.7	5.8	9.6	3.8		100
3	Develop ability to work in team.	F	25	19	4	4	-	4.25	221
		%	48.1	36.5	7.7	7.7	-		100
C 1	In accessing remote resources. Allow the students in remote to actions to have direct learning form experienced, skilled and qualified teachers.	F	30.7	14	4	3	1	4.33	225
		%	57.7	26.9	7.7	5.8	1.9		100
2	Allow the teacher to sharer new and relevant teaching experiences from the online teachers.	F	29	21	9		2	4.44	231
		%	55.8	40.4	-		3.8		100
3	Provide a access to expensive and scarce laboratory equipments when experiment, demonstration, and different activities take place from a central transmission	F	29	18	2	2	1	4.38	228
		%	55.8	34.6	3.8	3.8	1.9		100
4	Access to real situation images of the world, which other means can not offer to understand abstract content of lessons.	F	30	14	5	2	1	4.35	226
		%	57.7	26.9	9.6	3.8	1.9		100
5	Access to different specialists to make more clear contents that are beyond abilities of the teachers.	F	28	18	2	2	2	4.38	224
		%	53.8	34.6	3.8	3.8	3.8		100
6	Internet enables the teachers to find access resources that can be used for their own lesson preparation.	F	26	10	10	4	2	4.04	210
		%	50	19.2	19.2	7.7	3.8		100
7	Internet enables the teachers to access curriculum and instructional guides.	F	22	16	7	4	2	4.06	211
		%	42.3	30.8	13.5	7.7	3.8		100

In the above table 4, different items are listed under three major aspects that could influence effectiveness of educational use of ICT in education. The aspects are itemized in to A, B and C. The teachers' agreement (strongly agree plus agree) on items 1, 2, 7 in A; item 1 in B; items 2, 3, 5 in C was relatively high. Each of the items was supported by mean rating value of greater than 4: i.e. 4.33, 4.12, 4.19; 4.44, 4.38 and 4.38 respectively. This indicates that high majority of the teacher respondents are in position to the advantages of integrated IC T use has to develop critical learning, ability to work in team, that it allows the teachers to have new and relevant teaching experiences and provides education in puts that a high school can never at all.

The mean rating value of all the rest items was also greater than the expected average mean (i.e. 3). Thus, in general most of the teachers perceived that instructional television program, computer and internet use in education could support to enrich the new pedagogical method, access remote resources, enable collaboration.

Table 5: Teachers' Perception on advantage of using ICT in Education to enable educational opportunity and to develop skills for the work place

Items		SA	A	U	D	SD	x	Total		
		5	4	3	2	1				
A	1	In enabling educational opportunities	F	18	29		2	3	4.10	213
		Enable the teachers to up grade their education.	%	34.6	55.8		3.8	5.8		100
2		Enable the teachers to have different training programs to improve their teaching methodologies.	F	24	12	11	4	1	4.04	210
			%	46.2	23.1	21.2	7.7	1.9		100
3		Enable educational opportunity for civil servant to improve their educational level.	F	16	18	10	5	3	3.75	195
			%	30.8	34.6	10.2	9.6	5.8		100
4		Offering lifelong learning opportunities.	F	20	13	13	5	1	3.88	202
			%	38.5	25	25	9.6	1.9		100
B	1	Both internet and instructional TV program possible learning characterized by time log between the delivery of instruction and in reception by learners.	F	6	20	15	9	2	3.37	175
			%	11.5	38.5	28.8	17.3	3.8		100
2		In developing skills for the work place	f	17	15	15	-	5	3.75	195
		Skill of computer and internet use enable to be good competent to embark on career.	%	32.7	28.8	28.8	-	9.6		100
3		Computer and internet using skill secure suitable employment.	f	18	13	15	2	4	3.75	195
			%	34.6	25	28.8	3.8	7.7		100
4		The skill enhances productivity.	f	17	24	5	2	4	3.92	204
			%	32.7	46.2	9.6	3.8	7.7		100
5		Develop learning skills that result to making judgments	f	21	17	7	5	2	3.96	2006
			%	40.4	32.7	13.5	9.6	3.8		100
6		Develop communication skill.	f	25	20	6	-	1	4.31	224
			%	48.1	38.5	11.5	-	1.9		100
7		Develop ability to find and use appropriate use of information.	f	30	16	5	1	-	4.44	231
			%	57.7	30.8	9.6	1.9			100

In the above table 5, two broad features of ICT use in education are listed. Under each category there are items to measure the future expectation of the users for the integrated use of ICTs in education. In such a way, relatively high respondents (above 85% for each) of the teachers were accepted item 1 and item 6 of category B with mean rating value of 3.92 and 4.23 respectively (strongly agree plus agree). This implies that most of the teachers highly perceive that acquiring knowledge of and skills to use computer could enable to increase their productivity. It can also enable them to find information communicate and use it. In addition to that, some of the students (above 60% for each) accepted all the rest items. All the items were accepted with mean rating values greater than the average mean value, i.e. 3. This shows that, the teachers perceived that computer and internet use in collaboration with ITV could improve the access to educational opportunity and develop skills for the workplace.

Table 6: Students' perception on educational advantage of integrated ICT to offer new Pedagogical methods, enable collaboration and access to educational resources

	Items		SA 5	A 4	U 3	D 2	SD 1	X	Total
A	In supporting new pedagogical methods	f	66	44	8	13	3		559
		%	49.3	32.8	6	9.7	2.2	4.17	100
1	Develops critical learning of students.	f	59	43	19	10	3		547
		%	44	32.1	14.2	7.5	2.2	4.08	100
2	Develop problem solving ability	f	48	43	27	12	4		521
		%	35.8	32.1	20.1	9	3	3.89	100
3	Help to work on real-life problem in-depth	f	70	35	18	4	7		559
		%	52.2	26.1	13.4	3	5.2	4.17	100
4	Help by making learners less abstract and more relevant to their life situation.	f	64	54	7	6	3		572
		%	47.8	40.3	5.2	4.5	2.2	4.27	100
5	Develop authentic learning experiences	f	62	35	22	10	5		541
		%	46.3	26.1	16.4	7.5	3.7	4.04	100
6	Develop social negotiation or knowledge	f	63	39	19	7	6		548
		%	47	29.1	14.2	5.2	4.5	4.09	100
7	Help through integration of pedagogical methods	f	69	47	11	7	-		580
		%	51.5	35.1	8.2	5.2	-	4.33	100
B	In enabling collaboration	f	62	39	17	12	4		545
		%	46.3	29.1	12.7	9	3		100
1	Encourage interaction and cooperation	f	71	53	7	1	2		592
		%	53	39.6	5.2	0.7	1.5		100
2	Provide the opportunity to work with students of different culture and ethnicity	f	82	25	20	3	4		580
		%	61.2	18.7	14.9	2.2	3		100
3	Develop ability work in team.	f	77	35	8	9	5		572
		%	57.5	26.1	6.0	6.7	3.7		100
C	In accessing remote resources.	f	60	48	16	7	3		557
		%	44.8	35.8	11.9	5.2	2.2		100
1	Allow the students in remote locations to have direct learning from experienced, skilled & qualified teachers	f	78	23	20	7	6		562
		%	58.2	17.2	14.9	5.2	4.5		100
2	Access expensive and scarce educational resources.	f	60	48	16	7	3		557
		%	44.8	35.8	11.9	5.2	2.2		100
3	Access real situation of the world which ordinary means can not offer	f	78	23	20	7	6		562
		%	58.2	17.2	14.9	5.2	4.5		100
4	Access different specialists for contents beyond abilities of the teachers	f	78	23	20	7	6		562
		%	58.2	17.2	14.9	5.2	4.5		100

As illustrated in table 6, different items are grouped under three major aspects of the educational use of information communication technologies and listed from A to C. In such a way, the first seven items under supporting new pedagogical methods, the second three items under enabling collaboration and the third four items under accessing remote resources. All the items under each category are positive statements. The percentage frequency and mean scores of the degree of agreement on each item is listed. The relative agreements (strongly agree plus agree) of the student respondents on item 5 of category A; items 1 and 3 of category B was very high -86.6%, 92.6%, and 85.8% respectively. The rest items were accepted by over 65.7% (strongly agree plus agree) of the students. The mean rating value of all the items under each category is above the expected mean value (i.e. 3). Thus, most of the respondents perceived that availability ITV program, computer and Internet use in education could support to: offer new pedagogical methods that develops problem solving ability of the learners by offering various package of teaching methods; enable the students to cooperatively work, interact and perform different activities with each others; and that it provides them remote educational resources. Hence, position of the students is that, they could be beneficiaries from the introduction of integrated ICT use in education. In general, when we look into table 4 and 6 concerning perceptions of the students on advantage of integrated use of ICT, findings of the study in this aspect indicated the educational advantage attained from ICT use from two perspectives. That is, most of the teachers and students strongly believed that, using integrated ICT in education enabled students and teachers to the new pedagogical methods of teaching and learning activities, enabled collaborative learning experiences, and access to remote resources. Therefore, it seems that the Ethiopian government objective, as prescribed in Education Sector Development Program III, improving quality of education and supporting teachers through the introduction of ICTs that was realized.

Table7: Students' Perception on Educational Advantage of Integrated ICT use in providing Educational Opportunities and in developing skills for the work place

	Items		SA 5	A 4	U 3	DA 2	SD 1	X	Total
A	On enabling educational opportunity	f	55	41	23	13	2	4.00	536
1	Enable educational opportunity for civil servants to up grade their education	%	41	30.6	17.2	9.7	1.5		100
2	Offer life-long learning opportunities.	f	54	36	26	8	10	3.87	518
		%	40.3	26.9	19.4	6.0	7.5		100
3	Provides possible learning characterized by time lag b/n the delivery and reception	f	40	48	27	8	11	3.73	500
		%	29.9	35.8	20.1	6.0	8.2		100
B	In developing skills for the work place.	f	63	37	8	19	7	3.97	532
1	Skill of computer and internet use enable to be good competent to embark on career.	%	47	27.6	6	14.2	5.2		100
2	Computer and internet using skill secure suitable employment	f	70	45	11	3	5	4.28	574
		%	52.2	33.6	8.2	2.2	3.7		100
3	The skills enhance productivity	f	48	48	20	15	3	3.92	525
		%	35.8	35.8	14.9	11.2	2.7		100
4	Develop learning skills that result to making judgments.	f	59	42	22	9	2	4.10	549
		%	44	31.3	16.4	6.7	1.5		100
5	Develop communication skill	f	71	33	23	4	3	4.23	567
		%	53	24.6	17.2	3	2.2		100
6	Develop ability to find and use appropriate use of information.	f	73	42	14	4	1	4.36	584
		%	54.5	31.3	10.4	3	0.7		100

In the above table 7, two broad features of ICT use in education are listed. Under each category there are items to measure the future expectation of the users for the integrated use of ICTs in education. In such a way, relatively high respondents (above 85% for each) of the students accepted item 2 and item 6 of category B with mean rating value of 3.92 and 4.23 respectively (strongly agree plus agree). This implies that most of the

students highly expect that acquiring knowledge and skills to use computer could secure their future employment opportunity, and currently also that it can enable them to find information and use it. In addition to that, some of the students (above 65% for each) accepted all the rest items. All the items were accepted with mean rating values greater than the average mean value, i.e. 3. This shows that, from the very introductory stage of it, the students perceived that computer and internet use in collaboration with ITV could improve the access to educational opportunity and develop skills for the workplace. This in turn implies that the users are highly motivated with expectation of the potential the technology holds to increase their performance and secure their future employment opportunity

On top of that, most of the teachers and students perceived that integrated ICT use in education –especially that computer/internet has high potential to offer educational opportunities and to develop their skills for the work place. A large number of the respondents perceived that simultaneous use of integrated ICTs including ITV, computer and internet use in education can solve deficiencies of the ordinary teaching and learning activities.

In other words, using instructional television program for teaching learning activities can enable them to have student centered and problem solving oriented quality education. In addition to this, the respondents valued the potential of such technology use, can access remote resources which the ordinary method cannot offer. They also had high expectation of the technology especially that computer and internet knowledge and skill could improve their outcomes.

4.4 Appropriateness and content Development Similarity of ITV program lessons and Students' Textbooks

Table 8: Teachers' Perception on appropriates and content similarity of ITV program and Students' Textbooks.

No	Items		SA	A	U	D	SD	X	Total
			5	4	3	2	1		
1	Main topics and subtopics of the chapters are similar	f	24	18	6	4	-	4.19	218
		%	46.2	34.6	11.5	7.7	-		100
2	I TV program and student's Text book are similar on inclusion of sketching teaching exercises	f	15	29	6	2	-	4.10	213
		%	28.8	55.8	11.5	3.8	-		100
3	ITV program has relation with student's text books on inclusion of appreciation of ideas	f	18	31	3	-	-	4.29	223
		%	34.5	59.6	5.8	-	-		100
4	ITV program is similar with student's text book on giving practical example to elaborate abstract contents	f	29	16	3	3	1	4.33	225
		%	55.8	30.8	5.8	5.8	19		100
5	Both are similar on inclusion of a activities that develop students analytical skills	f	17	25	9	-	1	4.10	213
		%	32.7	48.1	17.3	-	19		100
6	Both have appropriate that support new pedagogical methods to enhance quality education	f	15	17	9	8	3	2.37	123
		%	28.8	32.7	17.3	15.4	5.8		100
7	Both are constructed similarly in the way that ensures student_ centered teaching and learning	f	18	18	9	6	1	3.88	202
		%	34.6	34.6	17.3	11.5	1.9		100
8	Both ITV program and student's text books are similar in reflecting the real-life of the learners	f	23	22	6	-	1	4.27	222
		%	44.2	42.3	11.5	-	1.9		100
9	Similar an clarity of the contents	f	29	20	7	1	1	4.29	223
		%	46.2	38.5	13.5	1.9	-		100
10	Both the ITV program and student text books had any short of content similarity	f	23	23	2	3	1	1.77	92
		%	44.2	44.2	3.8	5.8	1.9		100

It was shown in table 8, that there are 10 items to assess the stand of teachers how they received the content relationship between instructional television and student's textbooks. Except items 6 and 10, all the rest are positively responded. As indicated in the table, 94.1% items, 86.6% item4, 84.7% item 9, 84.6% item 1, and 69.2% of the respondents accepted (strongly agree plus agree) item 7 respectively.

In addition to this, all mean value of the items was above 4 except for item 7, which has 3.88 mean values.

The mean rating value of the eight items is more than the expected average, 3. Thus, most of the teachers had positive perception on the presence of fair content similarities between the ITVP and student's Textbooks. Hence, the position of the teachers is that, content development of the instructional television program and student's Text books has similarity in the inclusion of sketching teaching exercises, in inclusion of appreciation of ideas, in giving practical example to elaborate abstract contents, in the inclusion of activities that develop student's analytical skills on the construction of contents to ensure student-centered teaching and learning approach, and in its clarity as well.

On the other hand, most of the teachers reflected their disagreement (strongly disagree plus disagree) on items 6 and 10. That is 88.4% and 61.5% of the respondents rejected items 10 and 6 respectively. This implies that, the teachers are in position that content development of both materials is similar and appropriate to support the new pedagogical methods designed to provide quality education.

In Ethiopia the basic objective of introducing the use of ITV program is to improve quality of education MOE (2004). To this end, two major issues were supposed to be solved through ITV program use in education. One major aspect to be addressed was to reach populations who, other wise, would have much poorer quality instruction. The other assumed advantage of the technology was, it's potential to provide educational factors that are scarce and expensive including highly trained teachers, laboratory equipments and so on. To realize this, content development of the ITV program needs to enhance the objectives and goal of the education policy. In this regard, high majority of the teachers positively valued content development similarities of the materials. Therefore, it was revealed in the study that there is content development similarity between both ITV program and student's textbooks in areas of basic features that were proposed by the Education and Training Policy to enhance quality of education. In addition to this, there is appropriateness of contents in both cases that enable provide student centered and problem solving oriented learning.

4.5 Teachers and Students ability of using Computer and Internet

Table 9: Summary of Teachers' and students' self rating on computer and Internet use skills and knowledge

Students N= 134

Teachers N= 52

No	Major categories of the items	Respondent	Rating					
			Excellent	Very good	good	poor	Very poor	
			%	%	%			
1	Knowledge and skills basic computer by stem	Student	11.93	16.29	26.11	27.61	14.9	100
		teacher	7.69	11.54	23.08	42.31	15.38	100
2	Knowledge and skill on basic computer net work	Student	11.19	11.19	17.16	36.57	23.88	100
		Teacher	3.85	5.77	13.46	50	26.92	100
3	Knowledge and skill of using window 200 and Microsoft excel 200	Student	14.18	14.93	25.37	29.85	15.65	100
		Teacher	3.85	7.69	15.38	51.92	21.15	100
4	Knowledge and skill of using Microsoft Internet explorer	Student	13.43	12.69	17.16	32.09	24.63	100
		Teacher	3.85	3.85	11.54	50	30.77	100

In table 9, students and teachers self rating on ability that could enable them to effectively use computer and internet is summarized and depicted. Knowledge and skills supposed to be achieved for computer and internet use, adopted from ICT training manual, was classified in to four major components. These are: knowledge and skill on basic computer system; knowledge and skills on basic computer network; knowledge and skill of using windows 2000 and Microsoft Excel; and knowledge and skills of using Microsoft internet explorer. Under each of these categories assumed basic knowledge and skill measuring items were listed. (See Annex II]. Carefully and systematically projected average frequencies of the items were shown in percentage for each respective major category.

As depicted in the table 9, 11.93% of the students rated themselves "excellent" in their knowledge and skill of basic computer system. On the same major categories 16.29% 27.61% and 14.9% of the students rated themselves in "Very good" "poor", and very poor" respectively. Hence, relative majority of the students (42.51%) rated them selves "poor" plus "very poor" in knowledge and skills of basic computer system including identifying characteristics of computer; data representation method; classification and importance of computer software; word processing; use of speed sheet; and data base management. On the second category, 23.28% (excellent plus very good) of the students rated them selves above the moderate (i.e. "good") average knowledge and skill to be acquired. Majority of the students (60.45%) rated themselves in below the moderate scale.

Thus, most of the students did not acquire the basic knowledge and skill of computer network to effectively use the technology. That is, awareness and knowledge of the students, on meaning, types, scope, categories, and types of protocols in it and operation of net work was poor. On the third category, 29.11% of the students rated them selves in "excellent" plus "very good" 'where as 45.52% of the students rated them selves in "Poor" plus very poor" scale. This shows that almost half of the students had below the moderate knowledge and skill of using window 200 and Microsoft excel 200. For the last category, 26.12% of the students rated them selves in "Excellent plus very good" where as, 56.72% of the students rated themselves in "poor plus very poor" scale.

These identify traits that most of the students had no basic knowledge and skill that would have enabled them to effectively use the Microsoft internet explorer with its entire importance, ethics, scopes and operation techniques.

In the same categories with the same items under each, table 8 illustrates teachers self-rating. Accordingly 19.23% rated their ability in "Excellent plus very good" on category 1, 9.62%, 11.54%, and 7.70% of the respondents rated them selves on category 2, 3, and 4 consecutively. On the other extreme, 67.69% of the teachers rated them selves in "poor plus very poor", 76.92%, 73.07%, and 80.77% of the teacher rated them selves (i.e. in poor plus very poor) on category 2,3, and 4 consecutively.

There was high relative self-rating of teachers in the "poor plus very poor" on all the categories- 4, 2, 3 and 1. That is, 80.77%, 76.92%, 73.07% and 67.69% respectively. Thus, most of the teachers had no knowledge and skill supposed to be achieved on basic

computer system; basic computer network; using window 200 and Microsoft Excel 200;and using Microsoft internet explorer with its type, scope and importance. This result and response of the sample respondents to the open-ended item-4b shows that the teachers were not given training and they students have not acquired ability of using the technology. Thus, one can understand that the real situation to use computer network and Internet in the high schools lacks what some authors stated as basic fulfillments in ICT integration to be successful. That is, they stated that: teachers, education administrators, technical specialists and content developers should be developed through the education system as one part of the basic issues to be considered (Tinion 2002, Yared 2001).

However that, finding of this study identified lack of adequate and sufficiently trained IT teachers, subject wise expertise, and technical supporters for maintenance services at Woreda and school levels. Most of the teachers were found to be diploma holders but teaching the preparatory level students. This implies that integration of ICT in to the education system encountered inappropriate implementation strategy .On the other hands whatever his education level is teachers should have awareness knowledge and basic skills necessary for effective use of computers.

Paul Newhouse (2002) indicated that to use an educational technology it requires: teachers who know how make use of the technology effectively, teachers and students who know how to operate the technology, and who has positive attitudes towards the importance of the technology. Nevertheless, even though findings of the study indicated that the teachers have positive attitudes towards the educational advantage ICT could offer the other findings regarding ability of both the students and teachers ought to have been used to effectively harness potential of the technology, high majority of both sample respondents revealed that they do not have adequate knowledge and skill of computer use.

Similarly, Sales (UNESCO 2004) found in his study that some teachers reported they lacked the necessary basic training to be taken.

4.6 Classroom teachers' support for students

Table 10: Students' Opinion on the role of Teachers to enrich Effectiveness of ITV program use

No	Items	Yes		No	
		f	%	f	%
1	Class room teachers assist to make the learning process more critical	120	89.55	14	10.55
2	Class room teachers support to make the program more student centered learning	116	86.57	18	13.43
3	Classroom teacher help to encourage, guide, and monitor the student to the let them actively engaged in all the learning activities.	127	94.78	7	5.22
4	Classroom teachers assist to ensure the interactivity of the ITV program.	124	92.54	10	7.46
5	Class room teachers assist the students to ask questions and answer questions	114	85.07	20	14.93
6	Classroom teachers assist to make clear idea that is not clear during the program transmission.	122	91.04	12	8.96
7	Classroom teachers attempt to measure progress of the students understanding.	102	76.12	32	23.88

Table 10 illustrated the role classroom teachers are playing to make the ITV program more effective. This can be assessed from two points of view. The first objective was to assess whether the classroom teachers have been and are working to enrich the educational objective_ provision of quality education, for which scarce and expensive educational resources were offered. The second part was to assess how the students valued roles of their teachers to minimize deficiencies of the Instructional Television program.

As stated in table 10, by the two scales agreement “Yes” or “NO”, relatively high percentage of the students agreed up on items 3,4,6,1,2,5 and item 7(i.e. above 85% except, it was 76.12% for item 7) this shows that, most of the students perceived positively the necessity of classroom teachers as complementary resource to make the ITV program more effective to increase quality of the instruction, it also implies that they valued the role their class room teachers made the program more student- centered learning; encouraged, guided and motivated them to actively engage in all the learning activities; ensured the interactivity of the program; assisted on making clear ideas which they could not understand. The above table showed also that, unlike the other items, a considerable proportion of the respondents rejected item 7. This implies that, teachers could not monitor students’ understanding because of the limited time share for the class room teachers to perform such activities continuously.

4.7. Infrastructure development for Effective use of ICT in Education

Table: 11 Summary of ITV and computer ratio in the High Schools

	High schools	Total students (grade 9-12)	Total sections	Average class size	Total ITV	ITV to student ratio	Compt. available	Computer to student ratio	preparatory (grade 11 to 12) students	Comp to prep. stu ratio
1	Boji	2044	34	61	21	1:97	12	1:171	153	1:13
2	Gimbi	2987	38	79	29	1:103	16	1:187	777	1:49
3	M/Sibu	3461	35	99	21	1:165	11	1:315	183	1:17
4	Nedjo	3682	41	90	21	1:176	15	1:246	518	1:35
	Total	12174	148	82	92	1:132	54	1:225	408	1:31

As clearly shown in table 11, student class ratios of all the high schools are large ranging from 61 to 90 students per class or an average of 82 which could be beyond holding capacity of a section as prescribed to be standard in the new education and training policy of the country. Hence, it is difficult for the teachers to manage and enhance quality instruction. The student ITV ratio is very high. Minimum size of student ITV ratio was found to be 1:132, on the average. When available total sections are compared with number of ITVs provided to each school by far it is the total sections that exceeds the

total instructional televisions. In relation to this, student to ITV ratio was found to be larger than the average ITV class size (i.e. 82). Even though there is potential of classes to use some additional instructional televisions, due to limited number of the equipments supplied by the government, all the schools suffer from the large size of student ITV ratio. Thus, it could result into difficulty to prepare, monitor, and control student's participation during the transmission. The table shows also that, there was a significant number of student's computer ratio. For students of grade 9 to 12 one computer was made available to 225 students on average. The ratio on the senior or preparatory students to computer was 31. This indicates that, there was no adequate infrastructure supply to adopt the technology and improve quality of education for which innovation of these technologies were intended.

On the other hand, the table illustrates that, there was variation in availability of these infrastructures among the high schools. For example relatively Boji seemed better than others holding less number of students per class for ITV, and computers while ManaSibu high school had the highest average of 99 students per class. Gimbi high school had 49 students per computer for the preparatory level students and in Nedjo high school one ITV serves average of 176 students. Hence, there is inequity of infrastructure distribution among the high schools. In addition to these, all the teacher and student respondents claim that there is frequent disconnection of Internet. Thus they criticized that the computers and the Internet line provided is not giving sufficient services neither to enhance the quality of education nor to enable the users to access global knowledge services.

In order to maximize the potential advantage of a technology use in education there should be ICT- enabled learning environment. Creating ICT-enabled learning environment again calls for development of adequate and sufficient infrastructure. However, findings of the study revealed that, there is no adequate number of learning sections, proportionate number of ITV with available sections, sufficient number of computer and more lines for the internet. The available ITV and computer it self were distributed unevenly among the high schools. Hence, it makes schools with many students disadvantage.

4.8 Impact of ITV Program on students' achievement

Table12: Comparisons of student's achievement progress with ITV program versus face -to-face education.

Students of the academic years 1993-1995 were educated "With out" ITV program, while students of the academic years 1996-1998 were introduced to the ITV program. This section presents the pass rate achieved by grade ten students of the sample high schools during the above consecutive periods. For the comparison, EGSLEC GPA of grade ten students in each academic year of the periods was considered. Accordingly, GPA of 2 and above was taken as pass mark (see table 12).

	School	Measurement	Exam years before introduction of ITV				Exam years during the ITV			
			1993	1994	1995	1993-1995	1996	1997	1998	1996-1998
1	Boji	Exam takers	172	339	436	947	358	563	794	1715
		GPA \geq 2	70	120	131	321	159	292	189	640
		Pass rate	40.70	35.04	30.45	33.90	44.44	51.87	23.80	37.32
2	Gimbi	Exam takers	558	1096	963	2617	632	562	953	2147
		GPA \geq 2	208	383	187	77.8	187	218	204	609
		Pass rate	37.28	34.95	19.42	29.73	20.59	38.79	21.38	28.37
3	Manasibu	Exam takers	205	-	738	943	332	1099	840	2271
		GPA \geq 2	160	-	388	548	306	220	402	928
		Pass rate	78.05	-	52.7	58.11	92.17	20.02	47.86	40.86
4	Nedjo	Exam taker	528	662	1183	2373	722	1226	1488	3436
		GPA \geq 2	218	343	317	878	321	475	566	1362
		Pas rate	41.29	51.82	26.80	36.99	44.46	38.74	38.04	39.64
Total		Exam takers	1463	2097	3320	6880	2044	3450	3775	9269
		GAP \geq 2	656	846	1023	2525	973	1205	1361	3539
		Pass rate	44.84	40.34	30.81	38.66	47.60	34.93	36.05	39.53

As shown in table 12, on average 44.84% of the students had grade point average 2 and above in 1993; 40.34% in 1994; and 30.81% of them in 1995. Thus, most of the students scored below grade point average 2 through the academic years. On the other hand, in the academic year 1996 47.60% of the students had grade point average 2 and above, in 1997 34.93%, and in 1998 36.05% of them had GPA 2 and above. Hence, most of the students had less than GPA 2. In both ("With out" ITV program and "With" the ITV program) academic years, the majority of them scored below GPA 2. However, when average of the two cases are compared, it seems better in the academic years 1996-1998; i.e. on average 39.53% had GAP 2 and above. During the period 1993-1995 only 38.66% of the students had GPA above on average. In addition to these fluctuation of pass rate during the 1993-1995 period is relatively high (i.e. 4.5% to 14.03%), where as, of the 1996-1998 period is, relatively stable. This implies that, there was slightly better students' achievement with ITV program used for teaching and learning activities. However, the difference is statically significant at $N = 6$, degree of freedom = 5, $\alpha = 0.01$ two tailed; when the average pass rate of the two periods are tasted to check that there is statically significant improvement it was found to not to be statistical significant as t -obtained (0.81) less than t -critical (4.032).The table shows also that pass rate had negative relation with number of students enrolled. For example, the total average pass rate in 1996 was 47.6% for enrollment of 2044 students, while it was 36% for enrollment of 3775 students, and 34.9% rate for enrollment of 3450 students in 1998 and in 1997 respectively. This implies that, as number of students enrolled increase number of students per class and per ITV increases, resulting in diminishing marginal quality of ITV program could provide per a class.

Effectiveness of a technology use can be measured from different methods- qualitative and quantitative. Measuring effectiveness of a technology through students' achievement may not be reliable as there are many other factors to influence achievement of students. What the finding may indicated us would be achievement gained as the result of using ITV program on the assumption that other factors were similar during both periods. That is, since the school environments were unchanged and the comparison was in the same school at different time student pass rate before establishment of the technology and after establishment of it was used to identify presence of students' achievement difference.

The study showed that the average pass rate recorded is slightly better after the introduction of ITV program.

Similar with this finding, an over view made by Nicholas (2004) on different studies stated that there were little deference in student achievement between ICT- based and traditional face - to- face education.

4.9 Students' and Teachers' response to the open-ended items on the questionnaire.

There were five open-ended items in the questionnaire distributed to both teachers and students. These questions were responded by 96.15% of the teachers 97.01% of the students. For the first item which stated, "How do you evaluate the appropriateness of instructional television program implementation to achieve pedagogical objectives of the new education and training policy of Ethiopia?" The respondents indicated the advantages as follows:

- ITV presented theoretical abstract contents practically by demonstration and experiments- especially for subjects like Chemistry, Biology and Physics.
- It enabled to finish the curriculum portions to be covered in the academic year.
- It could provide talents of experienced, skilled and knowledgeable instructors equally for all.
- It had potential of providing laboratory equipment and pedagogical teaching aids that their schools that would have not addressed to provide full and concrete information on each contents.
- It enabled to solve problems of absenteeism of school teachers.

Moreover, 82.7% of the teachers think that the ITV program as appropriate for the following reasons:

- To reduce technology gap between poor countries and others.
- Offers basic knowledge and contents of subjects in practical terms.
- Complements subject wise knowledge of the teachers
- Develops pronunciation and English language skill of students.

- Varies different teaching methodologies that the high schools suffer from inadequate number of qualified teachers.

On the other hand, about 26% of the students and 17% of the teachers suggested that it had some deficiencies. They stated these deficiencies as:

- It favors only fast understanding learners.
- It presented in so that the TV program teachers could not be used for the students to take short notes.

This implies that, most of the teachers and students believed the appropriateness of ITV program to achieve pedagogical objectives of the new educational policy of Ethiopia.

For the second item which stated, "What is your opinion on the existence of ITV program to be totally stopped or to continue with necessary adjustment of its short comings?" About 97% of the student and 98% of the teachers supported the existence of ITV. Hence, most of the respondents had positive attitude towards ITV program to be used for the classroom instruction.

For the third item that stated, "What alternative technology do you think is more effective than using ITV to realize the pedagogical objective of the new education and training policy?" About 89.5% of the students and 76.9% of teacher respondents reacted that they had the experience and knowledge of ICTs- to fairly judge. However, they still think that the ITV can be more effective if lessons could be available on internet and on the usual public TV broadcasts. This indicates that, the mechanism could alleviate language barrier problem between the learners and the ITV instructors.

For the fourth item that stated: "What factors are more prohibiting in the implementation of ICTs-ITV and computer?" All of the students and teachers identify the limiting factors to be:

- Large class size.
- Lack of adequate number of teacher-subject wise distribution.
- Lack of qualified teachers to teach basic knowledge and skill of computer and Internet use.
- Lack of capacity in students to copy-up with speed and pronunciation.

- Frequent disconnection of internet line
- Lack of technical support at Woreda and school level for maintenance.
- Unfair time allocation for different activities to be performed in class.
- Over lapping of school schedule for different classes to be managed by a teacher.

Hence, the respondents pointed out that some of the major problems could be attributed to source of the transmission and others to inadequate infrastructure developments.

For the last item that stated: "What solutions do you suggest to over come or minimize those problems you mentioned above?" About 70% student respondents and 69% of teacher respondents forwarded possible solution to include the following:

- Supply adequate number of plasma display TVs to the classes held on schedule.
- Recruiting sufficiently oriented and qualified teachers to fit with the standard set by the MOE.
- Recruiting well-qualified and trained staffs to teach basic knowledge on for computer and Internet use.
- Provide technical support for each school training and retraining assigned teachers and ICT coordinators of the high schools.

Like the result depicted from the close-ended items, from responses to the above items it was tried to identify perceptions, believes and attitudes of the respondents towards educational advantages ICT could provide, importance of instructional television program in class room teaching and learning to improve quality of education. It also tried to point out the level of infrastructure development; effectiveness of the ITV- mediated instruction in comparison with the ordinary face-to-face instruction, and to assess the computer literacy level of the students and teachers.

CHAPTER FIV

Summary, Conclusion and Recommendations

5.1 Summary

The study attempted to assess attitudes of students and teachers towards the educational advantage of integrated ICT use in education in general, and towards the importance of ITV programs to improve quality of education to particular. The study tried also to identify perception of the students on how the classroom teachers were attempting to support them; opinion of the teachers on appropriateness and content development similarity of ITV program lessons with student's Textbooks; infrastructure development level to create ICT-enabled teaching and learning environment; and the major factors that were prohibiting implementation of ICT use in education. In general, it was designed by the research to have general view of the current status of ICT use in education from 134 selected sample students, and 52 selected sample teachers from the four high schools in West Wollega. Thus, a look in to the analysis and discussions conducted in this paper based on the data secured from high school teachers, students and documents indicated the following summary of outcomes in terms of both success and failure against the effective use of ICT in education.

- In most of the basic advantages of using ICTs in education; as perceived by respondents, the benefits acquired from ITV use appear to meet target of the instructional quality improving objective of the New Education and Training Policy of the government.
- Expectations of both the students and teachers for the advantage computer and internet using ability has and for the potential integrated ICT use has to secure their competency, to extend new education opportunities and to develop their knowledge/skill for the workplace is very high
- In terms of the educational quality improvement, the ITV program seems to have relatively better importance in light of providing critical learning, student-

centered and problem solving oriented approach. In this case, attitude of the students and teachers reveal that the program enabled access to various pedagogical methods and talents of experienced staffs and adequate teaching materials.

- In case of student achievement, there is slight growth in pass rate on average in period of academic years after introduction of ITV for classroom instruction.
- The relative high weaknesses indicated from the analysis of data in this paper, however, were the insufficient provision of critical and decisive educational inputs that determine effectiveness of a technology. These include, number of ITV, computer, ease of Internet access, quality and quantity of technical and teaching staff.
- Another critical component found to be not addressed is developing basic knowledge and computer and internet using skill of the teachers and students.
- Moreover, the time share among different activities within a period to address all contents of the lessons, and the time share given for classroom teachers to support students is found to be unfair.

5.2 Conclusion

The attempt to implement the package of ICT in education by providing instructional television (Plasma display Panels) for the secondary schools (grade 9-12) of the country and by providing personal computer to preparatory (grade 11-12) level schools to set up Internet laboratory, appeals in some aspects and not in few aspects. That means, innovation of the technology into the countries Education system has tried to address the objectives for which it was set; nevertheless, supporting factors for full implementation of the technologies are not adequately provided. Based upon the data secured from different sources, as mentioned earlier, findings of the study were presented above. Hence, from the findings the following could be concluded

- Integrated use of ICTs in education enabled both the teachers and students to get all advantages the education system prescribed to be gained from the technology.
- Better quality instruction can be offered with ITV program using the same educational inputs from a center at a time to equally treat students located at different areas. Therefore, one could recognize that the technology has potential of minimizing inequity of quality education provision that may result from limited and expensive educational inputs. In addition to this, ITV program could save education cost of the country since it uses the same resources for all at a time
- Students were being supported to some extents by their classroom teachers. The students were not left to the television as the television is not to replace the teachers but to complement the subject wise knowledge gap of the teachers.
- Given the same high school, at different time within the same education system, by similarly developed materials, there is no significant difference of students' achievement when learned on ITV program and by the ordinary face to face instruction.
- Computer student ratio, ITV student ratio, and average class size are above the standard prescribed in education system of the country. Hence, it might be such problems that contributed to insignificance of students' achievement in relation to the high potential of ICTs over the ordinary face to face instruction.
- One of the objectives of Ethiopian government was to complement the talents of qualified and experienced educators to the knowledge the classroom teachers share for the learners. But not to leave the learners to the television. Other objective was to provide scarce and expensive educational materials so that the learners would be provided problem solving skills from what they learn (from experiments and demonstration at) However, the time share given for such activities and the timeshare given to the classroom teachers to play their roles are not fair. This implies that it needs readjustments to balance the time share among activities of a period and the time share between the ITV program transmission and classroom teachers to fill gap of either by the other.
- Moreover, what could be concluded is that students and teachers lack sufficient ability of using computers/internet. Thus, it may not be difficult to understand that most of the factors pointed as mostly hindering implementation of ICT in

education were related to inadequate supply of infrastructures and lack of necessary human resource development. Therefore, this could lead to incurring high opportunity cost of the investment made on the technology if its potential is not harnessed to the maximum by providing the above basic factors to mitigate such problems.

5.3 Recommendations

From the responsible government bodies including the Federal government, MOE, and Regional Education Bureaus points of view, provision of instructional television is intended to improve quality of instruction especially for schools, which has no adequate number of qualified teachers. Practically also different research studies show that, teachers, students and school communities believe in potential ICT has to improve quality of education. However, some educational technologies could be sensitive to inadequacy of other complementary equipments including lack of technical support, lack of infrastructure development and budget subsidies. Thus, unless sound and urgent measures are taken on such issues the negative impact worth's the benefit expected. Therefore, generally, recommended possible solutions for the problems identified are:

- To sustain currently acquired educational advantage of using ICT in education, close supervision and continuous assessment should be made to identify and take corrective measures as soon as problems occur during the implementation process.
- Using ICTs in education has some basic advantages .These are :it prepares current generation for the work place as ICTs using is becoming more and more expanding; creates conducive situation for the long term objective of the country- to enable new ways of teaching and learning through computer and internet use. How ever, this could be realized only when there is adequate and sufficient amount of developed human resources and infrastructures. Thus, to alleviate the current existing problems related to these issues, the government must provide adequate number of computers, Plasma display televisions and internet lines. In

such away, the government of Ethiopia must address this problem through initiative of the community, religious organizations, NGOs and external donors.

- Without acquiring basic skills on how to use effectively a technology, teachers and students cannot harness the advantages ICT could offer to increase their current performances and to develop their knowledge for the work place. Therefore, the Ethiopian government must take short term and long-term measures. As temporary solution in developing the necessary basic skills of using ICT for both the students and teachers training and retraining should be given. In parallel to this, in the long run, the Ministry of Education should integrate ICT use in to the curriculum develop the future to be teachers with basic knowledge and skill of computer use, and need to offer currently teaching teachers basic ICT knowledge through in service training and summer program.
- To make sustainable and institutionalized the current ICT use, financially in addition to what should be provided by the Ethiopian government, the top-level education management bodies (MoE to Woreda education Offices) must design revenue-generating mechanisms for such schools and should fully empower them to administrate the income for the provision of equipments that are important for expansion of the technology use.

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Annexes

Annex 1: Summary of students self-rating on knowledge and skills of computer and Internet use

No	Item	Rating									
		5		4		3		2		1	
		No	%	No	%	No	%	No	%	No	%
1	Knowledge on the basic characteristic of computer, the show the capability and potential of it for processing data to save time, space, money, labor etc	29	21.6	18	13.4	31	23.1	30	22.4	26	19.4
2	Knowledge of data representation methods with computer	16	11.9	22	16.4	35	26.1	44	32.8	17	12.7
	Knowledge on the units of data representation with in the computer system	14	10.4	17	12.7	39	29.1	46	34.3	18	13.4
4	Knowledge of computer hard ware and their functions.	11	8.2	27	20.1	32	23.9	46	34.3	18	13.4
5	Computer software, their classification, importance and how use them.	11	8.2	27	20.1	39	29.1	33	24.6	24	17.9
6	Awareness on the applications software and their categories; and skill of word processing, spread sheet, and data base management system	18	13.4	20	14.9	33	24.6	46	34.3	17	12.7
8	Awareness of the two general types(LANs and WANs) of Network scope, and operation skill	14	10.4	19	14.2	27	20.1	41	30.6	33	24.6
9	Understanding of the two broad categories (Peer-to peer and server based of Networks)	13	9.7	17	12.7	18	13.7	46	34.3	40	29.9
10	Awareness of different Network technologies available and how to use them to maximize efficiency	14	10.4	10	7.5	25	18.7	53	39.6	32	23.9
11	Awareness on importance and types of protocols in network	12	9	16	11.9	26	19.4	46	34.3	34	25.4
12	Window components and their selection techniques	16	11.9	19	14.2	39	29.1	39	29.1	21	15.7
13	Skills How to start and use the windows Accessories and the explorer	23	17.2	19	14.2	36	26.9	41	30.6	15	11.2
14	Knowledge and skills questing work books and work sheets	19	14.2	24	17.9	40	29.9	36	26.9	15	11.2
15	Knowledge and skills of formatting numbers with in excel	21	15.7	18	13.4	31	23.1	42	31.3	22	16.4
16	Knowledge and skills on how to use formulas to compute different activities	19	14.2	15	11.2	35	26.1	40	29.9	25	18.7
17	Knowledge and skills of printing procedures	17	12.7	22	16.4	25	18.7	42	31.3	28	20.9
18	Knowledge and skill of connecting Microsoft explore to internet	16	11.9	12	9	27	20.1	46	34.3	33	24.6
19	Knowledge and skills of accessing online tutorial	27	20.1	21	15.7	22	16.4	41	30.6	23	17.2
20	Skills of searching internet using different search engines using different search engines and	12	9	20	14.9	23	17.2	57	42.5	22	16.4
21	Skills of receiving. Creating and sending emails	22	16.4	13	9.7	21	15.4	34	25.4	44	32.8
22	Skills of down loading information from a web page	14	10.4	19	14.2	26	19.4	42	31.3	33	24.6
23	Ability to differentiate quality of data available, its reliability and relevancy	23	17.2	17	12.7	22	16.4	41	30.6	31	23.1
24	Skill of printing page/s from internet	10	7.5	17	12.7	23	17.2	40	29.9	44	32.8

Annex 2 Summary of teachers self-rating on knowledge and skills of computer/internet use

No	Item	Rating									
		Excellent		Very good		Good		Poor			
		No	%	No	%	No	%	No	%	No	%
1	Knowledge on the basic characteristic of computer, the show the capacity and potential of it for processing data to save time, space money labor etc.	10	19.2	5	9.6	16	30.8	19	36.5	2	3.8
2	Knowledge on the units of data representation methods with computer	4	7.7	9	17.3	9	17.3	25	48.1	5	9.6
3	Knowledge on the units of data representation with in the computer system	4	7.7	6	11.5	10	19.2	24	46.1	8	15.4
4	Knowledge of computer hard ware and their functions	2	3.8	6	11.5	15	28.8	20	38.5	9	17.3
3	Computer software, their classification, importance and how to use them.	3	5.8	7	13.5	9	17.3	21	40.4	12	23.1
6	Awareness on the applications software and their categories: and skill of word processing, spread sheet, and data base management system	-	-	3	5.8	14	26.9	23	44.2	12	23.1
7	Awareness of the meaning and importance of the Network	-	-	4	7.7	14	26.9	23	44.2	11	21.2
8	Awareness of the two general types 9 LANs and WANs0 of Network scope, and operation skill	2	3.8	4	7.7	5	9.6	30	57.7	11	21.2
9	Understanding of the tow broad categories (peer-to peer and server based of Networks)	4	7.7	-	-	9	17.3	24	46.2	15	28.8
10	Awareness of different Network technologies available and how to use them to maximize efficiency	-	-	3	5.8	4	7.7	35	67.3	10	19.2
11	Awareness on importance and types of protocols in Network	-	-	3	5.8	10	19.2	17	32.7	22	42.3
12	Window components and their selection techniques	-	-	2	3.8	7	13.5	34	65.4	9	17.3
13	Skills how to start and use the windows Accessories and the explorer	2	3.8	7	13.5	10	19.2	26	32.7	7	13.5
14	Knowledge and skills of formatting numbers with in excel	-	-	4	7.7	9	17.3	31	65.4	8	15.4
15	Knowledge and skills on how to use formulas to compute different activities.	4	7.7	2	3.8	8	15.4	24	50	14	26.9
16	Knowledge and skill of printing procedures	2	3.8	3	5.8	1	1.9	19	59.6	27	51.9
17	Knowledge and skill of connecting Microsoft explore to internet	3	5.8	2	3.8	5	9.6	27	46.2	15	28.8
18	Knowledge and skill of accessing online tutorial	-	-	2	3.8	3	5.8	28	36.5	19	36.5
19	Skills of searching internet using different search engines using different search engines and directories	2	3.8	2	3.8	3	5.8	30	51.9	15	28.8
20	Skills of receiving. Creating and sending emails	2	3.8	1	1.9	7	13.5	26	53.8	16	30.8
21	Skills of down loading information form a web page	3	5.8	4	7.7	10	19.2	24	57.7	11	21.2
22	Ability to differentiate quality of data available, its reliability and relevancy	2	3.8	2	3.8	7	13.5	24	50	17	32.7
23	Skill of printing page/s from internet	2	3.8	-	-	9	17.3	24	46.2	17	32.7
24	Window components and tier selection techniques	2	3.8	2	3.8	4	7.7	24	46.2	17	32.7

Universiitii Finfinneetti
Kolleejjii barumsa sagantaa Digirii 2^{ffaa}
Dippaartimeentii karoora fi Bulchhinsa Barnootaa
Gaaffilee barattootaa fi qophaa'an.

Kaayyoo qorannichaa:-

Qorannoon kun qorannoo akkaadaamii digirii lammaffaa xumuruuf adeemsifamu dha. Barbaachisummaan unka gaaffilee kanaas ragaa fi Odeeffannoo hubannoo barattoontni tekniinooloojii barumsaa fi fayyadamu irratti, Keessattuu, sagantaa barnoota Teeleviziyiinii fi interneetii irratti qaban funaanuuf. Galma ga'iinsi qorannoo kanaas deebii fi yaada bilchaataa amanamaa ati unka gaaffii kanaa irratti kennintantu murteessaa dha. Yaadnii fi deebiin nama kamiyyuu immoo icciitiidhaan qabama kanaaf, biliisa taatee` yaada kee ifaa ta'e akka kennituu fi yeroodhaan akka deebiftuu adaraan.

Kallattii walii galaa

1. Maqaa ykn Lak. Kee barreessuun hin barbaachisu
2. Mallattoo (*) qubee ykn lakkoobsa filannoo kee ta'e booda ykn jalatti agarsiisi.
3. Yaada kee biliisa bakka gaaffilee boodatti kennaman irratti barreesuudhaan ibisi.

Baayyee galatoomi !

Kutaa I Haala yaada /deebii kennitootaa

1. Maqaa mana Barumsaa keetii _____
2. Umuriikee _____
3. Saala :- A/ Dha.() B/ Dhi. ()

Kutaa II Deebii fayyadama Teeleviziyiinii barnootaa fi interneetii

Aayitemoota armaan gadii bu'aa ICTn Televiziyiinii barnootaa fi interneetiin argamsiiseera jettee fudhattu keessaa isa caalaatti itti amantu haala asii gadiitiin filadha. Sadarkaa itti walii galtee kana ibsuun iskeeliin taa'ee jiru

Baayyeen itti walii gala = 5 I ttin walii gala = 4 Yaada hin qabu = 3

Nan morma = 2 Baayyeen morma =1

Lak	Aayitemoota	5	4	3	2	1
A	Tooftaa peedaagoojii haaraa deggeruu irratti					
1	Gadi fageenyaan waa barachuu gargara					
2	Dandeettii rakkoo hiikuu cimsa					
3	Rakkoo qabatamaa irratti gadi fageenyaan hojjechuu					
4	Haala jireenyaa qabatamaa irratti barattoota waan qabatamaa hin taane irraa waan qabatamaa fi wal fakkaataan hubachiisuu.					
5	Muuxannoo jabinaa fi ciminaan barachuu kennuu irratti					
6	Aadaa walii galtee Hawwaasummaa namootaa cimsuu irratti					
B	Waliin hojjechuuf haala mijeessuu irratti					
1	Barattootni yaada akka wal jijjiiraniif wal gargaaranii hojjetaniif jajjabeessuu.					
2	Barataa fi carraa barattoota aadaa addaa addaa fi qomoo garaa garaa taa'an waliin hojjechuu uumuuf.					
3	Dandeeti Gareen hojjechu guddisa.					
c	Qabeenya/resources/ fagoo argamsiisuu					
1	Barattootni fagootti argaman barsiisota muuxannoo, dandeettii barnoota olaanaa fi ogummaa barsiisummaa cimaa qaban iddoo wal ta'e tokko irraa argachuu.					
2	Barsiisotni kutaa barsiisota sagantaa tekinoooloojiin barsiisan irraa muuxannoo barsiisummaa haaraa akka gosoota barnootaatti mijataa ta'e argachuu.					
3	Meeshaalee Laaboraatoorii hanqina qabaniif minyaa'aa taa'an hojii yaalii, agarsiisaaf hojii barumsa tokko tokkoof barbaachisu argamsiisuu.					
4	Sochii qabatamaa biyya lafaa kanaa kan karaa biraatiin argachuun hin dandaa'amne qabiyyee hin hubatamne hubachiisuuf gargaaru akka argatan gochuu.					
5	Qabiyyewwan barnoota ga'umsa barsiisotaa ol taa'an ogeessota adda taa'aniin akka ibsamu gochuu.					
D	Carraa sagantaa barnoota addaa addaa ballisuu irratti					
1	Barsiisotni tooftaa barsiisuu qaban akka ittiin fooyyeffataniif carraa leenjii addaa addaa uumuufii					
2	Hojjetootni mootummaa carraa barumsa isaanii fooyyeffachuu akka qabaatan gochuu.					
3	Carraa umurii ofii guutuu akka baratan namaaf kennu irratti.					
4	Interneetiif sagantaa barnoota TV lamaan iyyuu rakkoon garaagarummaa yeroo tamsaasni itti darbuu fi yeroo barataan itti hordofu gidduu jiru ni fura.					
E	Ogummaa hojii irratti nama gargaaru guddisuu fi cimsuu irratti					
	Barnoota xumuruun yeroo hojii irratti bobbaa'an ogummaa kompiwuutaraa fi interneetii qabaachuun dorgomaa gaarii nama gochuu isaa					
2	Ogummaa fi dandeettii kompiwuutaraa fooyya'e qabaachuun hojii mijataa ta'e argamsiisuuf gaarii ta'uu					
3	Ogummaan kun kompiwuutarii fi interneetii qabaachuu fi ittiin hojjechuu danda'uu omishtummaa amma hojii irratti guddisuu.					
4	Ogummaa waa uumuu (kalquu), rakkoo hiikuu fi dandeettii yaaduu waa madaaluu namaa guddisuu isaa irratti					
5	Dandeettii namoota biroo waliin walii galuu fi waliin hojjechuu uumuuf guddisuu					
6	Dandeettii odeeffannoo sakatta'uu fi sirriitti itti fayyadamuu namootaa guddisuu					

Kutaa III, Gaaffileen armaan gadii hubannoo ati kompiwuutarii fi Interneetii irratti qabdu addaan baasuuf dhiyaate.

Bakka sirriitti ibsuu danda'u irratti mallattoo kana () kaa'i.

Lak.	Dandeettiiwwan tarreeffaman	Sadarkaa(Rating)				
		Daran olaana a	Olaan aa	Quu bsaa	Gad - aan aa	Daran gad-aan
1	Beekumsa amaloota murteessoo kompiwuutara agarsiisuuf ga'umsaa fi dandeettii odeeffatnoo baafachuu irratti qusannaa yeroo, maallaqa, humna k.k.f. ati qabdu attam ?					
2	Beekumsa odeeffannoo kompiwuutara keessatti qopheessuu irratti malli ati beektu attam ?					
3	Beekumsa odeeffannoo qopheessuuf kompiwuutara keessatti mallttoolee nama gargaaran (the units of data representation) tokko tokkoo isaanii adda baaftanii beekuu irratti					
4	Beekumsa (hardware) kompiwuutaraa fi tajaajila isaanii irratti ati qabdu					
5	Beekumsa(software)qoqqoodamiinsa barbaachisummaa fi akkamitti akka itti fayyadaman irratti.					
6	Hubannoo itti fayyadama soofti weerii fi garee isaanii, akkasumas ogummaa woordiin hojjechuu (word processing), (spread sheet), fi tooftaa qabaa odeeffannoo					
1	Hubannoo fi barbaachisummaa Neettii woorkii (Net work)					
2	Hubannoo fi itti fayyadama neetti woorkii dhiyoo fi fagoo (Local area net work & wide area net work) irratti					
3	Hubannoo gurguddoo lamaan kompiwuutara bifa hiriya taa'aniin (peer to peer) ykn kudhanii gadi walitti hidhuuf (server based of network) fi kompiwuutara kudhanii ol walitti hidhuu irratti					
4	Hubannoo teknioloogii neetti woorkii addaa addaa jiru irratti qabdu fi ga'umsaan itti fayyadamuu irratti.					
5	Hubannoo ati fayidaa fi gosa pirootokoolii (protocols) Neetti woorkii fi akkaataa itti fayyadama isaa irratti qabdu					
1	Qabiyyee foddaa kompiwuutarii irra jiranii fi i tooftaa keessaa itti filatan					
2	Ogummaa akkaataa itti jalqabbii foddaa (window) kompiwuutara irratti warra dabalataa taa'an (Accessories) fi akkaataa daawwannaa ykn sakatta'uu (explorer) irratti qabdu					
3	Beekumsaa fi Ogummaa itti fayyadama barreeffamaa (work book) fi gabateewwan (work sheet) addaa addaa irratti qabdu					
4	Beekumsaa fi ogummaa unka lakkoofsotaa ykn barreeffamoota (excel) keessaa sirreessuuf gargaaran (formatting numbers with in excel)					
5	Beekumsaa fi ogummaa akkaataa itti fayyadama foormulaa dalagawwan addaa addaa (Formulas to compute different activities)					
1	Beekumsaa fi Ogummaa Kompiwuutaraa fi interneetii itti fayyadamuuf walitti hidhan (connecting Microsoft explorer to internet)					
2	Beekumsaa fi ogummaa barsiisaa dabalata taamsaa'an bananii itti fayyadamuu (accessing on line tutorial)					
3	Interneetii irratti Ogummaa itti fayyadama meeshaalee sakatta'oo karaa agarsiisoo taa'anitti fayyadamuu (using different search engines and directories)					
4	Ogummaa ergaa (emails) fudhachuu, fi deebisanii itti fayyadamuun dhaamsa dabarfachuu danda'uu					
5	Ogummaa odeeffannoo fuula Weebii (Web page) irraa fudhachuu					
6	Dandeettii odeeffannoo qulqulluu, amansiisaa fi siirrii ta'e adda baasuu irratti					

Kutaa IV Ga'ee barsiisotni kutaa taphatan

Aayitamootni armaan gadii ga'ee barsiisotni kutaa barsiisa kara sagantaa Teeleviziyiinii darbu bu'a qabeessa gochuuf taphatan ibsu. Filannoo isa hojii irra oolmaa saganta kanaaf ga'ee barsiisaan taphataa jirudha jettu jala mallattoo *) kaa'uun yaada kee ibsi.

Lak.	Aayitamoota	Eeyyee	Miti
1	Barsiisaan kutaa/daree sochii barumsaa caalmaatti hunde qabeessa godha.		
2	Barsiisaan kutaa sagantaa barnoota TV caalmaatti barumsa barataa giddu-galeessa godhate akka ta'uuf gargaara.		
3	Barsiisaan kutaa barattoota akka isaan si'aayinaan hojii barachuu keessatti hirmaataniif jajjabeessuu, qajeelchuu fi hordofuuf gargaara.		
4	Barsiisaan kutaa walii galtee ykn wal quunnamtiin sagantaa barnoota TV fi barataa gidduu akka cimu gochuuf gargaara.		
5	Barsiisaan kutaa barattootni akka gaaffii gaafataniif debbi akka deebisan gargaara.		
6	Barsiisaan kutaa yaad-rimee sagantaa TV tiin ifaa hin taane ifaa gochuuf gargaara.		
7	Barsiisaan kutaa jijjiirama/fooyya'iinsa barattootaa mullatan lakkaa'uu/madaaluuf/gargaara.		

taa V. Faayidaa sagantaa barnoota Teeleviziyiinii

Filannoo isaa caalmaatti ilaalacha ati sagantaa barsiisa teeleviziyiinii fayyadamuu irratti qabdu iskeelii mullisu jalatti mallattoo (*) kaa'i.

Tarreen iskeelota kanaas

Baayyeen itti walii gala = 5 Ittin walii gala = 4 Yaadan qabu = 3 Nan morma = 2

Baayiseen morma = 1

Lak.	Aayitemoota	5	4	3	2	1
1	Sagantaa barsiisa Teeleviziyiinii barsiisuu fi barachuu kutaa keessaatiif bu'aan barnootaa fi fooyya'iinsi qulqullina barnootaa argamu hin jiru.					
2	Sagantaa barsiisa TV hawwaasa rakkoo qulqullina barnootaa guddaa qabanii fi karaa kan biro tiin fooyyeffachuu hin dandeenye ni gargaara.					
3	Barsiisni karaa sagantaa TV rakkoo hanqina meeshaalee barnootaa fi rakkoo guddina gatii isaatii barnoota kutaa keessaa mudachuu danda'u ni fooyyessa.					
4	Galma ga'iinsa darbuu barataa hin milkeessu					
5	Barnoota STV barattoota buuta hubatoo g/galeessa hin godhatu					
6	Sagantaa barnoota TV barattoota dafanii waa hubatan qofa gargaara.					
9	Televiziyiinii barachuun sababa sagalee dubbisa barsiisata sanii hin hubatamneef ni ulfata					
10	Sagantaan barnoota TV ogummaa rakkoo hiikuu barattootaa cimsuu dandaa'a.					

Kutaa VII. Taajjabbii walii galaa

Taajjabbii ykn yaada fayyadama ICT irratti qabdu bakka gaaffilee armaan gadii booda jiran ibsi adaraa.

1. Kaayyoo Peedaagoojii himaammata barnoota Itoophiyaa isa haaraa kana galmaan ga'uuf mijaa'ummaa barnoota TV kanaa akkamitti madaalta?

➤ Mijaawaa dha.(_____)

➤ Mijaawaa miti.(_____)

A/ Yoo deebiin kee "mijaawaadha" kan jedhu ta'e haala nni itti mijaawaa ta'e ibsi.

B/ Yoo deebiin kee "mijaawaa miti" kan jedhu ta'e bakka /haala itti inni mijaawaa hin taane ibsi.

2. Yaadni ati jiraachuu sagantaa barnoota TV irratti qabdu maali?

➤ Tasumayyuu hafuu qaba jetta yoo ta'e

➤ Wanti fooyya'uu qabu fooyya'ee itti haa fufu jetta yoo ta'e.

3. Imaammata barnootaa haaraa hojii irra oolchuuf Teknooloojjiin barnootaa kan sagantaa TV caalaa bu'a qabeessa jettee yaaddu maali?

4. Akka mana barumsaa keetti Hojii irra oolmaa "ICT" wantootin gufaachiisan maali ?

A Gama sagantaa TV tiin _____

B. Gama komputeraa fi Interneetiitiin

5. Rakkoolee armaan olitti tuqaman fooyyessuuf maaltu fala ta'uu qaba jettee yaadda?

Annex 4

Addis Ababa University
School of Graduate Studies
College of Education
Department of Educational Planning and Management
Questionnaire for Teachers

Research Objective:

This is an academic research conducted by a graduate student. The purpose of this questionnaire is to collect data on teacher's perception of information communication technology use in education, particularly on instructional and internet use in high schools. The effectiveness of this questionnaire depends on your genuine and reliable response to each of the questions. I assure you that the response to the questionnaire will be kept confidential. So, please be frank in your response and return the questionnaire immediately as you complete it.

General direction:

1/ No need to write your name

2/ put tick mark (✓) mark against the letter of your choice

3/ Write your free idea or suggestions for the open-ended questions on the provided space.

Thank you very much

Part I. Respondents back ground

1. Name of your school _____
2. Age (in years)
A) Less than 26 years () B) 26-30 years () C) 31-35 years ()
D) 36-40 years () E) over 40 years ()
3. Sex: A/ Male () B/ Female ()
4. Educational level:
A/ Certificate () B/ Diploma () C) BA/BSC degree ()
D) MA/MSc degree () E) other (specify) _____
5. Subjects you teach _____
6. Years of teaching experience _____

Part II. Response on Use of Instructional TV and Internet

For the following items on ICT related to instructional television program and the internet, choose the one that you think best describes it. Using measurement scales on the degree of agreement, put a tick mark (✓) on the corresponding column and row for each question and against the choice you made.

Scales: Strongly Agree = 5, Agree = 4, Uncertain = 3, Disagree = 2, and Strongly Disagree = 1.

	Items	5	4	3	2	1
A.	Supporting new pedagogical methods					
1	Critical learning					
2	problem solving ability					
3	work on Real-life problem in-depth					
4	Making learners less abstract and more relevant to their life situation					
5	Authentic learning Experiences					
6	Social negotiation of bewildered					
7	Integration of pedagogical methods (facilitating learning, motivating the students to actively engage)					
B.	Enabling collaboration					
1	Encouraging interaction and cooperation among learners					
2	Providing the students the opportunity to work with students of different culture and ethnicity.					
3.	Develops ability to work in team					
C	Accessing remote resources					
1	Allowing the students in remote locations to have direct learning from experienced, skilled, and more qualified teachers and experts teaching at a central location.					
2	Allowing the teacher to share new and relevant teaching experiences from the online teachers.					
3	Providing access to expensive and scarce laboratory equipments when experiment, demonstration, and different activities take place from a central transmission.					
4	Accessing to real situation images of the world which other means can not offer to understand abstract content of lessons.					
5	Accessing to different specialists to make more clear contents that are beyond abilities of the teachers.					
6.	Internet enables the teachers to find access resources that can be used for their own lesson preparation					
7.	Internet enables the teachers to access curriculum and instructional guides					
D	Extending educational program					
1	-Enabling the teachers to upgrade their education					
2	- Enabling the teachers to have different training programs to improve their teaching methodologies					
3	-Enabling educational opportunity for civil servant to improve their educational level					
4	-Offering lifelong learning opportunities					
5	Both internet and Instructional Television program possible learning characterized by time lag between the delivery of instruction and in reception by learners.					
E	Developing skills for the work place					
1	After having school to embark on a career, skills of computer and Internet use enables me to be good competent.					
2	Advanced computer and internet skills and know how, help secure suitable employment					
3	Advance computer and internet skills and knowing how to use enhance one's productivity when employed					
4	Develops creative, problem solving, and logical thing that result in making judgments					
5	Develops ability to interact and work effectively with other people					
6	Develops ability to find, appropriate use of information					

Part III. Items on content relationship.

Consider the relationship between students' text and the instructional television program. Read each item and put a tick mark (√) for the one that best describe your perception.

Scales: **Strongly Agree = 5,** **Agree = 4**
Uncertain = 3, **Disagree = 2, and Strongly Disagree = 1.**

	Items	5	4	3	2	1
1	Main topics and sub topics of each chapter are similar					
2	Have relation on inclusion of sketching leaching exercises.					
3	Have relation on inclusion of appreciation of ideas					
4	On giving practical example to elaborate abstract contents					
5	On inclusion of activities that develop student's analytical skills.					
6	Both have no appropriate content that support new pedagogical methods to enhance quality education.					
7	On how both constructed to ensure student centered teaching and learning approach.					
8	On how to reflect the real-life of the learners.					
9	On clarity of the contents throughout all the chapters.					
10	Both have some similarities and differences					
11	Both do not have any sort of content similarity.					

Part IV. Roles the class room teachers play.

The following items show on the role of the teacher to enrich the effectiveness of instructional television in classroom learning. Put a tick mark (√) on the "yes" and "No" choice you feel is applicable during the ITV program transmission.

	Question items	Yes	No
1	Classroom teachers assist to make the learning process more critical		
2	Classroom teacher support to make the program more student centered learning.		
3	Class room teachers help to encourage, guide and monitor the students to let them actively engaged in all the learning activities.		
4	Class room teachers assist to ensure the interactivity of the ITV program.		
5	Class room teachers assist the students to ask questions and answer questions.		
6	Class room teachers assist to make clear idea that is not clear during the program transmission.		
7	Class room teachers attempt to measure progress of the students understanding.		

Part V Rating Scale on your ability.

It is assumed that you gained basic knowledge (concept and skills) to be acquired in computer and Internet use. There fore, put a tick mark (√) on the level you believe matches your ability.

Rating Scales: Excellent = 5, Very Good = 4
 Good = 3, Poor = 2, Very Poor = 1.

	Items	5	4	3	2	1
1	Knowledge on the basic characteristic of computer, the show the capability and potential of it for processing data to save time, space, money, labor etc					
2	Knowledge of data representation methods with computer					
3	Knowledge on the units of data representation with in the computer system					
4	Knowledge of computer hard ware and their functions.					
5	Computer software, their classification, importance and how to use them.					
6	Awareness on the applications software and their categories; and skill of word processing, spread sheet, and data base management system					
1	Awareness of the meaning and importance of the Network					
2	Awareness of the two general types(LANs and WANs) of Network scope, and operation skill					
3	Understanding of the two broad categories (Peer-to peer and server based of Networks)					
4	_Awareness of different Network technologies available and how to use them to maximize efficiency					
5	_Awareness on importance and types of protocols in network					

Cot'd....

Rating Scales: Excellent = 5, Very Good = 4
 Good = 3, Poor = 2, Very Poor = 1.

	Items	5	4	3	2	1
1	Window components and their selection techniques					
2	<u>Skills</u> How to start and use the windows Accessories and the explorer					
3	Knowledge and skills questing work books and work sheets					
4	Knowledge and skills of formatting numbers with in excel					
5	Knowledge and skills on how to use formulas to compute different activities					
6	Knowledge and skills of printing procedures					
1	Knowledge and skill of connecting Microsoft explore to internet					
2	Knowledge and skills of accessing online tutorial					
3	Skills of searching internet using different search engines using different search engines and directories					
4	Skills of receiving. Creating and sending emails					
5	Skills of down loading information from a web page					
6	Ability to differentiate quality of data available, its reliability and relevancy					
7	Skill of printing page/s from internet					
1	Window components and their selection techniques					
2	Skills How to start and use the windows Accessories and the explorer					
3	Knowledge and skills questing work books and work sheets					
4	Knowledge and skills of formatting numbers with in excel					
5	Knowledge and skills on how to use formulas to compute different activities					

Part V. Importance of instructional television (ITV) program.

Put a tick mark (✓) on the choice you feel is best to show your perception on the use of ITV.

Rating Scales: **Strongly Agree = 5,** **Agree = 4**
Uncertain = 3, **Disagree = 2,** **Strongly Disagree = 1.**

	Items	5	4	3	2	1
1	No quality improvement can be achieved through the use of ITV program for class room teaching & learning					
2	ITV program assists to reach populations who, other wise, would have much poorer quality instruction					
3	ITV assist to improve factors that are scarce and expensive (i.e. highly friend teachers and laboratory equipment for class room administration)					
4	ITV is not good to increase student's achievement					
5	ITV program is difficult because it does not consider the slow understanding learners					
6	ITV program is enjoyable					
7	ITV program is not appropriate for authentic learning as the traditional learning method					
8	ITV program is important for critical /detail learning					
9	Learning by ITVP is difficult to understand its pronunciation and to let learners participate in learning activities					
10	ITV program can develop problem solving skill of the students					

Part VI. Overall Comments

Please respond for the following questions by writing your comments or suggestions you think would be best.

1. How do you evaluate the appropriateness of instructional Television implementation to achieve pedagogical objectives of the new educational policy of Ethiopia?
 - Appropriate ()
 - Inappropriate ()
 - If your answer is "appropriate" please, discuss on points of your justification for its appropriateness

A. If your answer is "inappropriate", please, explain areas of its inappropriateness _____

2. What is your opinion on the existence of ICT-ITV program?
 - If it has to be totally stopped

- If it has to be adjusted and continue

3. What alternative technology do you think is more effective than using ITV to realize the pedagogical objective of the education policy?

4. What factors are more prohibiting in the implementation of ICT in your school?

A. for ITV program _____

B. For the computer and internet _____

5. What solution/s do you suggest to overcome or minimize those problems you mentioned above? _____

Thank you again!

Addis Ababa University
School of graduate studies
College of education
Department of educational planning and management
Questionnaire for Students

The purpose of this questionnaire is to collect data on student's perception on effectiveness of information communication technology use in education, particularly, on instructional television program, and computer and internet use in high schools. The effectiveness of this questionnaire depends on your genuine and reliable response to each of the questions. There fore, being informed that the response to questionnaire will be kept confidential, please, be frank while responding to each item in the questionnaire.

Thank you very much.

General direction

- 1/ No need to write your name /ID No. _____*
- 2/ Encircle or put a tick mark (✓) for the letter or number you feel would be your choice.*
- 3/ For the ideal questions to be explained, write your idea on the provided areas.*

Respondents back ground

- 1/ Age _____*
- 2/ Sex*

A/ Male() B/Female()

Part I .In the following section, there are items that describe the improvements could be achieved from instructional television program; computer and internet in aspects of the educational use of ICT. There are scales to show degree of agreement and disagreement represented by numbers as: Strongly Agree =5, Agree = 4 Uncertain =3, Disagree=2, and Strongly Disagree=1. Therefore, from your experience of teaching face-to- face and technology based, chose by putting a tick mark(√) on that you feel describe best the improvement achieved from use of the technologies.

	Items	strongly agree	agree	uncertain	Disagree	St. gly disag
A.	Supporting new pedagogical methods					
1	Critical learning					
2	problem solving ability					
3	Work on Leal-life problem in-depth					
4	Making learners less abstract and More relevant to their life situation					
5	Authentic learning Experiences					
6	Social negotiation of knowledge					
7	Integration of pedagogical methods (facilitating learning, motivating the students to actively engage)					
B.	Enabling collaboration					
1	Encouraging interaction and cooperation among learners					
2	Providing the students the opportunity to work with people of different culture and ethnicity.					
C	Accessing remote resources allowing the students in remote locations to have direct learning from experienced, skilled, and more qualified teachers and experts teaching at a central location.					
2	allowing the teacher to share new and relevant teaching experiences from the online teachers.					
3	Providing access to expensive and scarce laboratory equipments when experiment, demonstration, and different activities take place from a central transmission.					
4	Accessing to real situation images of the world which other means can not offer to understand abstract content of lessons.					
5	Accessing to different specialists to make more clear contents that are beyond abilities of the teachers.					
D	Extending educational program					
1	-Enabling the teachers to upgrade their education					
2	- Enabling the teachers to have different training programs to improve their teaching methodologies					
3	-Enabling educational opportunity for civil servant to improve their educational level					
4	-Offering lifelong learning opportunities					
5	Both internet and ITV program possible learning characterized by time lag between the delivery of instruction and in reception by learners.					

	Items	strongly agree	agree	uncertain	Dis-agree	St. gly disag
E 1	Developing skills for the work place After having school to embark on a career, skills of computer and internet use enables me to be good competent.					
2	Advanced computer and internet skills and knowing how to use ,help once secure suitable employment					
3	Advance computer and internet skills and knowing how to use enhance once productivity when employed					
4	Develops my creative, problem solving, and logical thing that result in making judgments					
5	Develops my ability to interact something and work effectively with other people					
6	Develops my ability to find, appropriate use of information					

Part II The following items describe basic knowledge to be acquired to have concept and skills of computer and Internet case. There fore, put a tick mark (✓) on the level you believe depict your ability.

No	Items	Rating				
		5	4	3	2	1
1	Knowledge on the basic characteristic of computer, the show the capability and potential of it for processing data to save time, space, money, labor etc					
2	Knowledge of data representation methods with computer					
3	Knowledge on the units of data representation with in the computer system					
4	Knowledge of computer hard ware and their functions.					
5	Computer software, their classification, importance and how use them.					
6	Awareness on the applications software and their categories; and skill of word processing, spread sheet, and data base management system					

1	<u>Awareness of the meaning and importance of the Network</u>				
2	<u>Awareness of the two general types(LANs and WANs) of Network scope, and operation skill</u>				
3	<u>Understanding of the two broad categories (Peer-to peer and server based of Networks)</u>				
4	<u>Awareness of different Network technologies available and how to use them to maximize efficiency</u>				
5	<u>Awareness on importance and types of protocols in network</u>				
1	Window components and their selection techniques				
2	<u>Skills</u> How to start and use the windows Accessories and the explorer				
3	Knowledge and skills questing work books and work sheets				
4	Knowledge and skills of formatting numbers with in excel				
5	Knowledge and skills on how to use formulas to compute different activities				
6	Knowledge and skills of printing procedures				

No	Items	Rating				
		Excellent	Very good	Good	Poor	V. poor
2	Knowledge and skills of accessing online tutorial					
3	Skills of searching internet using different search engines using different search engines and directories					
4	Skills of receiving. Creating and sending emails					
5	Skills of down loading information from a web page					
6	Ability to differentiate quality of data available in of its legibility and relevancy					
7	Skill of printing page from internet					

Part III .In this section there items that describe the content relationship between students text and the instructional television program. Each item is followed by a five point degree of agreement and disagreement. Each is represented by numbers 1-5 as: Strongly agree=5 Agree=4, Uncertain =3, Disagree=3, Strongly disagree=1. Read each item and put a tick mark (✓) for the one that best describe your perception.

	Items	Strongly Agree	Agree	Uncertain	Disagree	Strongly disagree
1	Main topics and sub topics of each chapter are similar					
2	Have relation on inclusion of sketching leaching exercises.					
3	Have relation on inclusion of appreciation of ideas					
4	On giving practical example to elaborate abstract contents					
5	On inclusion of activities that develop student's analytical skills.					
6	Both have no appropriate content that support new pedagogical methods to enhance quality education.					
7	On how both constructed to ensure student centered teaching and learning approach.					
8	On how to reflect the real-life of the learners.					
9	On clarity of the contents throughout all the chapters.					
10	Both have some similarities and differences					
11	Both do not have any sort of content similarity.					

Part IV. The following items illustrate what roles the class room teachers are praying to enrich the effectiveness of instructional television in classroom learning. Thus, put a tick mark (✓) on the choice you feel describe whether you get support from the teachers during the ITV program transmission.

	Points	Yes	No
1	Classroom teachers assist to make the learning process more critical		
2	Classroom teachers support to make the program more student centered learning.		
3	Class room teachers help to encourage, guide and monitor the students to let them actively engaged in all the learning activities.		
4	Class room teachers assist to ensure the interactivity of the ITV program.		
5	Class room teachers assist the students to ask questions and answer questions.		
6	Class room teachers assist to make clear idea that is not clear during the program transmission.		
7	Class room teachers attempt to measure progress of the students understanding.		

Part V. Importance of instructional television (ITV) program.

Put a tick mark (✓) on the choice you feel is best to show your perception on the use of ITV.

Rating Scales: Strongly Agree = 5, Agree = 4
Uncertain = 3, Disagree = 2, Strongly Disagree = 1.

	Items	5	4	3	2	1
1	No quality improvement can be achieved through the use of ITV program for class room teaching & learning					
2	ITV program assists to reach populations who, other wise, would have much poorer quality instruction					
3	ITV assist to improve factors that are scarce and expensive (i.e. highly friend teachers and laboratory equipment for class room administration)					
4	ITV program is not good as the traditional to clarify abstract contents					
5	ITV program is important for critical /detail learning					
6	ITV program is enjoyable					
7	ITV program is not appropriate for authentic learning as the traditional learning method					
8	ITV program favors only fast understanding learners					
9	Learning by ITVP is not attractive to let learners participate in learning activities					
10	ITV program can develop problem solving skill of the students					

Part VI. Answer to the following questions by witting ideas /comments/ suggestions you think would be best response to the questions