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ADDIS ABABA UNIVERSITY

COLLEGE OF EDUCATION AND BEHAVIORIAL STUDIES

DEPARTMENT OF EDUCATIONAL PLANNING AND MANAGEMENT

THE PRACTICE AND CHALLEGES OF USING INSTRUCTIONAL TECHNOLOGIES IN SELECTED GOVERNMENT SECONDARY SCHOOLS IN BOLE SUBCITY

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The Practice and Challenges of Using Instructional Technologies in Selected Government Secondary Schools in Bole Sub City

By

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This is to certify that the thesis entitled 'The practice and challenges of using instructional technologies in selected government schools in Bole Sub City' is prepared by Fantu Wolde and submitted in partial fulfillment of the requirements for the degree of masters of educational leadership and management complies with the regulations of the university meets the accepted standards with respect to originality and quality.

Fantu Wolde

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1. DECLARATION

I confirm that this research thesis is my original work and has not been presented in any other university for certification. The thesis has been complemented by referenced works duly acknowledged. Where text, data, graphics, pictures and tables have been borrowed from other works including the internet, the sources are specifically accredited through referencing in accordance with anti-plagiarism regulations.

Fantu Wolde

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Fantu Wolde

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List of Acronyms

BSCEO: Bole Sub-city Education Office

CAI: Computer assisted instruction

CD: Compact disc

EICTDA: Ethiopian Information Communication Technology Development Agency

EMA: Educational Media Agency

ESDP: Education sector development program

ETP: Education and Training Policy

FDRE: Federal Democratic Republic of Ethiopia

ICT: Information Communication Technology

IJSRM: International Journal of Science and Research Methodology)

IMs: instructional Materials/Instructional Media

ITV: Instructional Television

LCD: Liquid Crystal Display

MCB: Ministry of Capacity Building

MoE: Ministry of Education

NGO: Non-Governmental Organization

OHT: Overhead transparency

PTV: Plasma Television

SPSS: Statistical Package for Social Sciences

UNESCO: United Nations Educational, Scientific and Cultural Organization

VCD: Video Compact Disc

VSAT: very small aperture terminal

ABSTRACT

*The purpose of the study was to assess the practice and challenges of using instructional technologies in selected government secondary schools in Bole Sub City. To this end, D*escriptive design *was used. A total of 212 respondents were selected and addressed as source of data. From the four randomly selected schools, 184 teachers, 4 cluster supervisors, 4 principals, and 8 students were selected using random sampling technique. Where a*s *purposive sampling wa*s used to select *12 department heads (3 from each school). The researcher developed two types of questionnaires as the main data collecting instruments for addressing teachers and department head respondents. In addition to the main data collecting tools, interview, observation and document analysis were also used to help supplement the data gained through the questionnaires. The responses to close ended questios were analysed using SPSS statistics version 20 computer software,. The data obtained through open-ended questions, interview and document analysis were analyzed by condensing the information into key thems and topics. The findings of the study revealed that in the sampled schools instructional technologies, although available, they were not sufficient except plasma TV. Of the nineteen instructional technologies included in the research study, seven of them were found out to be used relatively more frequently by teachers than the rest. It was also revealed that factors such as lack of electric power, well organized ICT room, appropriate support from the school administration, and computers were perceived to affect the effective use of instructional technologies and application of ICT in the schools. From the findings of the study, it was concluded that instructional technologies were generally insufficiently available and used in the sample schools and the application of ICT integration is at low level. Finally, the researcher recommends that the school administration, teachers and the concerned government bodies should work collaboratively to ensure the adequate availability and use of instructional technologies for effective learning and teaching activity.*

CHAPTER ONE: Introduction

It is commonly believed that learning is enhanced through the use of technology and students need to develop **technology skills** in order to be productive. For this reason, provision of quality education includes the expectation that teachers use technologies effectively in their classroom and that they teach their students to use technology (Davies & West, 2014). Different authors agree that students learn best if they are given the opportunity to make observations of what they are taught. A good instructional material serves as a substitute for real life objects in the classroom as against the use of exploratory method. According to Thungu (2008), instructional materials meet the needs of learners and facilitate the teaching and learning process.

It is belived that education in Ethiopia undergoes a paradigm shift since the introduction of Education and Training Policy in 1994 (Kassahun, 2012). The reform was necessitated by crises into which the previous education system was plunged. To enhance the quality of education at secondary level, a strategy has been laid by the government to provide ICT infrastructures to help schools receive satellite education transmission (Ministry of Education: 2010). For instance, Demissew (2006) wrote that ICT has gradually been introduced in the country: starting with Plasma TV followed by computer based instruction, ultimately, multi-modal or all ICTs that contribute to the achievement of educational goals and targets in schools.

It is necessary to introduce instructional technologies into schools for teaching purpose. But their availability should be to the required level and utilizing the available technologies is crucial.

This study focuses on the practice and challenges of using instructional technologies in four selected government secondary schools in Bole Sub City. Bole Sub City is one of the ten Sub Cities in Addis Ababa City Adminstration, the capital city of Ethiopia. It is located in eastern part of Addis Ababa City and it covers an area of 122.08 square kilometers. In the sub city there are eight government secondary schools, of which four, namely Bole Preparatory school, Beshale Secondary & Preparatory School, Ayer Amba Secondary School, and Bole Community Secondary School; were randomly selected to be used as sample to collect the required data for the study.

1.1. Background of the Study

Teaching is a complex and demanding task that requires highly specialized skills, knowledge and resources to impact significantly on student learning. Availability and utilization of instructional technologies in schools is important in achievement of its goals and objectives. Students learning outcome can be influenced by appropriate utilization of such resources.

The use of instructional technologies actually provides flexibility to a learner which is denied by the traditional process and method. On the internet, many Websites are available freely which will be utilized by students and teachers to develop reasoning, critical thinking, analysis and problem solving hence helping them in sharing technologies one another. Betz (1990) notes that instructional technologies attract attention; which is paramount to learning. They help students visualize problems, solutions and link students to learning tools especially when using computers (Newby et al. 2006). This lets them access the materials, obtain information and have experiences that they will not have had.

The use of instructional technologies actually provides flexibility to a learner which is denied by the traditional process and method. Instructional technologies, however do not achieve the attributed value on their own, their usefulness depends on what the teacher makes out of them. Intelligent handling and effective use of these materials in classroom is necessary. For effective utilization teachers must understand how to use and control the technologies. Unless the teacher uses these devices and directs the pupils attention to what they should look for, the pupils will not learn as much as intended from the devices. Besides, although instructional technologies can add strong values to the modern educational environment, it is the proper and effective utilization of the available instructional technologies rather than the presences of the technologies by themselves that can help students receive a better learning.

The notion of education in Ethiopia is started in the sixth century, the entrance of Christianity. The church continues to dominate the education system in Ethiopia until modern education was introduced in 1908. Many social problems forced the Emperor to think of modern education and hence he launched it with many resistances from the church (Aweke S., 2015). Traditional education is an inadequate model to prepare students to compete worldwide. The curriculum changes needed for global communication and collaboration should consider how education

overall can be enhanced and strengthened with technology. It is clear that in such education system teachers expect only the passive behavior of students.

Ethiopia is known to have an experience spanning about four decades in using radio and television to support secondary education. The Educational Media Agency (EMA) of the Ministry of Education traces its origin to the Audio-Visual Center established in 1952/53. This center was developing, producing and distributing audio-visual teaching aids, and even had a mobile team that was travelling to villages and schools to show films and slides (Demissew B. & Thomas D. & 2000). These authors further stated that in 1965, a year after the introduction of television in the country, television became the first technology for broadcasting educational programs using the facilities of the Ministry of Information. In 1967, the Audio-Visual Center was reorganized as the Educational Mass Media Center with its own TV studio that produced programs in eight subjects for senior secondary schools and in five subjects. In 1969, EMA started broadcasting from its own studio, an indication of its technical and production attainment.

Convinced by its opportunity to bring about fast growth and development to the country, the Ethiopian government gave emphasis to science and technology progressively changing the system adjoined by the core approach of student centered learning. Good examples for such radical change is the implementation of plasma television (PTV) learning media in six subjects(mainly Mathematics and Sciences) in all government high schools throughout the country. The plasma-based instruction was launched in 2004 throughout the country. Later in 2006, three other school subjects, namely technical drawing, general business and economics) were also added for preparatory students. All programs have only been delivered to governmental secondary schools in the country through a closed- circuit system using (VSAT) satellite dishes (Berhanu A., 2013).

The 1994 Education Strategy Policy clearly outlines a progressive educational philosophy that is inclusive of technological needs. It is an excellent base to begin preparing students with 21st century skills (Jenifer F., 2014). In the new policy emphasis is given to the development of problem solving capacity and culture in the content of education, curriculum structure and approach, focusing on the acquisition of scientific knowledge and practicum (MoE, 1994). This can be partly ensured by allowing the integration of ICT in the education system.

ICT has been introduced in the education system to strengthen the expansion of quality education (FDRE, 2004). The government initiated three initiatives (MCB, 2006) of these Schoolnet initiative is aimed at deployment and exploitation of ICTs to facilitate teaching and learning process and implementing the new educational policy within the Ethiopian school system, including the primary, secondary, technical and vocational schools. According to Temtim A. (2017), the Ethiopian government is being engaged to expand ICT penetration in the high school through different measures. It introduced new mode of teaching in the high schools through live broadcast ITV and installed one or two computer labs with internet connection in all high schools of the country.

Recently everywhere in our country there has been lots of discussions and debates regarding the falling of the quality of education. According to Shiferaw M (as cited in Haradhan K. M., **2**013), low quality education is one of the major problems in Ethiopian Education. But the blame has been shifted from one education variable to another. Teachers, parents and pupils share the blame, ministry of education is often blamed for the deteriorating condition in schools at different level. Though various measures could be taken to come up with a solution to the education problem in the country, there is still widespread quality problems in the country. In this regard the researcher of this study believes that the use of instructional technologies in schools can partly help to alleviate the quality problem obliviously seen in education. As far as the researcher's personal preliminary observation is concerned, there are many secondary schools in Addis Ababa City which are known to rely mainly on verbal presentation to deliver lessons in the classroom. Such type of teaching activity does not properly help to produce innovative and productive individuals. It is with this background in mind that the researcher intended to undertake the research on the practices and challenges of using instructional technologies in selected government secondary schools in Bole Sub City.

1.2. Statement of the problem

Instructional technologies are known to reinforce learning because when technology based education is implemented in the classroom, learners are motivated. Instructional materials facilitate teaching and learning activities and consequently, the attainment of the lesson objectives. According to Muddasir H. Malik & Aqueel A. Pandith (2011), instructional devices

which are used in the classroom are known to encourage learning and thereby make it easier and interesting.

The mere presence of the instructional resources does not guarantee that teachers use the resource for ensuring provision of quality education. The researcher of this study believes that for the students to acquire the necessary knowledge and develop the required skill, the available instructional technologies in schools need to be exhaustively and appropriately utilized by teachers. In order to ensure this success, teachers, principals, supervisors and education officials should be well equipped with knowledge about the importance of utilizing instructional technologies. On top of this, they also need to develop the appropriate skill of using the available technologies

The researcher has personally been working for eighteen years in one private secondary school of the study area. The preliminary observation made by the researcher of this study in some government schools in Bole Sub City revealed that instructional technologies such as computers, models, realia, LCD projector and others which could assist teachers in supporting the theoretical lessons they present in the classroom are not suffiently available. In addition to this, the technology devices available in the schools are rarely used by teachres and there are also several teachers who were not using the available resources. This issue was one of the points of discussion when the researcher meets with some teachers, principlas and cluster supervisors.

This may be a problem in different secondary government school in the country. Abebe (2008) in his study notes that teachers are poor in utilizing audio and audio visual instructional media. Other studies conducted on instructional technologies in various area of our country also found out that the extent of utilizing instructional resources is quite inadequate in many schools. The problem of such inadequacy affects a number of activities in the teaching and learning process, thus limiting teachers in their efforts to vary their teaching techniques.

For students to get better learning experience, the teaching learning should be supported by technology based education. In this regard the researcher of this study got opportunities to meet with few students of government secondary schools in Bole Sub City at various times and discuss with them to understand about the current status of using instructional technologies in their respective schools. They were complaining about too much theoretical presentation which was not supported by technology devices. This and the aforementioned preliminary information led

the researcher to decide that there might be problems in connection with the practice and challenges of using instructional technologies in the schools.

Moreover, although and other researchers such as Solomon H. (**2**019) and Tetim A. (**2**017) conducted researches on related issue, to the knowledge of the researcher, there was no research conducted on the practices and challenges of utilizing instructional technologies in government secondary schools in Bole Sub City. Thus, the researcher here felt that, there is a gap which needs in-depth investigation in the study area about the current status on this particular issue.

To get to the core of this inquiry, there are central questions which must serve as guides in determining the direction and focus of the research. With this in view, the study is aimed at addressing the following research questions:

1. Are instructional technologies sufficiently available in the schools?
2. Are the available instructional technologies sufficiently used in the schools?
3. What are the major factors affecting the use of instructional technologies in the selected schools?

1.3. Objectives of the study

1.3.1. General objectives

The overall objective of this study is to identify the current practices and challenges of the use of instructional technologies in the selected government secondary schools in Bole Sub City.

1.3.2. Specific objectives

The following specific objectives were formulated for achieving the overall objective stated above and addressing the research questions:

- To find out sufficiency of instructional technologies in the selected schools.
- To find out the extent to which the available instructional technologies are utilized in the schools.
- To describe the major factors contributing to the use of instructional technologies in the selected government secondary schools and suggest possible solutions.

1.4. Significance of the study

The essence of any research endeavor is an addition to the academic satisfaction, to find solution to the numerous problems confronting man in his attempt to actualize himself in the context of the society (Ogaga, G. A., Igori W. & Egbodo B. (2016).

It is anticipated that this study could contribute in the following ways:

- It will be of help to the other researchers who wish to conduct similar research in the education.
- It will serve as a valuable document to teachers, principals, writers of social studies textbook and teachers of social studies in various secondary schools.
- The findings and recommendations of this study could be used by Bole Sub City education office as frame work to organize training sessions for secondary school teachers, principals and supervisors on how to effectively utilize instructional resources.
- It provides valuable feedbacks to the researched selected schools regarding the way of ensuring the effectiveness of the use of instructional resources, and the benefits of proper utilization of instructional materials.
- Researchers might also use the research result as a springboard for further investigations that would lead to the improvement of the use instructional technologies in an educational system.

1.5. Delimitation of the Study

Although the concept of instructional technology is vast and extensive to grasp, the scope of this study is limited only in giving answer to the three basic research questions. Moreover, to make the research manageable its scope covered the major and basic issues in assessing the practice and challenges of instructional technologies in selected secondary schools in Bole Sub City. In order to make the study more manageable and feasible it was delimited to only four government secondary schools. The reason why the four government secondary schools in the Sub City were selected was because of the researcher's practical experience for about 18 years in teaching and as school director in one of the private secondary schools in Bole Sub City. It was thought that this might give an opportunity for the researcher to get well acquainted with school supervisors,

teachers and principals in government schools and education offices. This, in turn, made possible for the researcher to collect the required data with little possible obstacles. Regarding the content and respondents of the study, it was delimited to assess the the practice and challenges of using 19 instructional technologies involving teachers, students, school principals in 4 randomly selected government secondary schools in Bole Sub City, and cluster supervisors in the selected schools.

The study is also confined mainly to the investigation of five main areas of the subject matter: Availability of instructional technologies in the selected schools, benefits of using instructional technologies, problems faced during the application of instructional technologies in the teaching and learning activity, strategies employed to overcome the challenges, and ICT integration, Since there are various types of instructional technologies which are used for instructional purposes, this study focused only on some of those instructional technologies which are categorized under projected and non-projected instructional technologies, display boards, three dimensional devices, audiovisual and ICT related materials which are expected to be available in government secondary schools.

1.6. Limitation of the Study

As anything in the world is not changeless, the researcher believes that any research can never be free from limitations. Because of the evil covid-19 problem, all schools in the country were closed. This prevented the researcher from collecting data from respondents of the selected government schools as per the required time. The researcher was able to minimize the problem by conducting telephone interview with some of the school principals and cluster supervisors instead of using face to face interview. Some of the limitations were related to respondents' unwillingness to fill in the questionnaires and to be interviewed. Some respondents were observed to respond for the open ended questionnaires carelessly. As a result, few of the collected questions were discarded. There were very few respondents who had enough time, but they were found to make a few half-hearted attempts to fill in the questionnaires and return them on time.

1.7. Definition of key terms

In this study the term instructional technologies is used alongside instructional media, instructional materials and instructional resources to mean all the materials and equipment that are used to enhance the teaching and learning process in the classroom.

Diorama: a three dimensional representation of events, ideas or concepts against a scenic background.

Educational technology: any tool, equipment, or device—electronic or mechanical—that can help students accomplishes specified learning goals. Educational technology includes both instructional and learning technologies.

Graphics: Materials which are used for instruction purposes such as figures, diagrams, graphs, maps, pictures, photographs, etc.)

ICT Integration: in education refers to the use of computer-based communication that incorporates into daily classroom instructional process.

Improvisation of instructional technologies: preparing materials for classroom instruction using the available materials

Instructional material: any collection of materials including animate and inanimate objects and human and non-human resources that a teacher may use in teaching and learning situations to help achieve desired learning objectives.

Instructional media: Instructional media encompasses all the materials and physical means an instructor might use to implement instruction and facilitate students' achievement of instructional objectives.

Instructional technology: educational technologies teachers employ to provide classroom instruction.

Mock ups: a replica of a machine or structure used for instructional purposes.

Peg board: pre-drilled with evenly spaced holes. The holes are used to accept pegs or hooks to support various items such as tools in a workshop or classroom.

Realia: objects used by teachers to illustrate everyday life. (e.g. gold coins, tools, a real frog and flower etc. brought into classroom for instruction purpose)

Technology: methods, systems and devices which are the result of scientific knowledge being used for practical purposes.

Technology integration: the use of technology to enhance and support the educational environment.

1.8. Organization of the study

This research paper consists of five major chapters. The first chapter describes about the statement of the problem, the research questions, objectives, significance of the study, the scope of the study and limitations of the study. Chapter two presents a review of the related literature in connection with the practice of using instructional technologies, challenges to using instructional technologies and other concepts related to instructional technologies. Then, chapter three clearly specifies the research research design, sampling, methods of data collection and the methods of data analysis. Data presentation, analysis and interpretation are dealt in chapter four. And finally findings, conclusion and recommendations are presented in the fiveth chapter.

CHAPTER TWO: Review of Literature

2.1. Introduction

Learning, which is a complex process, is an enduring change in behavior, or in the capacity to behave in a given fashion, which results from practice or other forms of experience (Schunk D. H., (2012). There is an assertion that learning can be reinforced with instructional technologies of different variety because they stimulate, motivate and attracts learners' attention for a while during the instruction process (Adeyanju, 1997). It is known that learning uses the sense avenues to reach the mind of the learner and this can be made possible through the use of instructional technologies. Technology is perhaps the strongest factor shaping the educational landscape today (Johnson, A. M., Jacovina, M. E., Russell, D. E., & Soto, C. M. (2016). The researcher of this study believes that this is the era of technology where we are utilizing scientific techniques for solving problems and improving the life. For learners to acquire better knowledge and develop the necessary skills and to make teaching and learning process easier, simple, and comprehensive; we need to implement technology based education.

This chapter presents relevant literature on the practice and challenges of using instructional technologies. It provides a comprehensive review of related literature on the various aspects of instructional technologies giving more emphasis to the definition and uses of instructional technologies, factors affecting the use of instructional technologies, classification of instructional technologies, strategies to minimize the challenges to utilize instructional technologies and ICT integration in learning and teaching.

2.2. Definition of Instructional Technology

The term instructional technology, which is also interchangeably used with instructional material and instructional medium, has been defined differently by various authors. In this study the term instructional technologies will also be frequently used alongside instructional media, instructional materials and instructional resources to mean all the devices and equipments that are used to enhance the teaching and learning process.

Armsey and Dahl (1973) defined the term instructional technologies as "the things of learning, the devices and the materials which are used in the processes of learning and teaching". The authors further stated that 'the things of learning' that have the potential to make a significant quantitative or qualitative difference in education are: television and television related technologies, film, audio tape, radio programmed instruction, and means to its presentation, computers and books. Such recent publications as encyclopedia of terminology for educational communications and technology by Rita C. Richey (2013) cited Armsey and Dahl and the definition they gave to instructional technologies. Ogaga et al (2016) observed instructional materials as those materials which are used in classroom for instruction or demonstration purpose by teachers and students. Instructional materials (IMs) can be used to make the learning experience more dynamic, concrete and realistic.

According to what is stated by the aforementioned authors, the researcher notes that instructional technologies can be considered as devices that assist an instructor to clarify, establish and correlate concepts, to transmit to learners facts, skills, attitudes, knowledge and appreciation, and enable them to make learning more concrete, clear and effective. They viewed instructional technologies to be part of the teaching-learning process and make learning more realistic. Instructional materials are learning aids and devices through which teaching and learning are done in schools. So, from the above definitions point of view; the term instructional technologies generally refer to the various devices used for providing classroom instruction to make the teaching learning process more vivid and interesting.

According to Commission on Instructional Technology report (as cited in Chyung, 2008), the following was stated about one of the early definitions of instructional technology:

> *Instructional technology can be defined in two ways. In its more familiar sense, it means the media born of the communications revolution which can be used for instructional purposes alongside the teacher, text book and blackboard. . . . The second definition and less familiar definition of instructional technology goes beyond any particular medium or device. In this sense, instructional technology is more than the sum of its parts. It is a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of specific objectives, based on research on human learning and communication, and employing a combination of human and nonhuman resources to bring about more effective instruction (p.21).*

In order to reflect the present day reality; the commission, along with what is stated above, considered the pieces that make up 'instructional technology': television, films overhead

projectors, computers and other items of 'hardware' and 'software'. Here, the researcher of this study notes that instructional technology can also be considered as a systematic way of designing, carrying out and evaluating the total process of teaching and learning, using a combination of human and non-human resources to effect an effective change teaching and learning activity.

Thus different authors agree that instructional technologies are resources that the teacher and students use to influence the effectiveness of teaching and learning process. They help to promote understanding of concepts and generalization by making lessons practical and realistic. Technological equipments have to support the teaching and learning processes in order to make learning more interesting and easier to access for students. Any teacher who has the interest of his students at heart is bound to think of the ways and means he will employ to make his teaching and learning process effective and interesting to the students.

Despite the above more comprehensive viewpoints from the literature that instructional technology encompasses the broader processes of teaching and learning, for the very purpose of this research the researcher used the definition given by Armsey and Dahl.

2.3. Brief historical overview of instructional technologies

In education, technology has been used for a long time in various forms: black and white boards, pens, and recently overhead projectors, radio and TV or film (Matilda D., 2007). With the development of learning technologies in the late 20th century, education system has changed rapidly. This is due to the capability of technology to provide a proactive, easy access and comprehensive teaching and learning environment. Nowadays, Ministry of education in all over the world has provided a lot of facilities and training in order to enhance the use of advanced technologies in the countries' teaching and learning process (Ghavifekr S, Athirah & Rosdy, 2015).

There have been important developments which help to create the need for instructional technologies (Seattler, 1990). These were:

- Due to the fact that World War II (WWII) created an enormous instructional problem, thousands of military personnel had to be trained rapidly to perform thousands of tasks critical to their own survival and the war effort. The problem could result in an expansive impact on the development of instructional materials. (Olsen & Bass, 1982). Supporting

this idea Chyung, (2008), stated that the profession of instructional technology emerged during WWII. The roles of instructional technologists have changed over time. This indicates that it has been long since instructional technology used in education and in training.

- Stabler, (1969), had an observation that the application of instructional technology which was based on pre-war scientific research was proved to be very productive under controlled environment.
- The production of a wide variety of instructional materials and a broad use of instructional technologies was encouraged by the emergence of an official military policy and finally, the apportion of an enormous financial resources available to the development of the programme.

In relation to Africa, Bogonko (1992), states that the concept of using instructional resources can be traced back to the indigenous African education. The focus of indigenous African education was learning by doing as well as being expository in nature. As both print and non-print media were non-existence or scarce, relying upon spoken word from a school teacher was one major challenge faced by early schools in the use and acquisition of resources.

2.4. Use of Instructional Technologies in the Teaching Learning Process

The use of instructional technologies plays a significant role in the reinforcement of learning. This is because instructional technologies can stimulate, motivate and as well as arrest learners' attention for a while during the instruction process. In order to empower teaching and learning activity both teachers and students must have access to instructional technologies in schools (Linns, 1997).

Lyons (2002) states that learning involves interplay of students' motivation, physical facilities, teaching resources, skills of teaching and curriculum demands. The use of instructional technologies in education brings about fruitful learning outcomes since such resources stimulate students learning as well as motivating them. It is evident as Yelland (2001) claimed that organizations that do not incorporate the use of instructional technologies in schools cannot seriously claim to prepare their students for life in the twenty-first century.

According to Raw (2003), appropriate utilization of resources in schools makes students remain motivated for longer period. When properly used, they help gain and hold the attention of students. In connection with increasing the human attention span, Sonya H. (1988) in her book entitled 'How to talk so people listen' stated: "Eighty-five percent of the brain is actually not needed for your listener to grasp what you mean. You must build in new devices to keep 100 percent of the listeners brain occupied."

Here the researcher of this study notes that the use of technology devices in teaching and learning helps to maximize the attentiveness of learners. As the primary purpose of teaching and learning process is to bring a significant change in behavior through active participation and critical thinking of the learner, the use of instructional technologies in the classroom instruction can assist in achieving this purpose by increasing the span of their attention.

Several studies conducted with regard to the use of instructional technologies show that classroom instruction when supported by technology greatly benefits learners. Zekaria (2012) in his study figured out five advantages of instructional technologies. These are: 1) provide a concrete idea for conceptual thinking and hence reduces abstract thinking, 2) have high chances of arousing interest of learners and hence motivates them to learn, 3) offer the necessary basis for the development of learning hence it makes learning to be more permanent, 4) offer a reality of experience which stimulates self activities on the part of the learners, and 5) provide experience not easily secured by other methods and contribute to the efficiency of learning.

Instructional technologies play a significant part in teaching and learning process. The materials that the teacher uses in the classroom determine students' enthusiasm, involvement and willingness to learning process. When students are actively engaged, they are able to retain knowledge as well as participate in class. Aramide and Bolarinwa (2010) opine that instructional materials have the potential for enhancing students' learning. Their role in teaching and learning is one of the most important and widely discussed issues in contemporary education policy. Instructional materials must serve as a vehicle for improving the quality of learning for every student (Pattaya, 2014).

Okpala (1999) noted that if Audio-Visual materials are properly utilized, they will enable the teachers to achieve the following: a) Reduce verbalization; c) Stimulate self-activity, make new

topic interesting; d) Supply concrete basic conceptual thinking; e) Increase ability of retention; f) Develop keen observation; and g) Foster creative imagination

Supporting the above view, Onwuka (1998) stated that audio-visual when effectively used can accomplish the following objectives:

I. Supply concrete basis for conceptual thinking and reduce meaningless word responses of pupils (Nyamubi, 2003);
II. Making learning more permanent;
III. Offer reality of experience which stimulates self activity on the part of the pupils;
IV. Increase students interest to learn;
V. Contribute to growth of meaning and vocabulary development

It is apparent that when instructional technology is properly used, it captures the learners mind, the teacher becomes more organized in selecting media and the method for presenting content so as to stimulate learners and enhance better understanding of the concept.

Instructional materials provide a range of learning experiences to learners from direct to indirect. Dale (1969) arranged the learning experiences on a continuum of 'directness to indirectness' which has correlation with continuum of 'concreteness to abstract'. He called it a 'Cone of Experiences'.

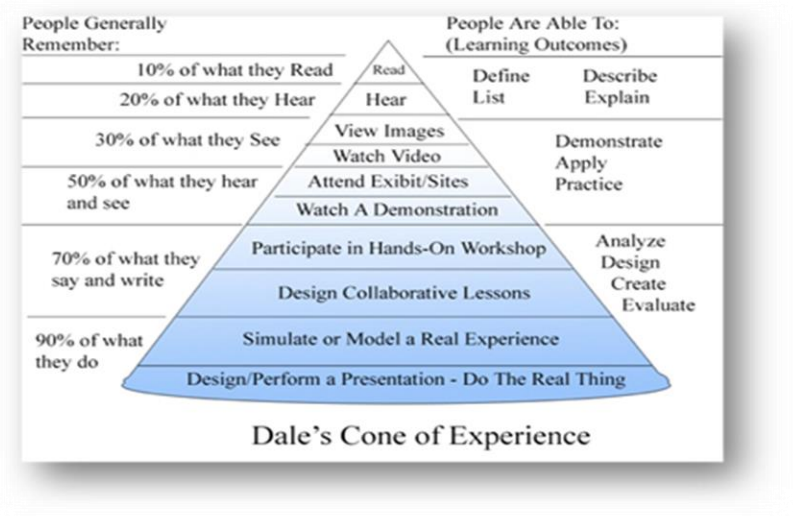

Fig.1. Cone of experience:

Taken from: https://www.jaypeedigital.com/book/9789350253502/chapter/ch7 (Retrieved on December 2, 2019)

From the above cone of experience, it is noted that there is little learning when learners read by themselves or listen to a teacher. The more the number of senses involved by learners during learning, the higher the level of retention of what is taught. With today's students, verbal presentation does not hold their attention for very long even though it is a means of conveying information to them. Students need to be engaged and motivated by allowing them to do some activities through the use of instructional technologies. This will enhance the use of their various senses.

To sum up, all the above research findings indicate that instructional technologies play a great role in facilitating the teaching-learning process. Since instructional materials constitute alternative channels of communication, which teachers can use to convey instructional information more vividly to learners; the classroom teachers should become conversant with the type of instructional technologies which can be used in any teaching/learning situations. Educationists have realized the importance of instructional technology devices for effective classroom teaching and learning. Hence, it is essential that teachers bridge the gap between theoretical and practical knowledge via the use of technologies to facilitate teaching and learning.

The focus of instructional technology is in using tools to facilitate student learning. It is not simply application of tools but beyond that as well. The tools that are used by teachers for instruction purpose are wide and varied. Whether for the purposes of seeing or hearing and others for seeing and hearing at the same time, instructional materials are intended to bring about meaningful understanding and hence learning. The use of instructional technologies in the classroom has the potential to help the teacher explain new concepts clearly, resulting in better student understanding of the concepts being taught.

2.5. Categories of contemporary instructional technologies

This study focused on nineteen instructional technology devices, namely graphics, realia, **s**lide**s,** film strips, overhead head projector, LCD projector, Computers, silent films, models, mock ups, dioram, white board , peg board, bulletin board, tape recorder, video, plasma TV, internet and school net. These are expected to be available in government secondary schools. This section aims to give some description about the major categories of instructional technologies to which the indicated devises belong according to Ellington (1987).

I. Non-projected display materials

, This category includes all visual display materials that can be shown to a class, small group or individual student without the use of an optical or electronic projector of any sort. It includes a number of the most basic - and most useful - visual aids that are available to teachers and lecturers, some of these are: **Chalkboard displays, Marker board (whiteboard), magnetic board displays, flipcharts, Posters, models, realia:**



Bulletin board Peg board Magnetic board

Source: http://www.google.com/images

Fig. 2: Display boards

II. Still projected display materials

This category includes all visual display materials which do not incorporate movement and which require an optical projector of some sort in order to show them to a class or group or enable them to be studied by an individual learner, the most important of which are listed below:

Overhead projector transparencies and similar materials: textual or graphical images on large acetate sheets that can either be displayed to a class or group using an overhead projector




Film strips slides LCD projector Overhead projector

Source: http://www.google.com/images

Fig. 3: Projected Instructional Technologies

Slides: single frames of 35 mm photographic film mounted in cardboard, plastic or metal binders, often between twin sheets of glass (compact slides).

Filmstrips: these are simply strips of 35 mm film carrying linked sequences of positive images.

III. Audio materials

This category includes all the various systems whereby straight forward audio signals can be played to a class or listened to by an individual. Radio broadcasts and audiotapes are some of the most important audio materials.

IV. Video materials

This class includes all media that enable audio signals to be combined with moving visual sequences. Television broadcasts and videotape recordings are among the main systems that are currently available.

V. computer-mediated materials

This final category includes all the various materials that require a computer of some sort to enable them to be displayed, studied or used. This technology constitutes the most important single resource which brought about the massive shift from conventional expository teaching to mediated individualized learning.

The variety of instructional materials listed above describe the range of resources that individual teachers could adopt to complement the various teaching and learning activities to enhance teacher output and induce learner performance. Obviously, some of these materials vary from conventional instructional materials that are imported and therefore mostly out of reach of many schools in Ethiopia, The researcher of this study believes that the use of any of these resources in secondary schools could encourage learners to construct meaning from the lessons taught.

2.6. ICT integration in teaching and learning

The world in which we live in is changing rapidly and the field of education is experiencing these changes in particular as it applies to instructional technologies. As a classroom tool, computer has captured the attention of the education community. This versatile instrument can store,

manipulate, and retrieve information, and it has the capability not only of engaging students in instructional activities to increase their learning, but of helping them to solve complex problems to enhance their cognitive skills (Jonassen & Reeves, 1996). Integration of Information, Communication and Technology (ICT) in education refers to the use of computer-based communication that incorporates into daily classroom instructional process (Ghavifekr & Rosdy, 2015). According to Anderson and Glen (2003) ICTs are defined as those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware (e.g. computers and other devices); software applications; and connectivity (e.g. access to the internet and local networking infrastructure).

In recent years the integration of technologies and computers in the educational process is increasingly becoming an integral part of the education system. The technology can enhance the education process in many ways. Research, presentation, communication, collaboration, problem-solving and creativity, all are now under the influence of today's computers and other technologies that have become an important part of our daily lives. Therefore it is equally important to integrate the same technologies in the education process (Blerim R., 2012).

Since integrated technologies incorporate diverse forms of media under the control of a computer to produce and deliver materials in a variety of ways for teaching and learning, they are essential for multimedia learning (Rita C. Richey, 2013). Research studies in the past decade have shown that computer technology is an effective means for widening educational opportunities, but most teachers neither use technology as an instructional delivery system nor integrate technology into their curriculum (Mojgan A. et al, 2009).

ICTs are making dynamic changes in society. They are influencing all aspects of life. The influences are felt more and more at schools. Because ICTs provide both students and teachers with more opportunities in adapting learning and teaching to individual needs, forcing schools aptly respond to this technical innovation (Tinio, 2002). Tinio (2002) states the potentials of ICTs in increasing access and improving quality of education in developing countries as follows:

> *ICTs greatly facilitate the acquisition and absorption of knowledge, offering developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and execution, and widen the range of opportunities for business and the poor. One of the greatest hardships endured by the poor, and by many others, who live in the poorest countries, is their sense of isolation, and ICTs can open access to knowledge in ways unimaginable long ago.*

The use of ICT creates a powerful learning environment and it transforms the learning and teaching process in which students deal with knowledge in an active, self directed and constructive way (Volman & Van Eck, 2001). ICT is not just regarded as a tool, which can be added to or used as a replacement of existing teaching methods. It is seen as an important instrument to support new ways of teaching and learning. It should be used to develop students' skills for cooperation, communication, problem solving and lifelong learning (Plomp et al., 1996; Voogt, 2003).

Although ICT may facilitate independent self-paced learning, the potential of ICT may not be optimized if there is no shift in the learning and teaching paradigm (Bangkok, 2004). In fact, teachers play an important role in the teaching/learning paradigm shift. They must understand the potential role of technology in education. Also, they should become effective agents to be able to make use of technology in the classroom (Mojgan A. et al, 2009). ICT will assist teachers to the global requirement to replace traditional teaching methods with a technology - based teaching and learning tools and facilities.

There seems to exist factors that influence teachers' decision to use ICT. Earle (2002) discussed two types of factors:

> *The first relates to extrinsic items such as online access, time for planning, support, resources, and training in order to have the necessary skills. The second involves intrinsic items such as attitudes, beliefs, and practices about traditional teaching methods. In addition, administrators have the responsibility of helping teachers understand the technology by providing professional development which can be offered through "mini lessons" during the school year. Thus, teachers can easily recognize the benefits and technology can be used in planning the curriculum.*

The various kinds of ICT products available and having relevance to education, such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counseling, interactive voice response system, audiocassettes and CD ROMs, etc. have been used in education for different purposes (Sharma, 2003; Sanyal, 2001).

While, the aim of ICT integration is to improve and increase the quality, accessibility and cost-efficiency of the delivery of instruction to students, it also refers to benefits from networking the learning communities to face the challenges of current globalization (Albirini, 2006) as cited in Ghavifekr, S. & Rosdy, W.A.W. 2015).

2.7. Factors Affecting the Use of Instructional Technology in The Classroom

The effectiveness of instructional technologies depends upon the manner and the degree to which they meet the needs of teachers and students. Any evaluation must examine usage, scope of print and non print collections, frequency of removal of biased and outdated materials, and procedures that promote ease of use and accessibility (Bebell et al, 2004).

There are some factors which considerably affect the implementation of instructional tecnologies in the classroom. Moore (2004); Krysa (1998); Yaghi (1996) and Roszell (1995), have each undertaken studies and attempted to discover the factors for the limiting use of instructional technology in the classroom. Their investigation could disclose factors which are listed below:

- **Time**

The implementation of technology in the teaching field requires time to learn the skill. Teachers must have time to learn necessary computer and other technology related skills in order to apply these skills into their class curriculum.

- **Teacher Attitude**

The use of instructional technologies by teachers has an impact on students' content acquisition and adds to class performance. Beggs (2000) noted that, it is not the technology itself but how the technology is used that improves learning and increases student interest.One of the impediments to the successful implementation of instructional technologies in the classroom teaching and learning activity appears to be resistance of teachers. Teachers' attitudes and beliefs are crucial factors in determining the role and effectiveness of technology in classrooms. Teachers who have been provided by their schools with a computer and all the necessary instructional technology within the classroom will be more likely to have a positive attitude towards implementation of instructional technology (Becker 1999).

- **Availability of instructional media**

For the technology to be implemented in an environment, it must be first available (Majed 1996). Unavailability of the required instructional resource is known to contribute the minimal use of instructional technologies by teachers in the classroom. Availability of and access to instructional technology resources are important factors that determine the frequency with which teachers use instructional materials (Fuller 2000). In this connection, Holloway (1996) suggests that the

frequency with which teachers use instructional technology is related to the availability of technological hardware in the classroom.

In a survey, Kadzera (2006), on use of instructional technologies in five teachers training colleges in Malawi where classroom facilitates like power sockets were vandalized or were not there at all for use with instructional media. Kadzera (2006) further reports that lack of instructional media resources is one of the reasons contributing to minimal use of instructional technology in teachers training in Malawi. This was also confirmed by Amare A. (1998) that observation in an earlier study in Ethiopia which noted the lack of required instructional media resources is one of the reasons for teachers' limited use of instructional media.

When instructional technologies are available and the management is committed to implementation, change effects can be seen. This would exhibit the administration commitment and hence facilitate the change process making it easily acceptable by the subordinates. In spite of the facts that instructional materials have been found to be indispensable in the teaching of most of the subjects in schools yet some materials are in short supply while others are non-existence at all. From all indications instructional materials and equipment necessary for teaching and learning that the supply was inadequate and fell short of the expected standards.

- **Lack of Training**

Teachers need to be provided with trainings that help them clearly see the benefits of teaching with technology. Well-trained teachers tend to be more comfortable with and more efficient for learners, while poorly-trained teachers may model bad experience that could cause negative attitudes towards classroom technology and among the students (Yaghi 1996).

- **Attitudes of Administrators**

The lack of support from administrators impedes the implementation of technology in the classroom. According to Yaghi's survey, administrators think that the use of computers should be restricted to those who can make the best use of it.

- **Level of Education**

Inda (2013) found out that teacher's academic and professional qualification contributes to proper preparation and use of instructional resources during teaching and learning process. Teacher's

academic qualification level is a key characteristic to effective use of any given instructional method. Low academic level hinders teachers from understanding and utilizing the instructional resources effectively in teaching

- **Human or Psychological Factor**

Teachers who are not very familiar with technology naturally have little commitment to implement technology in the classroom. They might be embarrassed to commit errors in front of students or their colleagues. Undesired pressure from supervisors could cause psychological anxiety and reduced motivation to acquire computer skills (Yaghi, 1996).

In the article "Challenges and solutions when using technologies in the classroom" written by Johnson, A. M. et al, (2016), it is stated:

> *There are common challenges faced by educators when attempting to integrate technology in the classroom. These challenges are classified into two broad groups, namely internal (intrinsic) and external (extrinsic) to the teachers. The external challenges including access to resources, training, and support and the internal ones including their attitudes and beliefs, resistance toward technology in the classroom, and their knowledge and skills.*

Roszell (1995) listed five important factors which can limit the use of computer based technology in the classroom. These are:

- The availability of time for teachers to prepare to use computers in instruction
- The availability of high quality software
- The availability of hardware
- Personal knowledge about computers
- Administrative support

Further study conducted by Krysa (1998), revealed that factors such as teacher attitude and teacher training contribute to the use of technology in the classroom.

Taking into consideration what is clearly stated by the different authors related to the factors affecting the use of instructional technologies in the classroom, it can be concluded that the various challenges can be broadly categorized into internal and external factors.

2.8. Strategies to Minimize the Challenges of using Instructional Technologies

Johnson et al, (2016) set the following strategies for overcoming the challenges to using instructional technologies:

- It is necessary that teachers have a say in what technologies they will use in their instruction. Teaching is a deeply personal experience, and when teachers feel as though they have lost the ability to teach in a manner that best suits them, it can be frustrating and discouraging. No single educational technology will be perfect for every teacher, and teachers should have the ability to select a technology that they feel most comfortable with. By allowing teachers more freedom of choice they will retain the very important sense of classroom control.
- A call for better organization of available technologies. Teachers should be able to easily find and access the required instructional technologies within a specific learning domain. Better organization of the available instructional technologies will serve to save valuable time and will place less of a burden on the teacher.
- Providing teachers with relevant training on newly adopted instructional technologies, taking into consideration how to highlight constructivism and student-centered education, is also very decisive in overcoming the barriers. Besides, professional development efforts should focus toward those which emphasize the use of technology in instruction, rather than for administrative tasks.

With regard to teacher's professional development efforts Richard E. West (2018) States:

> *Many methods have been utilized to provide professional development to teachers on technology integration issues. Three methods on which the research evidence seems strongest are: (a) developing technological skills, (b) increasing support through collaborative environments; and (c) providing increased mentoring. The most common objective has been to change teachers' attitudes towards technology integration in an effort to get them to use technology more often.*

According to studies conducted in different parts of the world including Africa, improvisation of instructional technologies is also considered as one of the strategies. Improvisation involves sourcing, selection and deployment of relevant instructional materials into the teaching-learning focus in the absence or shortage of standard materials for a meaningful realization of specified educational goals and objectives Eshiet (1996).

As far as the observation of the researcher of this study is concerned, in the current literature review, one of the major limitations discovered is the practice and challenges of using instructional technologies in secondary government schools in some sub cites in Addis Ababa City Adminstration such as Bole Sub City. This is the very reason why the researcher considered this as a problem and intended to undertake an investigation on this particular issue.

2.9. Summary of Literature review

Technology in the formal definition of the field refers to both the processes and products practitioners employ to create the appropriate environment for learning to occur (Rita C. Richey, 2013). Learning is enhanced through the use of technology and that students need to develop technology skills in order to be productive members of society. For this reason, providing a high-quality education includes the expectation that teachers use instructional technologies effectively in their classroom and that they teach their students to use technology. In order to make teaching and learning interesting the teacher has to utilize instructional technologies. Instructional technologies are learning devices through which learning and teaching are facilitated in schools. The introduction of technology into the classroom environment exerts a change in the way students learn. According to what is addressed by the various scholars instructional technologies are influential in enhancing students learning and they make the teaching process easier. The uses of instructional materials in the processes of effective teaching and learning cannot be overemphasized. Regardless of the interpretations, instructional technology is neither an end in itself nor a concept that embraces all of education. Rather it is a means to accomplish some predetermined, clearly defined, and unambiguously educational objectives (Armsey & Dahl 1973, p.21),

Through integrated technologies, content can be presented very realistically in the context of the learner's experiences. Integrating instructional technology into all classrooms has the potential to transform modern education and student learning (Todd H. Sundeen, **2**013). Based on the degree of learner interactivity and the flexible presentation styles of learning materials to suit needs in the best way, integrated technologies are more attractive than traditional instructional technologies (Seels & Richey, 1994, as cited in Rita C. Richey, 2013). Technology integration in the classroom will require the ongoing collaborative efforts of teachers, instructional technology professionals, school administrators, researchers, and educational software personnel.

Fortunately, the benefits to schools, teachers, and students will yield tremendous returns (Johnson., et al, 2016).

There are various factors such as availability, time, and lack of training and years of experience which are known to affect the use of instructional technology in the classroom. There are also some strategies implemented in schools to overcome the challenges.

CHAPTER THREE: Research Methodology

This chapter deals with research methodology consisting of research design, sources of data, data collecting instruments, procedures of data collection, sample size, sampling technique, piloting of the research instruments and methods of data analysis as well as ethical considerations.

3.1. Research Design and Approach

A research design is a conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. Decisions regarding what, where, when, how much, by what means concerning an inquiry or a research study constitute a research design (Kothari, 2004).

The purpose of this research was to assess the practices and challenges of using instructional technologies in selected government secondary schools in Bole Sub City of Addis Ababa City Administration. In realizing this, a descriptive design and mixed research was used. The design could provide the best opportunities for addressing the research questions of this study, the answers of which rely upon a variety of forms of data. Descriptive design helps to describe and interpret the trend of event that exist now and existed in the past and that influence on the present situation. It aims at casting light on current issues or problems through a process of data collection that enables them to describe the situation more completely than was possible without employing this method (Fox & Bayat, 2007).

The study used mixed research which intentionally combines or integrates quantitative and qualitative approaches as components of the research. The use of these approaches can occur at different points in the research process (Creswell, 2012). As a method, it focuses on collecting, analyzing, and mixing both quantitative data (i.e., quantifiable data) and qualitative data (i.e., text or image) in a single study or series of studies. The core argument for a mixed methods approach is that the combination of both forms of data provides a better understanding of a research problem than either quantitative or qualitative data by itself (Creswell, 2012).

In any research the type of methodology used depends on the research problem, research question, type and source of data to be collected and the analysis processes required (Koranteng, 2012).

3.2. Sources of Data

The data were collected from different sources and this made possible for the researcher to get pertinent data related to the research questions. The primary data was gathered from different respondents in the selected schools who might have adequate information about the practices and challenges of the using of instructional technologies. Accordingly, the primary data was obtained from teachers, department heads, principals, cluster supervisors and students. To substantiate the data obtained from the primary sources, additional data were also collected from such documents as annual lesson plans; periodic lesson plans and the school annual plan.

3.3. Target Population and Sampling

A target population (or the sampling frame) is a group of individuals (or a group of organizations) with some common defining characteristic that the researcher can identify and study. *A sample* is a subgroup of the target population that the researcher plans to study for generalizing about the target population (Creswell, 2012).

In this study the target population was represented by teachers, students, principals and culuster supervisors in the eight secondary government schools found in Bole Sub City. Because of the relatively large size of teachers, the principal sources of data, are concerned; the researcher used samples from the target population as sampling method is important because of the constraints of time, resources, and the size of population and the nature of study.

3.4. Sample Size and Sampling Technique

In Bole Sub-city there are eight government secondary schools, among which four schools were randomly selected using lottrey system. As shown in table **2**, 4 deputy principals, 184 teachers, 12 department heads, 8 students, and 4 cluster supervisors were selected to be respondents in the research. Therefore, the total participants of the study were 212. In the case of teachers random sampling was used to select for data collection where as a purposive sampling was used to select the participants from department heads, principals, cluster supervisors and students.

To determine the sample size from teachers, the researcher used the following formula provided by Yemane (1967).

n = $\frac{N}{1+N(e)^2}$ where n is the sample size, N is the population size, and e is the level of precession.

Once the sample size of teacher respondents was calculated using the above formula, proportional representation (i.e. proportional to the number of teachers in the schools) was used to determine the number of teachers sample in each selected school, and the same process was applied to find out the number of male and female teachers sample size in each school .

Table 1: Total population and sample size of respondents

Respondents			School name				
			Ayer Amba	Beshale	Bole Community	Bole Preparatory	Total
Population size	Teachers	Male	40	91	40	118	**289**
		Female	16	38	14	26	**94**
		Total	44	117	4**2**	13**2**	383
	Dep. head	Total	1**2**	1**2**	1**2**	1**2**	**48**
	D.Principal	Total	4	4	4	4	**16**
	Student	Total	1097	2454	703	584	**4838**
	Cluster supervisor	Total	4	4	4	4	**16**
Total population size			1161	2591	765	736	**5253**
Sample size	Teachers	Male	19	45	18	58	**140**
		Female	7	18	6	13	**44**
		Total	**26**	**63**	**24**	**71**	**184**
	Dep. head	Total	3	3	3	3	**12**
	D.Principal	Total	1	1	1	1	**4**
	Student	Total	2	2	2	2	**8**
	Cluster supervisor	Total	1	1	1	1	**4**
Total sample size			**33**	**70**	**31**	**78**	**212**

Eventhough there was high total population of students; only 8 students were selected for data collection. Because the information collected by interviewing students was only used to substantiate the data collected by means of questionnaire, which is the principal data collecting instrument. And the same was true in the case of principalsand supervisors except that their total population size is much lower that that of the students.

3.5. Data Collecting Instruments

In order to gather information, the researcher used four main instruments for data collection, namely questionnaire, interview, observation and document analysis. From teacher and department head respondents data were collected using close and open ended questionnaires, from principals, cluster supervisors and students using semistructured interview. The main data collection instruments were questionnaires. Interview, Observation and document analysis were particularly used to triangulate the information obtained using questionnaires.

3.5.1. Questionnaires

A questionnaire is used for data collection because it offers considerable advantages while conducting the study. In this study a set of questionnaire with 5-point Likert Scale was employed to identify the practice and challenges of instructional technologies in the selected schools. In the questionnaires the rating scale 5 is for “strongly agree”, 4 is for “agree”, 3 is for “undecided”, 2 for “disagree” and 1 for strongly disagree. The use of questionnaire for data collection is crucially important because it can help to cover many issues and can be easily and quickly analyzed once field data gathering work is completed The questionnaires were administered, both in closed ended and open ended form. Open ended questions were included in the questionnaire because respondents were given freedom to provide their extended views on the issue. Close ended questions were used for their easiness in tabulation, objectivity and suitability to keep respondents ideas on the subjects of the questionnaire.

The questionnaire constituted five parts. The first part was about general characteristics of teachers and department heads. The second part was regarding the extent of availability of instructional technologies. The third part was concerning the extent to which instructional technologies are used by teachers. The fourth part was about factors affecting the use of instructional technology and the fifth part dealt with ICT integration in teaching learning. For the very purpose of avoiding communication gap, the questionnaires developed were translated into Amharic.

A total of 196 questionnaires, as shown in table 4, were prepared and distributed to the selected sample teachers and department heads. Out of the questionnaires distributed to the indicated respondents 191 (97.44%) were returned.

Table 2. Return rate of questionnaire papers

Respondents	Number of distributed questionnaires	Number of returned questionnaires	Return rate in percentage
Teachers	184	179	97.3
Department heads	12	12	100
Total	196	191	97.44

3.5.2. Interviews

In qualitative research, interviewing is a major source of data needed for understanding the phenomena under study. For the purpose of this study, semi-structured interview was used. The interview for this research was conducted with principals or deputy principals, students and cluster supervisors to know their understanding and perspectives about the issue.

To create a suitable atmosphere and relation the selection of participants was based on the willingness of the individuals to participate in the study. Interviews with school principals and cluster supervisors were conducted to access their perspectives towards instructional technologies and understand their effort providing support and guidance for teachers. All the interviews were conducted in Amharic, the working language of Ethiopia, for ease of communication. All the relevant interview responses were translated into English for analysis.

Both telephone interview and one to one interviews were conducted for 20 minutes. For telephone interview the response was recorded by means of cellphone. Then, the information was transcribed and translated into English. In the case of one to one interview the participants' information was recorded in written form and then all responses were translayed into English.

3.5.3. Observation

In addition to interviews and questionnaires the researcher used direct observation technique to get contextual information for the data collection. It was necessary to understand the context beside what the respondents said. As Creswell (2007) wrote contexts are important for understanding what the participants are saying. Thus, the observation serves as an additional technique that complement the information obtained through the interview and questionnaires. The researcher of this study used the information obtained from the observation to triangulate the

data collected particularly from teachers and department heads using closed and opended questionnaires.

Using observation checklist information was collected from classrooms, pedagogical centers, laboratory and library for availability of instructional technologies.

3.6. Data Collection Procedures

In the beginning the researcher had contact with the concerned officials in Bole Sub City Education office. This connection helped to get sufficient prior information about the number of secondary schools in the sub city, the number of teachers, students, principals in the schools and the number of cluster supervisors assigned for the schools. The general information obtained was crucially important for the researcher to make decision concerning the best way to go about the data collection process.

In order to accomplish the data collection process successfully in the selected schools, the researcher had a plan to adhere to following procedures: handing in cooperation letter, collected from EdPM department, to the school principals, having contact and establishing rapport with all principals in the selected government secondary schools, so as to get their approval and cooperation for collecting the necessary data in their respective school. Then the field work was conducted which lasted about two weeks. Before approaching respondents for data collection, the researcher gave a brief explanation about the purpose and nature of the investigation.

The questionnaires which were completed by teacher respondents were collected by representative teachers who were assigned by the researcher for this purpose. All the qualitative data collection procedures were conducted by the researcher himself.

3.7. Validity and Reliability of the Instruments

Both validity and reliability are important to consider when it comes to the selection or design of the instruments a researcher intends to use (Fraenkel jack R. & Wallen Norman E., 2006). The major challenge in questionnaire design is to make it clear to all respondents and to identify and solve the confusing points; there is a need to pre-test the questionnaire (Abawi K., 2013).

In order to make the questionnaire more reliable and valid, the pre-test of instruments was conducted at Ayer Amba Secondary School, which was one of the four sample schools. Pilot

testing provides opportunities to detect and remedy a wide range of potential problems with instruments. Validity shows the linkage between the questionnaire and the objectives of the study. To gather the relevant and necessary data, the question should be clear and easy to understand. To check the reliability and validity of the questionnaire, copies of questionnaires were distributed to 25 sample teacher respondents at Ayer Amba Secondary School. Based on the Pilot test, the reliability of the instruments were calculated using SPSS versions 20 and the reliability test result was acceptable as presented in table 3. Because of the pilot study significant suggestions were obtained for further improvement of the questionnaires.

Table 3. Reliability statistics

Question items related to									
All question items		Availability ITs		Use of ITs		Challenges of using ITs		ICT integration	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
0.924	62	**0.849**	19	**0.915**	19	**0.822**	13	**0.796**	11

3.8. Methods of Data Analysis

Data analysis is the application of reasoning to understand the data that have been gathered from respondents and the appropriate analytical technique of the analysis is mainly determined by the characteristics of the research design and the nature of the data gathered, (Saunders and others, 2009). Therefore, the data collected from samples was deeply analyzed, systematically organized, summarized and interpreted based on the facts of the data gathered from respondents.

For this study, both quantitative and qualitative methods of data analysis were implemented. The raw data obtained through a close ended questionnaire was carefully coded and entered into computer for processing by using the SPSS version 20. The data analysis was conducted using frequency, percentage, mean and standard deviation and followed by discussion of the most important points. The data gathered through open ended questions and interview was analyzed qualitatively through descriptive narration by carefully selecting the themes. The data collected by means of observation and document analysis could help to look deeper into the meaning of the trends identified in the numerical and textual data to determine its accuracy, credibility and usefulness. Most of the data were collected from teacher and department head respondents with

the help of closed and open ended questionnaires. In the light of this, the researcher of this study; expecting that the variation in such characteristics of the respondents as sex, age, education and years of service might have influence on the effectiveness of utilizing instructional technologies, made attempt to conduct analysis of the indicated characteristics.

3.9. Ethical Consideration

In order to get the research process done professionally, ethical issues were seriously taken into consideration. Before data collection was undertaken all the participants of this study were duly informed about the purpose of the study and their willingness and agreement was secured. A cooperation letter collected from the department of EdPM of Addis Ababa University was given to the sample school principals. As much as possible rapports were established with respondents and they were encouraged to feel free to deliver their response.

The participants were informed by the researcher that participation in the study was made only voluntarily and they were assured that the responses they give would be kept confidential. It is with this aim that in the introduction part of the questionnaires the respondents were clearly informed not to write their names. The respondents were given assurance that the information obtained from them would never be used for purposes other than for the consumption of this study. The researcher took great care not to personalize respondents in any part data presentations, analysis and interpretation. Furthermore, all the materials used for the purpose of this research were properly acknowledged.

Each informant was given a pseudonym name for ethical reasons, to protect confidentiality and also to help the researcher differentiate the one respondent from the other one during analysis.

CHAPTER FOUR: Data Presentation, Analysis and Interpretation

This chapter deals with the presentation, analysis and interpretation of data collected from teachers, principals, students and cluster supervisors through questionnaire and interview, and additionally data collected by means of document analysis and observation. It includes two major parts. The first part presents the general characteristics of teacher and department head respondents in terms of sex, age, educational qualifications, work experience and department category, and the second part is concerned with the presentation, analysis and interpretation of data. The chapter primarily covers the results obtained about the extent of availability of instructional technologies in the selected schools, the extent of using instructional technologies by teachers, factors affecting the utilization of instructional technologies in the classroom, strategies to minimize the challenges and ICT integration in the selected schools.

4.1. General Characteristics of the Respondents

Description of the respondents' characteristics provides some basic demographic information about the distribution of their general characteristics considered in the study. The following table (table 5) depicts the frequency and percentage of respondents' characteristics by sex, age, educational backgrounds and work experience.

Table 4. Characteristics of teacher and department head respondents by sex, age, education and years of work experience

Characteristics		**Respondents**			
		Teachers		Department heads	
variables	values	Number	%	Number	%
Sex	Male	138	77.1	10	77
	Female	41	22.9	3	23
	Total	179	100	13	100
Age	21-30	36	20.1		
	31-40	95	53.1	8	61.5
	41-50	39	21.8	4	30.8
	51 and above	9	5.0	1	7.7
	Diploma	0			
	BA/BSc	104	58.1	8	61.5

Education	MA/MSc	75	41.9	5	38.5
Years of work experience (teachers)	1-5	11	6.1		
	6-10	34	19.0		
	11-15	44	24.6		
	16-20	53	29.6		
	Above 20	37	20.7		
Years of work experience as department head	1-3			4	30.8
	4-6			2	15.4
	7-9			1	7.7
	10 and above			6	46.2

The principal data for this research was collected from teacher and department head respondents in the selected schools with the help of closed and open ended questionnaires. This is the very reason why the general characteristics of only teachers and department heads were considered in table 5 above.

As shown in the above table, of the total of 179 teacher respondents 138(77, 1%) were males and 41(22.9%) were females. Regarding age composition 36(20.1%) teachers were in the age category of 21-30, 95(53.1%) were in the age category of 31-40, 39(21.8%) in the age category of 41-50 and 9(5.0%) teachers age of 51 and above. This evidence reveals that 94.97% of the teacher respondents were in the age category of 21-50. With respect to service years of teachers, 44(24.58%) were found to have work experience between 1-10, 97(54. 19%) had work experience between 11 and 20 years and the remaining 37(21.23%) teachers had a rich work experience of 21year and above. In terms of education level the number of BA/BSc holders exceeded the number of MA/MSc holders by 29(16.2%). As regards the department heads 77% of were males, and 92.3% of them were in the age category between 31 and 50.

4.2. Data Presentation, Analysis and Interpretation

This section includes the numerical analysis of quantitative data collected from teachers, department heads using questionnaire; the analysis of interview reponses from principals, cluser supervisors and students were conducted by qualitative means; and the analysis of information collected by means of observation and document analysis checklists.

4.2.1. Availability of instructional technologies

As indicated in chapter three to obtain the required relevant data from respondents, the principal data collecting instrument was a questionnaire which consisted of 62 closed ended question items and 6 open ended question items for teacher respondents, and 61 closed ended question items and 8 open ended question items for department head respondents.

Looking at the average mean score may tell only part of the story of what respondents' rated on a 5 point Likert scale. So, in addition to mean, it is standard deviation (SD) which provides a valuable descriptive measure of the distribution of responses. SD generally does not indicate "right or wrong" or better or worse"- a lower SD is not necessarly more desirable. It is used to describe distribution in relation to mean (www.surveystar.com). In respect to this research SD will be used for the description of variability of responses where needed.

4.2.1.1. Teacher respondents

Table 5. Responses of teachers to the extent of availability of instructional technologies

Item No.		Technology devices	NR	Mean	S D
Non projected	1a	Graphics	179	3.37	.820
	1b	Realia	179	2.92	.792
projected	2a	Slides	179	2.16	.822
	2b	Film strips	179	1.92	.678
	2c	Overhead projector	179	2.20	.679
	2d	LCD projector	179	2.72	.711
	2e	Silent films	179	1.88	.739
Three dimensional	3a	Models	179	3.46	.656
	3b	Mock ups	179	1.93	.772
	3c	Diorama	179	1.91	.762
Display boards	4a	White board	179	2.31	.794
	4b	Peg board	179	1.96	.741
	4c	Bulletin board	179	2.21	.676
Audio	5a	Tape recorder	179	2.17	.579

Item No.		Technology devices	NR	Mean	SD
Audio visual	6a	Video	179	2.35	.706
	6b	Plasma TV	179	4.07	.790
ICT related	7a	Internet	179	3.26	.828
	7b	School net	179	2.49	.902
	7c	Computers	179	3.56	.688

6. Note: NR ⇨ Number of respondent, S D ⇨standard deviation

According to the teacher responses presented in table 5 above (see table containing the detail data analysis in appendix A), by having higher mean values seven instructional technologies are seen to stand out from the rest. Of these seven items the most abundantly available instructional technologies in the schools was found to be plasma TV where 30.7% of respondents strongly agreed and 49.2% disagreed for its availability. The mean and standard deviation of this particular item is 4.07 and 0.706 respectively. For the availability of computers the analysis shows that, with 3.56mean and 0.688 SD, 18% of respondents strongly agreed, 50.8% agreed. It was indicated by the respondents that models with 3.46 mean and 0.656 SD, graphs with 3.37 mean and 0.820 SD, internet with 3.26 mean and 0.828 SD, realia with 2.92 mean and 0.792 SD and LCD projector with 2.72 mean and 0.711 SD took third through seventh consecutive positions. On the other hand the analyzed data in the table shows that film strips with 1.92mean, diorama with 1.91 mean and silent films with 1.88 mean took the last three positions in terms of availability. This shows that of the 19 instructional technology devices included in the questionnaire plasma TV was the most available one and silent film was the list abundant.

The seven instructional technology devices which the majority teacher respondents rated strongly agree and agree to the extent of their availability, and as a result took the first seven top positions are graphically displayed here under in fig 4.

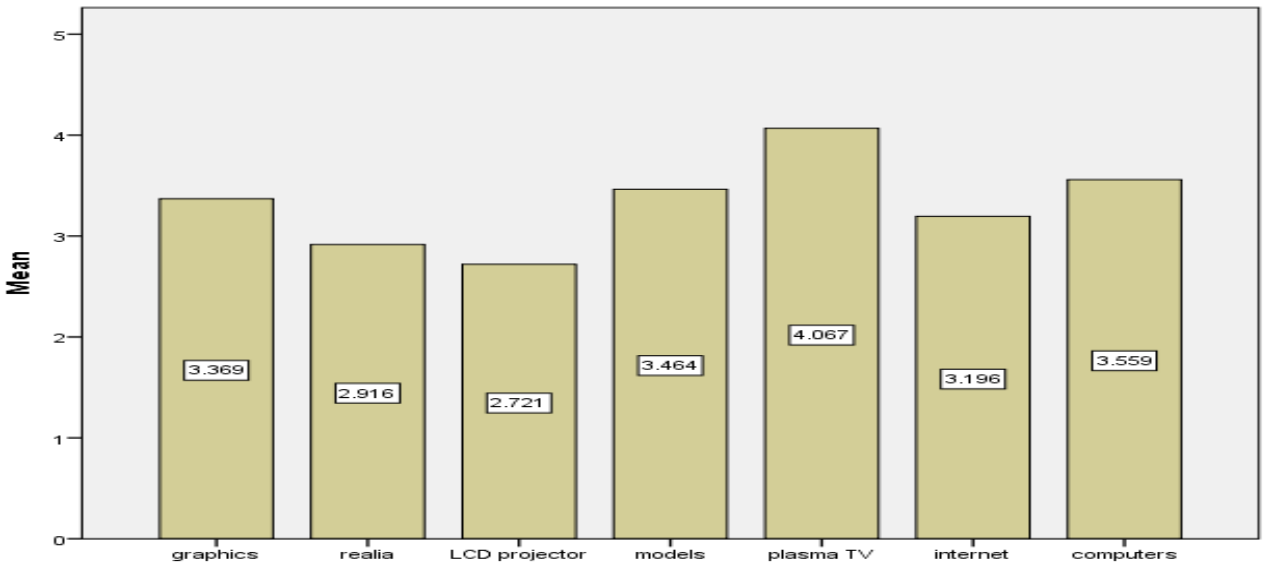

Fig. 4. The extent of availability of seven instructional materials according to teachers' responses

It is clearly shown in table 5 and fig 4 above that plasma TV, computers, models, graphics, internet, realia, and LCD projector are the instructional materials which were available most in the sampled schools This result more or less coincides with the responses given by the department heads.

Of the responses given to the remaining items the majority respondents either disagreed or strongly disagreed on the extent of the availability of the items. 84.35% (1.92 mean), 83.8% (1.88 mean), 81.6% (1.91 mean), 81% (1.93 mean), 78.8% (2.17 mean), 77.65% (1.91 mean), 76.5% (2.21 mean), 74.8% (2.16 mean), 74.3% (2.20), 70.9% (2.31 mean), 65.9% (2.35 mean) and 63.7% (2.49 mean) of respondents strongly disagreed and disagreed on the adequate availability of filmstrips, silent film, pegboard, mockups, tape recorder, diorama, bulletin board, slides, overhead projector, white board, video and schoolnet respectively. The indicated percentages and mean values show that the aforementioned instructional technologies were either rarely available or totally absent in the schools. In other words they were the least available instructional technologies among those listed in the questionnaire. Among the 19 instructional technologies, the item schoolnet is found to have the highest standard deviation value (0.902) but its corresponding mean value is only 2.49. The highest SD could not mean that the indicated item was available most. The highest SD of schoolnet could possibly mean the responses given to it on a 5 point Likert scale were relatively polarized.

Responses obtained from principals, cluster supervisors, and data collected using document analysis and observation checklist also substantiated the result that not all instructional technologies were available in equal proportion. It was noted and observed that plasma TV was the most abundant one. All the interviwees (Principals, cluster supervisors, and students) from the four schools exceptionally stated that plasma TV was adequately available in the schools.

To the question "How well is the school equipped with instructional technology?" One of the principals, principal A, responded:

"In our school the only instructional trechnology which is available sufficiently is plasma Tv. Next to plasma TV, computers are also present in a quite better quantity than the others. But others are either available in a few number or absent."

To the same question principal B responded:

"Plasma TV is available in every classroom. In the ICT room computers are present and their number is much less than the number of students. Models, LCD projector, realia, internet, graphics; though they are present, they are few inquantity. There are other several types each of which are represented by very few number"

To the question "Which types of instructional technologies are present in the school you are responsible to supervise?" One of the cluster supervisors, CS 1 responded:

"In the school which I supervise there are a lot of instructional technologies. But all. Except plasma TV and computers, are available in few number."

Information collected by means of observation checklist revealed that plasma TVs were present in all classrooms where bservation was undertaken. Computers which were kept in the ICT rooms were observed to be insufficient compared to the number of students in the sample schools. But the rest technology items were found to be either rare or absent.

The above responses indicate that all instructional technologies but plasma TV and computer were present in small quantity.

6.1.1. The extent of using by teachers

The mean and standard deviation of the responses of teacher respondents to the extent of using the 19 instructional technology devices are tabulated and presented in table 6.

Table 6: Teachers' responses to the extent of using instructional technologies

Item No.		Item	NR	Mean	S D
Non projected	9a	Graphics	179	3.13	.918
	10b	Realia	179	2.65	.926
projected	10a	Slides	179	1.88	.836
	10b	Film strips	179	1.70	.708
	10c	Overhead projector	179	1.95	.788
	10d	LCD projector	179	2.52	.950
	10e	Silent films	179	1.50	.730
Three dimensional	11a	Models	179	3.13	1.024
	11b	Mock ups	179	1.63	.813
	11c	Diorama	179	1.72	.809
Display boards	12a	White board	179	2.03	.939
	12b	Peg board	179	1.73	.845
	12c	Bulletin board	179	1.87	.782
Audio	13a	Tape recorder	179	1.99	.746
Audio visual	14a	Video	179	2.20	.842
	14b	Plasma TV	179	3.72	.926
ICT related	15a	Internet	179	3.17	.969
	15b	School net	179	2.06	1.056
	15c	Computers	179	3.53	.938

Note: NR ⇨ Number of respondent, S D ⇨standard deviation

As shown in table 6 above (see table containing the detail analysis in appendix B), taking the mean values into consideration, seven items whose mean value is above 2.5 are observed to stand out from the rest. The majority respondents relatively rated more strongly agree, agree and undecided on the five point Likert scale than the rest points to the seven instructional technology items regarding the extent of using them for teaching and learning. Accordingly, 165 respondents with 3.72 mean and 0.926 SD, 153 respondents with 3.53 mean and 0.938 SD, 138 respondents with 3.17 mean and 0.969 SD, 135 respondents with 3.13 mean and 0.918 SD, 130 respondents with 3.13 mean and 1.024 SD, 97 respondents with 2.65 mean and 0.926 SD, 84 respondents with 2.52 mean and 0.950 SD rated strongly agree, agree and undecided that plasma TV, computer,

internet, graphics, models, realia and LCD were respectively used more frequently for teaching and learning than the rest items. These results indicate that the items were comparatively often used for teaching and learning purpose in the selected schools. For comparison the responses to the indicated items are graphically demonstrated below in fig 5.

The data in the above table 6 reveals that the mean value of responses given to the items models and graphics is the same, i.e., 3.13, but the standard deviation values are different. This fact shows that in the case of responses to the item models more number of respondets strongly agreed and strongly disagreed, which are comparatively polarized responses, than in item graphics. So, the higher SD of the item models indicates that more number of poliraized responses were given to models than the number of responses to the item graphics.

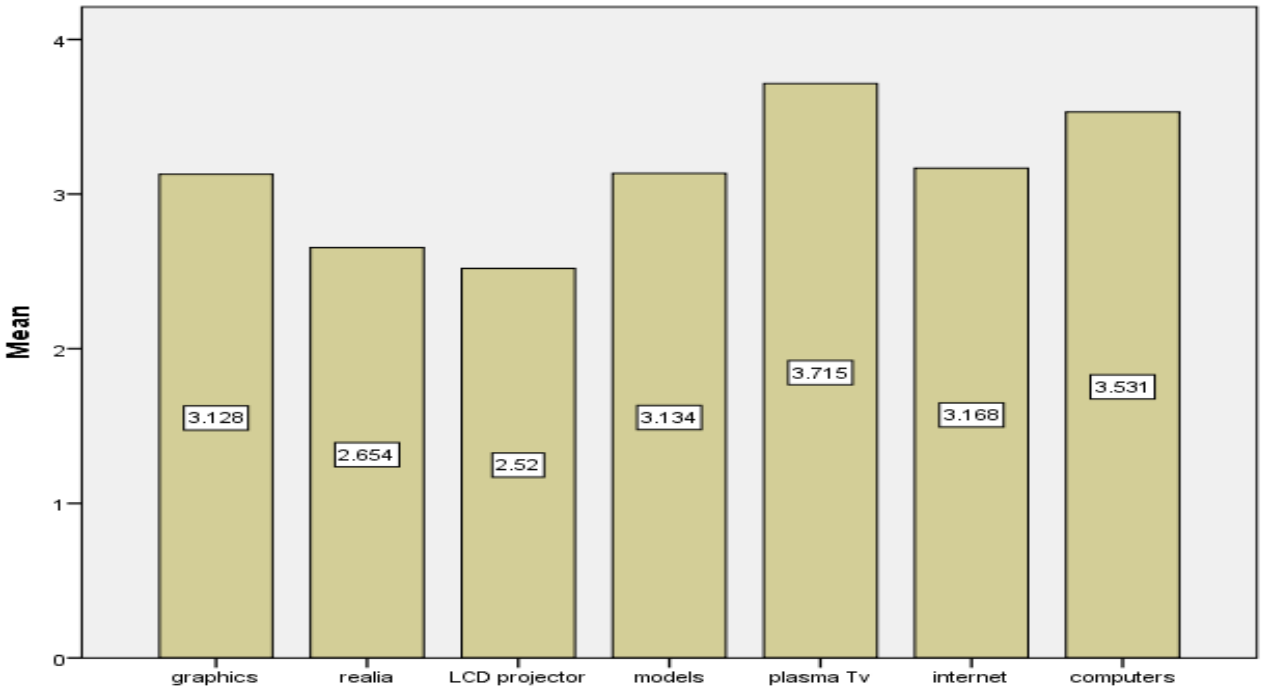

Fig.5. The extent of using seven instructional technologies

The responses given by the department heads to these items substantiate the above results as shown in table 7 below (see table containing detail analysis in appendix C). The number of responses to 19 items of instructional technologies and their percentage values are presented in the table. According to the data in the table, the majority respondents strongly agreed, agreed and rated undecided that plasma TV, computers, internet, graphics, models and realia were more frequently used for classroom teaching than other types of instructional technology items.

Table 7: Department head s' responses to the extent of using instructional technologies

Major category		Item	NR	Mean	SD
Non projected	9a	Graphics	12	3.17	.718
	10b	Realia	12	3.0	.853
projected	10a	**S**lide**s**	12	2.08	.515
	10b	Film strips	12	2.00	.603
	10c	Overhead projector	12	2.17	.389
	10d	LCD projector	12	2.25	.754
	10e	Silent films	12	1.92	.515
Three dimensional	11a	Models	12	3.08	1.311
	11b	Mock ups	12	2.17	.835
	11c	Diorama	12	2.17	.389
Display boards	12a	White board	12	2.00	.426
	12b	Peg board	12	1.83	.389
	12c	Bulletin board	12	1.83	.389
Audio	13a	Tape recorder	12	2.08	.515
Audio visual	14a	Video	12	2.00	.426
	14b	Plasma TV	12	3.50	.798
ICT related	15a	Internet	12	3.33	.985
	15b	School net	12	2.92	1.165
	15c	Computers	12	3.42	.900

Note: NR ⇨ S D ⇨standard deviation

The responses to the extent of using seven items, which were rated strongly agree, agree and undecided by most department heads, across the departments is depicted in table 8 below. Generally, comparison of the mean values in the table reveals that the instructional technology items were more often used by teachers in natural science department for classroom instruction than those found in social science and language departments

Table 8: mean comparison of the extent of using seven instructional technologies across departments

department category	computers	graphics	realia	LCD projector	models	plasma TV	internet
language	2.75	2.75	2.75	2.00	2.50	3.00	3.25
natural science	4.00	3.75	4.00	2.25	4.25	4.25	3.50
social science	3.50	3.00	2.25	2.50	2.50	3.25	3.25

The fact that there is variation in the extent of using instructional technologies across school departments is graphically demonstrated below in fig. 6

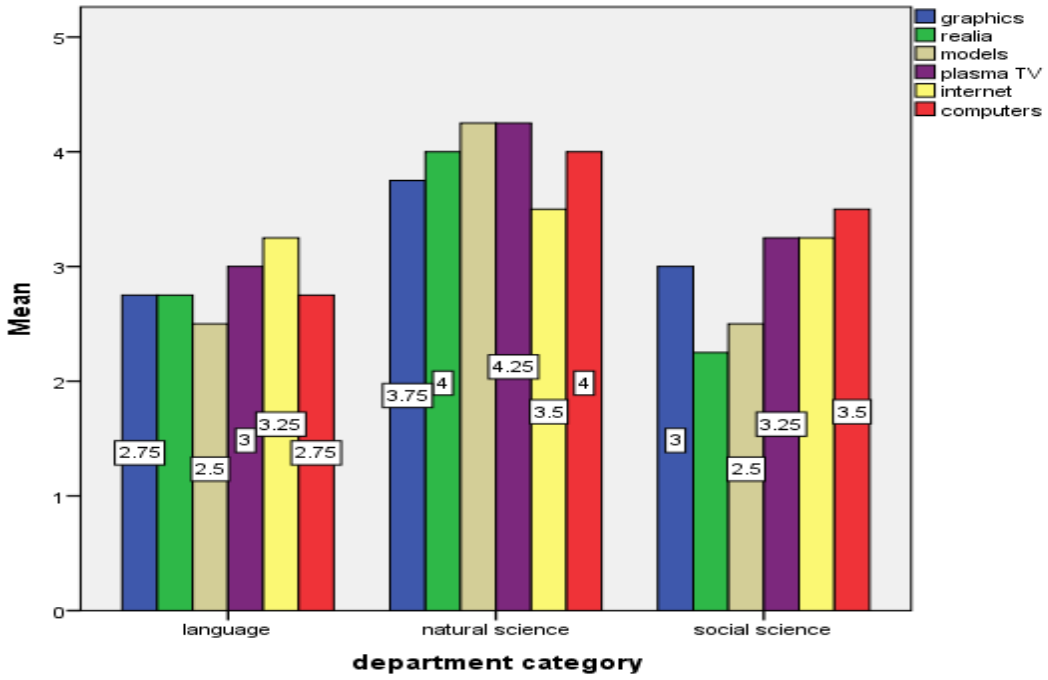

Fig. 6. The extent of using the most frequently used instructional materials across department

The analysis of responses of principals, cluster supervisors and students, and data collected using document analysis checklist show that as there were teachers who frequently used some of the available instructional technologies, there were also others who didn't even show interest in using any type of instructional technology. The school principals, cluster supervisors and students in their interview responses, although they believe that teachers should use instructional technologies when they deliver lessons in the classroom; they emphatically indicated that not all teachers have interest in using the technology devices. The analysis also showed that teachers

from natural science department used the technology devices more frequently than teachers of other departments.

For example to the question “To what extent is teachers in your school utilize the available instructional technology?” principal C responded:

“There are some teachers who use Plsma TV frequently, but most teachers they either use intermittently or fail to use. Practically speaking, most technology devises are used by teacher very fewer times in a week than expected.”

Principal D responded to the above same question by saying:

“Even plasma TV is sufficiently available in our school; it isn’t as frequently used by most teachers as supposed to be. As long as there is electric power computers are used in ICT rooms by ICT teachers to deliver lessons to the students. Other instructional technologies, though they are available they are insufficiently used.”

To the extent of using instructional technologies, two cluster supervisors, CS 3 and C4 gave the same response. They responded:

“Plasma TV, computers and radio are used by teachers more frequently than others. But it doesn’t mean that the indicated instructional media are utilized sufficiently. With regard to other types of instructional technologies, they are very rarely used”

As to whether teachers use instructional technologies in the class room or not the students response was

S1and S6: *“Most teachers don’t use*.”

S2: *“Most teachers use plasa TV frequently. But other kinds of technology devices, except computer, are rarely used.”*

S3: *“Plasma TV, computers and models are used by teachers”*

From the above responses it can be revealed that plasma TV was relatively used by teachers more than other types of instructional technologies.

Information collected by means of document analysis checklist showed that most teachers include instructional technologies in their annual plan, but there were several teachers who didn’t

include in the weekly lesson plan that they would use instructional technology for classroom teaching.

As shown in table 8 below drawing a comparison between male and female teachers in terms of the extent of using the seven most frequently used instructional technologies did not show significant difference. Whereas the frequency of using the technology devices for teaching and learning showed a bit increase with increasing teachers age as shown in table 9 below.

Table **9.** Mean comparison of the extent of using seven instructional technologies by gender and age

Age							
Age	graphics	realia	LCD projector	models	plasma Tv	internet	computers
21-30	2.86	2.31	2.39	2.94	3.36	2.97	3.31
31-40	3.03	2.64	2.45	3.00	3.71	3.16	3.48
41-50	3.59	2.92	2.77	3.54	4.03	3.33	3.82
above 51	3.22	3.00	2.67	3.56	3.89	3.33	3.67
Gender							
	▼	▼	▼	▼	▼	▼	▼
Female	3.10	2.68	2.61	3.12	3.88	3.17	3.66
Male	3.14	2.64	2.49	3.14	3.67	3.17	3.49

The graph below (fig 7), in support of the analyzed data presented in the above table 9, shows how the frequency of using the indicated technology devices slightly increases with increasing teachers' age.

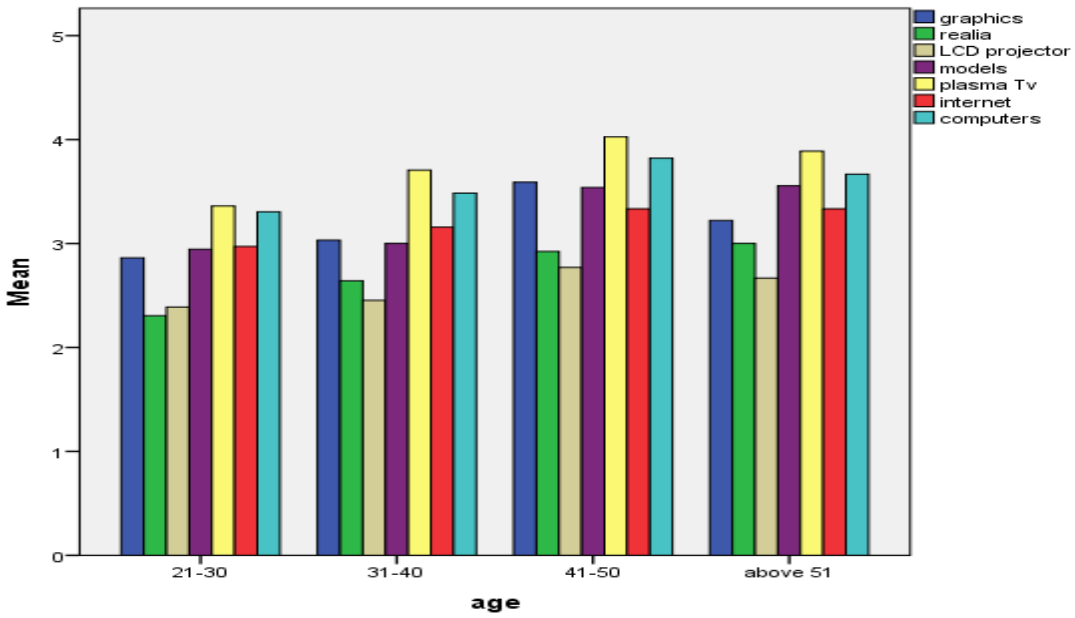

Fig. 7. Teachers' age and the extent of using seven instructional technologies

Eventhough the tabulated data in table 9 above and the graph in fig. 8 below show that female teachers were in a better position in terms of the extent of using plsma TV and computers, the mean values of the rest five technology devices clearly demonstrate that the female and male teachers were comparably similar in using instructional technologies..

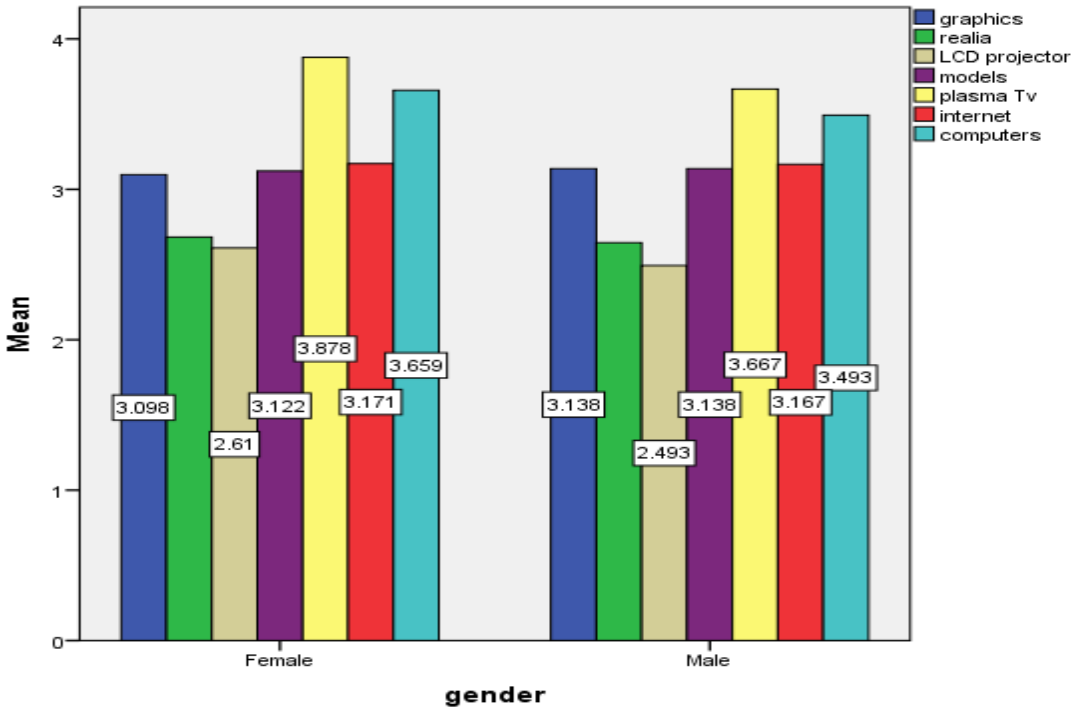

Fig. **8**. Tteachers' gender and extent of using seven instructional technology devices

The data analysis revealed that some relationship existed between years of teaching experience and the extent of using instructional technologies. The data in table 10 below and the graph in figure 9 show that there is a general tendency of increasing the extent of using instructional technologies with increasing teachers teaching experience.

Table 10. Years of teaching experience and the extent of using instructional technologies

years of experience in teaching	graphics	realia	LCD projector	models	plasma Tv	internet	computers
1-5	3.00	2.82	2.82	3.00	3.00	2.55	3.18
6-10	2.85	2.41	2.29	2.88	3.47	3.21	3.38
11-15	2.89	2.57	2.48	3.05	3.57	3.11	3.34
16-20	3.34	2.79	2.58	3.25	3.98	3.21	3.74
above 20	3.41	2.73	2.59	3.35	3.95	3.32	3.70

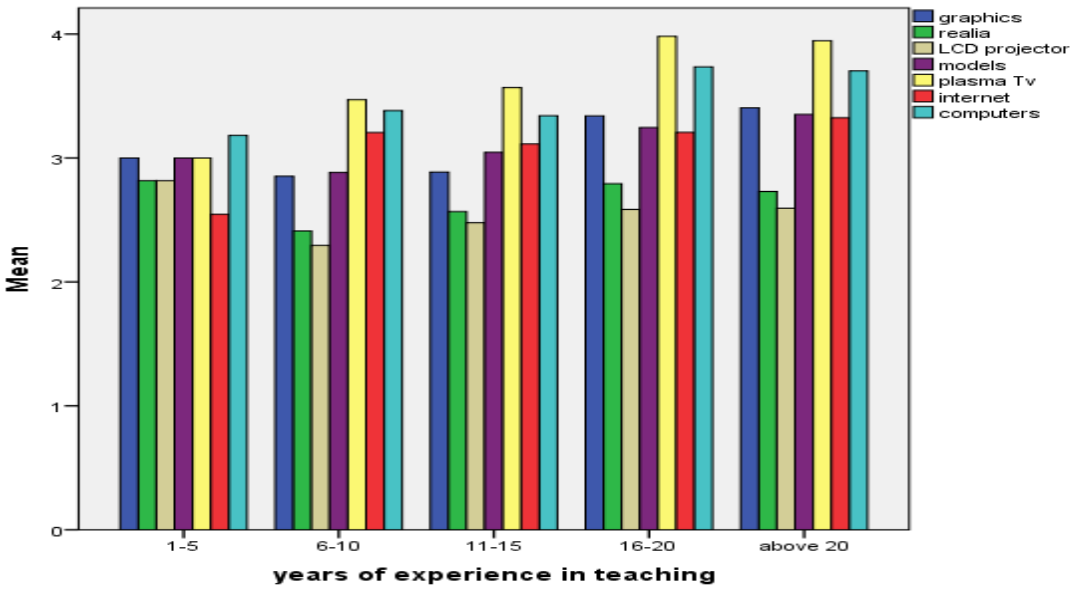

Fig. 9. Years of teaching experience and the extent of using instructional technologies

7.1.1. Factors affecting the use of instructional technology

The study sought to examine factors affecting the use of instructional technologies in the sample schools.

Table 11: Teachers' responses on factors affecting the use of instructional technologies

No.	Question	NR	mean	SD
1	There is sufficient time for the school teachers to learn how to use instructional technologies in the classroom.	179	2.49	.760
2	Teachers get enough support from the school administration to motivate them use instructional technologies in the classroom.	179	2.26	.712
3	Teachers are given trainings whenever new technologies are introduced into the school.	179	2.09	.721
4	The school teachers have no lack of knowledge in the use of instructional technologies.	179	2.11	.827
5	Teachers obtain technical assistance from the school to help them properly utilize instructional technologies in the classroom	179	2.11	.768
6	There is reliable electric power supply to enable teachers to use instructional technologies for instruction purposes.	179	1.97	.714
7	There are enough computers in the school to help teachers support the classroom teaching with technology	179	2.10	.704
8	There is internet connection in the school for teachers to use it for teaching purpose.	179	1.99	.731
9	The school has a continual monitoring and evaluation system for ensuring the use of instructional technologies by teachers	179	2.04	.770
10	Teachers have interest in using instructional technologies	179	2.53	1.029
11	The more the number of teachers teaching experience, the better their extent of using instructional technology for instruction purpose.	179	3.49	1.098
12	The school is known to go with the rapid technological changes.	179	1.71	.810
13	The school teachers improvise instructional technologies in the school pedagogical center.	179	1.90	.835

Note: NR ⇨ Number of respondent, **SD**⇨ Standard deviation

From table 11 above (see table containing detail analisis in appendix D), out of 179 respondents 16.2% strongly agreed, 40.8% agreed and 26.2% rated undecided with average mean 3.49 and SD 1.098 that the more the number of teachers teaching experience, the better their extent of using instructional technology for classroom instruction. This result clearly indicates that there is a positive convergence among the majority respondents in believing that teachers with more work experience had better performance in using instructional technologies for classroom teaching. On the other hand, of the 179 teacher respondents, 83.2% with mean 1.71 and SD 0.810 strongly disagreed and disagreed that the school was known to go with rapid technological changes, 79.3% with 2.09 mean and 0.712 SD strongly disagreed and disagreed that teachers were given trainings whenever new technologies are introduced into the school , 140 78.2% with 1.99 mean and 0.73 SD strongly disagreed and disagreed that there was internet connection in the school for teachers to use it for teaching purpose., 76.5% with 1.90 mean and 0.835 SD strongly disagreed and disagreed that the school teachers improvised instructional technologies in the school pedagogical center,75.4% with 2.11 mean and 0.768 SD strongly disagreed and disagreed that teachers obtained technical assistance from the school to help them properly utilize instructional technologies in the classroom, 74.3% with 2.04 mean and 0.770 SD strongly disagreed and disagreed that the school had a continual monitoring and evaluation system for ensuring the use of instructional technologies by teachers, 74.3% with 2.10 mean and 0.704 SD strongly disagreed and disagreed that there were enough computers in the school to help teachers support the classroom teaching with technology, 73.2% with 1.97 mean and 0.714 SD strongly disagreed and disagreed that there is reliable electric power supply to enable teachers to use instructional technologies for instruction purposes. Therefore regarding the factors affecting the use of instructional technologies in the classroom, of the 13 indicated possible factors, responses show that the majority respondents believe that 12 of them were challenges to the use of instructional technologies.

The responses given by the department head respondents substantiate the result obtained from teacher respondents as depicted in fig. 10 below. It is clearly seen in the graph that one of the possible factors, i.e., the one related to teachers teaching experience stands out with 4.083 average mean. The rest possible factors have low mean values ranging from 1.5 to 2 only.

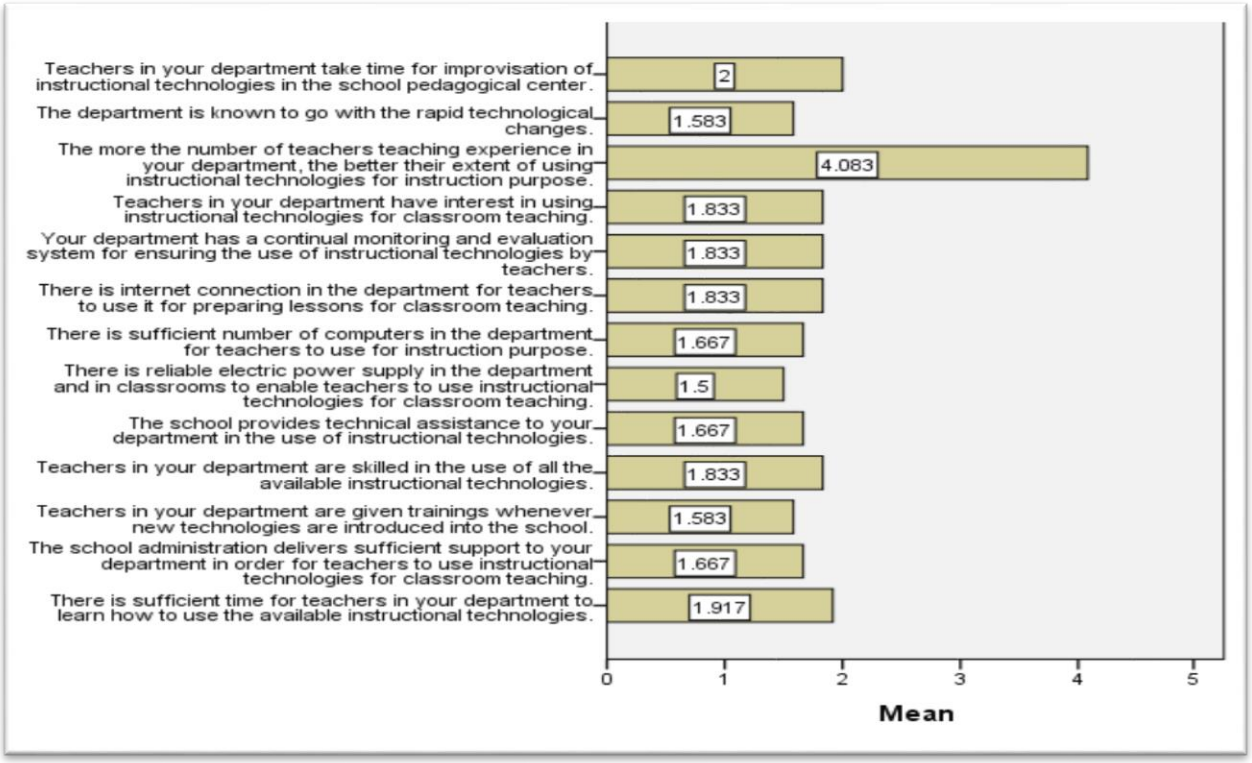

Fig. 10. Factors affecting the use of instructional technologies according to department head responses

The analysis of responses of teachers and department heads to open ended questionnaires reveal that there were certain challenges which contributed toward limiting the use of instructional technologies by subject teachers. Such challenges as lack of teachers' interest, motivation and understanding, lack of instructional technologies, teachers' attitude, shortage of electric power, maintenance problem, teachers' skill gap, lack of classroom, and lack of skilled technicians were identified. The responses of principals and cluster supervisors to the interview also reinforced the same analysis result obtained from teachers and department heads responses.

According to the responses given in relation to the challenges to using instructional technologies for teaching and learning, principals had different opinions.

Pricipal A said

"Some of the challenges to use the devices are lack of rooms, shortage of instructional resources and lack of motivation from the teacher side."

Principal B indicated:

"There are teachers who are not interested in using instructional technologies"."

Principal C said:

"One of the main challenges is absence of reliable electric power. Although there is diesel generator in the school, it may not work properly when need arises. Additionally, wifi is available only in the ICT room and near to the school administrative building. This prevents teachers and students from getting the service."

By analyzing the the interview responses of cluster supervisors related to challenges to using instructional technologies the following themes were identified: lack of motivation, financial constraints, lack of commitment, lack of skilled man power and poor infrastructure.

7.1.2. ICT integration in teaching learning

Teachers' opinion about ICT related question items is presented in table 12 below (see table showing detail analysis in appendix E).

Table 12: Teachers' responses on ICT integration

No.	Questions	NR	mean	SD
1	There is a well equipped ICT room in your school	179	1.98	.753
2	There are enough computers in the school for the implementation of teaching with ICT technology	179	2.12	.708
3	There is an internet access in your school for teachers to use it for teaching purpose	179	1.92	.694
4	There is internet access in your school for students to use it for learning purpose	179	1.95	.721
5	ICTs are making positive changes in the teaching learning activity in your school	179	2.03	.771
6	In your school, ICTs provide teachers and students with more opportunities of obtaining the required information	179	2.01	.775
7	The school administration has a mechanism to support teachers to improve their teaching activity with ICT technology.	179	2.15	.842
8	You are well equipped with basic skills of using computer for instruction purpose.	179	3.31	1.023
9	You know how to operate LCD projector	179	2.94	1.074
10	You know how to download videos from the internet and use it for instruction purpose.	179	2.97	1.068
11	You are able to prepare PowerPoint presentations to use in the class	179	2.73	1.099

Note: NR ⇨ S D ⇨standard deviation

As demonstrated in the above table 12 the majority respondents with 3.31 mean value and 1.02 SD agreed, disagreed and rated undecided that they are well equipped with basic skills of using computer for classroom instruction. The 1.02 SD shows that the responses are relatively dispersed, i.e., as there were respondents who were agreed, there were also considerable number of teacher respondents (17.3%) who disagreed that they had the basic skill. Out of the 179 respondents, 121(67.6%) with 2.94 mean and 1.074 SD strongly agreed, agreed and rated undecided that they are skilled in operating LCD projector, 134 (74.8%) with 2.97 mean and 1.068 SD strongly agreed, agreed and rated undecided that they are skilled in downloading videos from internet, and 95(53.11%) with 1.099 SD strongly agreed, agreed and rated undecided that they are skilled in preparation of power point. Here again the SD values indicate that there is some polarization as far as the responses given by the teacher respondents is concerned. Thus, the results of the four ICT related question items indicate that even though there might be several teachers who developed the skills, as the relatively higher SDs shows there were also considerable number of teachers who are expected that they were lacking the indicated skills.

The responses obtained from teacher respondents related to ICT integration also demonstrate that 79.3%) respondents with 1.98 mean and 0.53 SD strongly disagreed that there was a well equipped ICT room in their school; 73.7% respondents with 2.12 mean and 0.694 SD strongly disagreed and disagreed that there were enough computers in the school for the implementation of teaching with ICT technology; 82.1% respondents with 1.92 mean and 0.694 SD strongly disagreed and disagreed that there was an internet access in the schools for teachers to use it for teaching purpose; 79.9%) respondents with 1.95 mean and 0.721 SD strongly disagreed and disagreed that there was internet access in the schools for students to use it for learning purpose; 77.65% respondents with 2.03 mean and 0.771 SD strongly disagreed and disagreed that ICTs were making positive changes in the teaching learning activity in their school; 78.2% respondents with 2.01 mean and 0.775 SD strongly disagreed and disagreed that ICTs provided teachers and students with more opportunities of obtaining the required information; and 70.0% respondents with 2.15 mean and 0.842 SD strongly disagreed and disagreed that the school administration had a mechanism to support teachers to improve their teaching activity with ICT technology. The numerical results of the responses to the seven ICT related question items revealed that the majority respondents believed in the rarity of the activities in relation to the ICT related question items in the sampled schools.

The result of the numerical analysis of department head responses to ICT related question items positively reinforce what the responses of teacher respondents' revealed as shown in fig. 11 below. In the bar graph the average mean values of the responses to skills in basic computer, operating LCD projector, downloading videos and preparing PowerPoint lessons; indicate that insufficiency is observed in the number of teacher possessing the indicated skills. As the mean values of the responses, ranging from 1.5 to 1.667, to the rest ICT related question items reveal; it can be perceived that there were rare performances in the sample schools. This is what is plainly demonstrated in teacher responses in table 15 above.

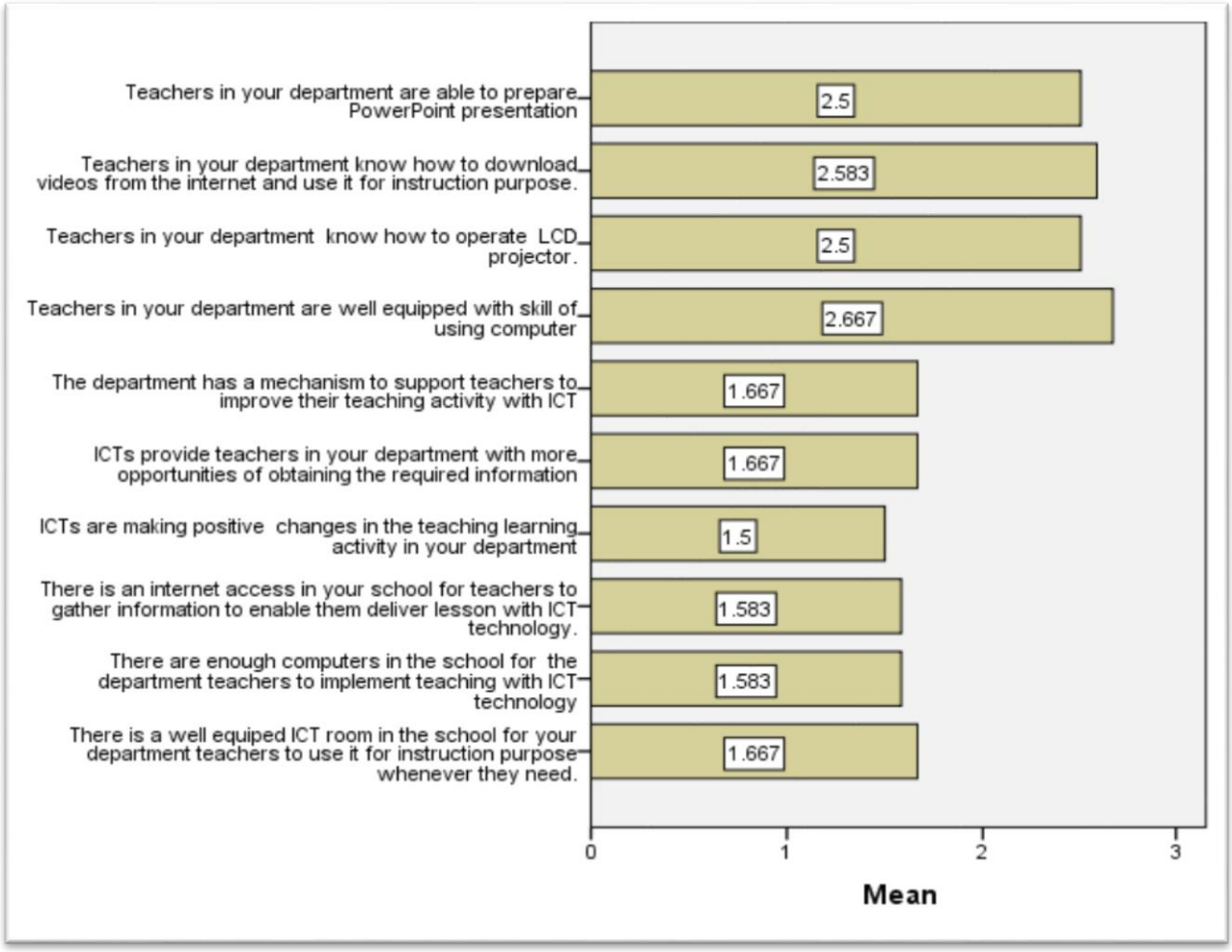

Fig.11. Dep heads' responses to ICT integration

Regarding the challenges to ICT integration, analysis of teachers and department heads responses to open ended questionnaires show that the absence of well organized ICT room, teachers attitude, internet connection problem, skill gap, large class size, lack of computers with good capacity shortage of computers were indicated to be the major challenge.

CHAPTER FIVE: Summary, Research Findings, Conclusion and Recommendations

This chapter deals with summary, major findings, conclusions and recommendations. The first part presents the highlights of the context for the research undertakings and the major findings while the second and the third parts cover the conclusions reached and the recommendations suggested respectively.

a. Summary

The main purpose of this research was to investigate the practice and challenges of using instructional technologies in 4 selected government secondary schools in Bole Sub City. To achieve this purpose, the researcher formulated the following three research questions.

1. Are instructional technologies sufficiently available in the schools?
2. Are the available instructional technologies sufficiently used in the schools?
3. What are the major factors affecting the use of instructional technologies in the selected schools?

To address these basic questions, mixed research design was used. The study was conducted in 4 government secondary schools. Whereas 184 teachers, 12 department heads were used as the principal sources of data, 4 school principals, 8 students and 4 cluster supervisors, observation and document analysis were used as sources of data to supplement the data collected from teachers and department heads. Convenience sampling method was employed to select teacher for data collection, school principal, cluster supervisor and student participants but purposive sampling was used in the case of department head respondents. The necessary data was gathered through both quantitative and qualitative tools. 196 copies of questionnaires were prepared by the researcher and distributed to teachers and department heads. To obtain qualitative data semi structure interview was conducted with the school principals, students and cluster supervisors, and additionally document analysis and observation were also undertaken. The qualitative data were primarily used to supplement the major information obtained with the help of close and open ended questionnaires. Out of the number of questionnaires distributed to teachers and department heads, only 5(2.55%) were left unreturned.

In the study, the data collected through questionnaires were analyzed using SPSS 20; and frequency, percentage, mean, and standard deviation were calculated. The data obtained from open ended questionnaires, interviews, document analysis and observation were analyzed qualitatively by condensing the available data to key themes and topics, and the information was used to substantiate the quantitative data according to their relevance. Another worth mentioning aspect of this research was ethical considerations. In this regard due attention was given to ethical considerations. Participants were given full information on the purpose of the study and their consents were secured ahead of time. As promised, their identity and responses remained confidential.

b. Major Findings

Based on the analysis of the data; the following major findings were obtained. The findings are presented here under.

i. Availability of instructional technologies

The analysis could show that not all instructional technologies were equally available in the schools. Of the types of instructional technologies included in the question items, plasma is one which was most abundantly found. Computers and models were found to be the second and third most available next to plasma TV. The extent to which graphics (such as figures, diagrams, graphs, maps, pictures, photographs, etc.) were available in the schools comes next to plasma TV, computers and models. Internet, realia and LCD projectors were the least available among the seven relatively most abundantly found instructional technologies. On the other hand, the remaining instructional technologies were either very rarely available or absent in the schools.

ii. Using instructional technologies

In terms of the extent of using the available instructional technologies the findings show that the same most abundantly found instructional technologies in the schools were also found to be used at the greatest extent for teaching and learning. Plasma TV was used by teachers at the extent of exceeding the other six relatively most frequently used items. Computers, internet, models, graphics, realia and LCD projectors took the remaining six consecutive levels in terms of the extent of using instructional technologies. With regard to the remaining 12 instructional

technology items; though they were used by teachers at different extent, they were either used rarely or not used at all for teaching and learning.

iii. Factors affecting the use of instructional technologies

According to the findings nine major factors which appear to affect the use of instructional technologies by teachers for teaching and learning are identified.

1. The absence of reliable electric power supply.
2. The fact that the sampled schools couldn't go with the rapid technological changes.
3. Insufficiency of teachers' activity in relation to improvisation of instructional technologies.
4. Lack of training which may enable teachers to get knowledge about new arrival technologies.
5. Teachers' skill gap in the use of instructional technologies.
6. Shortage of administrative and technical support to motivate teachers to use instructional technologies and help them exercise the use of the technologies in the classroom.
7. Insufficiency of continual monitoring and evaluation system for ensuring the use of instructional technologies by teachers.
8. Shortage of computers to help teachers deliver lessons in better way.
9. Lack of sufficient and reliable internet connection for teachers to use it for teaching and learning.

iv. Measures to overcome the challenges

Based on the analysis of the responses of teachers and department heads to open ended questions items, and principals and cluster supervisors to interview questions; the following are the most noticeable findings: Provision of capacity building trainings to bridge teachers skill gap, building additional rooms, arranging well organized ICT rooms in the schools, ensuring reliable internet and electric power supply and availability of dependable maintenance service in the schools, devising and implementing various ways which are engaging and make possible for teachers to actively involve in using instructional technologies for teaching and learning.

v. Integration of ICT technology

In relation to ICT integration this investigation helped to come up with the following major findings:

Relatively the majority teachers notably those with more teaching experience were found to be well equipped with basic skills of using computers, operating LCD projector, downloading videos from internet and preparing PowerPoint lessons. Besides, the following findings were observed and identified as gaps between what it should be and what it was actually seen in the schools according to the participants' responses of this research.

1. Lack of a well equipped ICT room in the sampled schools.
2. Internet access for teachers and students are in short supply.
3. Because of the lack of well equipped ICT room and shortage of internet access, ICT which can provide teachers and students with opportunities of obtaining various information, couldn't do so.
4. Lack of effective mechanism from the school administration side to support teachers improving their teaching and learning activities with ICT technologies.

c. Conclusion

The crux of this study was to investigate the practice and challenges of using instructional technologies in selected government secondary schools in Bole Sub city. From the study it is concluded that instructional technologies which greatly contribute to the betterment of teaching and learning activity are generally insufficiently available except plasma TV, which is revealed to be the most abundant one in the schools. The extent of availabity varies from one school to another. However, in terms of using instructional technologies for classroom teaching purpose, even the most abundant instructional technology, plasma TV, is used infrequently by teachers. The investigation also established that as there are teachers who either frequently or infrequently use different instructional materials, there are also others who totally failed to use. Teachers with more years of teaching experience use the available technology devices at a greater extent than those with less years of experience.

From the fact that the most available instructional technologies in the schools are the one which are used by teahcres most frequently, it can be concluded that the availability of instructional

technologies can serve as a driving force for teachers to use them, This idea is supported by what Fuller (Fuller 2000) stated saying 'Availability of and access to instructional technology resources are important factors that determine the frequency with which teachers use instructional materials.'

Teachers' age and level of work experience has relationship with the extent of using instructional technologies for teaching. The xtent of using the available technology device increases with increasing teachers' age. The more the level of teachers' teaching experience, the better the frequency of utilizing the available instructional technologies.

This study also helped to discover the major factors affecting the use of instructional technologies for classroom teaching. These factors are generally related to the school administration, the school teachers and some are external. Most of these factors, such as absence of administrative and technical support, are related to the school administration. Such factors as interest to the use of instructional technologies and participating in the improvisation of instructional technologies are related to teachers.

Related to ICT integration, most teachers with better teaching experience developed skills which helped them to be in a better position to apply ICT integration. In this regard, it is concluded that the more the number of teaching experience, the better the extent of using instructional technologies and application of ICT integration.

d. Recommendations

Taking the major findings and conclusions drawn from the study into consideration, the researcher suggests the following possible areas of intervention.

1. Teachers need to use instructional technologies for teaching and learning to help students obtain up to the minute informantion and ensure a better students learning. Therefore, the school administration needs to
   - design strategies such as giving certificate of appreciation, providing training opportunities to encourage and motivate teachers so that they optimally support the teaching and learning activity with various instructional technologies.

- collaboratively work with the concerned government bodies in preparing and facilitating trainings to enhance teachers' performance in using instructional technologies.
- collaboratively work with NGO's and volunteer investors by granting proposal to get support in areas which keep the schools to go with rapid technological changes
- encourage teachers to prepare lessons that incorporate instructional technologies and continually use them in their lesson presentation in the classroom.

2. Skill gap in operating technological devises can surely prevent teachers from using the technologies for classroom instruction. It is, therefore, necessary that

- trainings need to be scheduled to assist teachers in the operation of instructional technologies equipment and the effective use of plasma TV in the classroom.
- schools by conducting teachers skill gap analysis and identifying skill gaps, need to prepare and deliver trainings to keep teachers up-to-date with the technological changes.

3. As the research findings indicate, there are considerable number of teachers who have skills in using computer, operating LCD projector and preparing PowerPoint lessons. The skills are essential for the application of ICT integration. So the school needs to devise a system which allows teachers to share experience within and between departments.

4. The absence or insufficiency of the practice of monitoring and evaluation by the school management can affect the effectiveness of using instructional technologies in the classroom. Thus,

- the school needs to devise a system to make sure that there is effective follow up, support, monitoring and evaluation so that teachers are encouraged and intentionally use instructional technologies to allow students obtain better learning experience.
- the school ought to develop and maintain a well established system such as developing checklis formats which helps to facilitate reporting relationship among teachers, department heads and principals.

5. For audio, audiovisual and ICT related instructional technologies to operate, they require electric power. In this regard the schools, BSCEO, MoE and other concerned

government bodies need to work collaboratively to ensure the supply of reliable electric power to the schools..

6. ICT integration has a great effectiveness for both teachers and students (Ghavifekr, S. & Rosdy, and W.A.W. 2015). To make a difference in the teaching and learning activities schools need to employ ICTs as effectively as possible. The school, therefore, ought to design a system which allows school principals, teachers and students work together for effective application of ICTs in the schools.

Suggestions to further studies

The researcher of this study recommends the following further investigations to be conducted in the area:

Since this study was limited to be undertaken in four selected government schools in Bole Sub City, and there are also different aspects of the the study area which need to be assessed in depth; the researcher suggests that other similar investigations could be conducted in other government and private schools alike.

1. A study in connection with the impact of using instructional technologies on students academic performance in selected government schools could be carried out.
2. A comparative study on the practice of using instructional technologies in selected private and government schools in Bole Sub City could be another possible research to be conducted in the given area.
3. A comparative study to see how the extent of application of ICT integration varies across subjects; is also another possible research which can be undertaken in the area.

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Appendices

Appendix A

Teachers on the extent of availability of instructional technologies

Item No.		Item	NR	SA		A		U		D		SD		Mean	S D
				N	%	N	%	N	%	N	%	N	%		
Non projected	1a	Graphics	179	18	10.1	50	27.9	92	51.4	18	10.1	1	6	3.37	.820
	1b	Realia	179	3	1.7	37	20.7	89	49.7	44	24.6	6	3.4	2.92	.792
projected	2a	**S**lide**s**	179	2	1.1	11	6.1	32	17.9	103	57.5	31	17.3	2.16	.822
	2b	Film strips	179	0	0	3	1.7	25	14.0	105	58.7	46	25.7	1.92	.678
	2c	Overhead projector	179	0	0	8	4.5	38	21.2	114	63.7	19	10.6	2.20	.679
	2d	LCD projector	179	4	2.2	24	13.4	80	44.7	68	38.0	3	1.7	2.72	.711
	2e	Silent films	179	0	0	5	2.8	24	13.4	94	52.5	56	31.3	1.88	.739
Three dimensional	3a	Models	179	13	7.3	80	44.7	73	40.8	13	7.3	0	0	3.46	.656
	3b	Mock ups	179	1	.6	4	2.2	29	16.2	92	51.4	53	29.6	1.93	.772
	3c	Diorama	179	0	0	2	1.1	38	21.2	80	44.7	59	33.0	1.91	.762
Display boards	4a	White board	179	4	2.2	10	5.6	38	21.2	112	62.6	15	8.4	2.31	.794
	4	Peg board	17	0	0	6	3.4	2	15.	99	55.	4	26.	1.96	.74

	b		9					7	1		3	7	3		1
	4c	Bulletin board	179	1	.6	8	4.5	33	18.4	122	68.2	15	8.4	2.21	.676
Audio	5a	Tape recorder	179	0	0	5	2.8	33	18.4	129	72.1	12	6.7	2.17	.579
Audio visual	6a	Video	179	2	1.1	8	4.5	51	28.5	108	60.3	10	5.6	2.35	.706
	6b	Plasma TV	179	55	30.7	88	49.2	29	16.2	7	3.9	0	0	4.07	.790
ICT related	7a	Internet	179	9	5.0	62	34.6	75	41.9	32	17.9	1	.6	3.26	.828
	7b	School net	179	3	1.7	29	16.2	33	18.4	102	57.0	12	6.7	2.49	.902
	7c	Computers	179	33	18.4	91	50.8	42	23.5	13	7.3	0	0	3.56	.688

Note: NR ⇨ Number of respondent, **S**A⇨ strongly agree, A⇨agree, U⇨undecided, D⇨ disagree, **S**D⇨ strongly disagree, N⇨number, S D ⇨standard deviation

Appendix B

Teachers' responses on the extent of using instructional technologies

Item No.		Item	NR	**S**A		A		U		D		**S**D		Mean	S D
				N	%	N	%	N	%	N	%	N	%		
Non projected	9a	Graphics	179	13	7.3	45	25.1	77	43.0	40	22.3	4	2.2	3.13	.918
	10b	Realia	179	4	2.2	28	15.6	65	36.3	66	36.9	16	8.9	2.65	.926
projected	10a	**S**lide**s**	179	1	.6	10	5.6	17	9.5	90	50.3	61	34.1	1.88	.836
	10b	Film strips	179	0	0	2	1.1	20	11.2	80	44.7	77	43.0	1.70	.708

	10c	Overhead projector	179	1	.6	4	2.2	33	18.4	88	49.2	53	29.6	1.95	.788
	10d	LCD projector	179	4	2.2	25	14.0	52	29.1	77	43.0	21	11.7	2.52	.950
	10e	Silent films	179	0	0	5	2.8	10	5.6	55	30.7	109	60.9	1.50	.730
Three dimensional	11a	Models	179	18	10.1	45	25.1	67	37.4	41	22.9	8	4.5	3.13	1.024
	11b	Mock ups	179	0	0	5	2.8	23	12.8	52	29.1	99	55.3	1.63	.813
	11c	Diorama	179			4	2.2	28	15.6	60	33.5	87	48.6	1.72	.809
Display boards	12a	White board	179	4	2.2	12	6.7	21	11.7	90	50.3	52	29.1	2.03	.939
	12b	Peg board	179	1	.6	7	3.9	19	10.6	68	38.0	84	46.9	1.73	.845
	12c	Bulletin board	179	1	.6	5	2.8	23	12.8	90	50.3	60	33.5	1.87	.782
Audio	13a	Tape recorder	179	1	.6	5	2.8	28	15.6	103	57.5	42	23.5	1.99	.746
Audio visual	14a	Video	179	2	1.1	8	4.5	48	26.8	86	48.0	35	19.6	2.20	.842
	14b	Plasma TV	179	39	21.8	68	38.0	55	30.7	16	8.9	1	.6	3.72	.926
ICT related	15a	Internet	179	14	7.8	51	28.5	73	40.8	33	18.4	8	4.5	3.17	.969
	15b	School net	179	5	2.8	16	8.9	27	15.1	68	38.0	63	35.2	2.06	1.056
	15c	Computers	179	26	14.5	71	39.7	56	31.3	24	13.4	2	1.1	3.53	.938

Note: NR ⇨ Number of respondent, s_A⇨ strongly agree, A⇨agree, U⇨undecided, D⇨ disagree, s_D⇨ strongly disagree, N⇨number, S D ⇨standard deviation

Appendix C

Department head s' responses on the extent of using instructional technologies

Item No.		Item	NR	SA		A		U		D		SD	
				N	%	N	%	N	%	N	%	N	%
Non projected	9a	Graphics	12			4	33.3	6	50.0	2	16.7		
	10b	Realia	12			4	33.3	4	33.3	4	33.3		
projected	10a	Slides	12					2	16.7	9	75.0	1	8.3
	10b	Film strips	12					2	16.7	8	66.7	2	16.7
	10c	Overhead projector	12					2	16.7	10	83.3		
	10d	LCD projector	12			1	8.3	2	16.7	8	66.7	1	8.3
	10e	Silent films	12					1	8.3	9	75.0	2	16.7
Three dimensional	11a	Models	12	1	8.3	5	41.7	2	16.7	2	16.7	2	16.7
	11b	Mock ups	12			1	8.3	2	16.7	7	58.3	2	16.7
	11c	Diorama	12					2	16.7	10	83.3		
Display boards	12a	White board	12					1	8.3	10	83.3	1	8.3
	12b	Peg board	12							10	83.3	2	16.7
	12c	Bulletin board	12							10	83.3	2	16.7
Audio	13a	Tape recorder	12					2	16.7	9	75.0	1	8.3
Audio visual	14a	Video	12					1	8.3	10	83.3	1	8.3
	14b	Plasma TV	12	1	8.3	5	41.7	5	41.7	1	8.3		
ICT related	15a	Internet	12	1	8.3	5	41.7	3	25.0	3	25.0		
	15b	School net	12	1	8.3	3	25.0	3	25.0	4	33.3	1	8.3
	15c	Computers	12			8	66.7	1	8.3	3	25.0		

Note: NR ⇨ Number of respondent, SA⇨ strongly agree, A⇨agree, U⇨undecided, D⇨ disagree, SD⇨ strongly disagree, N⇨number, S D ⇨standard deviation

Appendix D

Teachers' responses on ICT integration in teaching and learning

Item No.	Item	NR	SA		A		U		D		SD		Mean	S D
			N	%	N	%	N	%	N	%	N	%		
1	There is a well equipped ICT room in your school	179			6	3.4	31	17.3	96	53.6	46	25.7	1.98	.753
2	There are enough computers in the school for the implementation of teaching with ICT technology	179			5	2.8	42	23.5	102	57.0	30	16.8	2.12	.708
3	There is an internet access in your school for teachers to use it for teaching purpose	179			2	1.1	30	16.8	98	54.7	49	27.4	1.92	.694
4	There is internet access in your school for students to use it for learning purpose	179			3	1.7	33	18.4	95	53.1	48	26.8	1.95	.721
5	ICTs are making positive changes in the teaching learning activity in your school	179			8	4.5	32	17.9	97	54.2	42	23.5	2.03	.771
6	In your school, ICTs provide teachers and students with more opportunities of obtaining	179	1	.6	5	2.8	33	18.4	95	53.1	45	25.1	2.01	.775

	the required information													
7	The school administration has a mechanism to support teachers to improve their teaching activity with ICT technology.	179	2	1.1	8	4.5	42	23.5	89	49.7	38	21.2	2.15	.842
8	You are well equipped with basic skills of using computer for instruction purpose.	179	22	12.3	56	31.3	63	35.2	31	17.3	7	3.9	3.31	1.023
9	You know how to operate LCD projector	179	14	7.8	38	21.2	69	38.5	40	22.3	18	10.1	2.94	1.074
10	You know how to download videos from the internet and use it for instruction purpose.	179	18	10.1	33	18.4	66	36.9	50	27.9	12	6.7	2.97	1.068
11	You are able to prepare PowerPoint presentations to use in the class	179	14	7.8	28	15.6	53	29.6	64	35.8	20	11.2	2.73	1.099

Note: NR ⇨ Number of respondent, s_A⇨ strongly agree, A⇨agree, U⇨undecided, D⇨ disagree, s_D⇨ strongly disagree, N⇨number, S D ⇨standard deviation

Appendix E

Teachers' responses on factors affecting the use of instructional technologies

Item No.	Item	NR	SA		A		U		D		SD		Mean	S D
			N	%	N	%	N	%	N	%	N	%		
1	There is sufficient time for the school teachers to learn how to use instructional technologies in the classroom.	179	0	0	16	8.9	68	38.0	82	45.8	13	7.3	2.49	.760
2	Teachers get enough support from the school administration to motivate them use instructional technologies in the classroom.	179	0	0	9	5.0	47	26.3	104	58.1	19	10.6	2.26	.712
3	Teachers are given trainings whenever new technologies are introduced into the school.	179	0	0	9	5.0	28	15.6	112	62.6	30	16.8	2.09	.721
4	The school teachers have no lack of knowledge in the use of instructional technologies.	179	1	.6	7	3.9	45	25.1	84	46.9	42	23.5	2.11	.827
5	Teachers obtain technical assistance from the school to help them properly utilize instructional technologies in the classroom	179	1	.6	7	3.9	36	20.1	101	56.4	34	19.0	2.11	.768
6	There is reliable electric power				0	0	43	24.0	88	42.9	43	24.0		

	supply to enable teachers to use instructional technologies for instruction purposes.	179	0	0									1.97	.714
7	There are enough computers in the school to help teachers support the classroom teaching with technology.	179	0	0	4	2.2	42	23.5	101	56.4	32	17.9	2.10	.704
8	There is internet connection in the school for teachers to use it for teaching purpose.	179	0	0	4	2.2	35	19.6	96	53.6	44	24.6	1.99	.731
9	The school has a continual monitoring and evaluation system for ensuring the use of instructional technologies by teachers	179	1	.6	3	1.7	42	23.5	90	50.3	43	24.0	2.04	.770
10	Teachers have interest in using instructional technologies	179	6	3.4	26	14.5	53	29.6	66	36.9	28	15.6	2.53	1.029
11	The more the number of teachers teaching experience, the better their extent of using instructional	179	29	16.2	73	40.8	47	26.3	17	9.5	13	7.3	3.49	1.098

	technology for instruction purpose.													
12	The school is known to go with the rapid technological changes.	179			5	2.8	25	14.0	62	34.6	87	48.6	1.71	.810
13	The school teachers improvise instructional technologies in the school pedagogical center.	179			6	3.4	36	20.1	71	39.7	66	36.9	1.90	.835

Note: NR ⇨ Number of respondent, **S**A⇨ strongly agree, A⇨agree, U⇨undecided, D⇨ disagree, **S**D⇨ strongly disagree, N⇨number, S D ⇨standard deviation

Appendix - F

Addis Ababa University

College of Education and Behavioral Studies

Department of Educational Planning and Management

Questionnaire to be completed by teachers

Dear respondent,

The researcher of this study is working on a partial fulfilment of Master of Arts in Educational Planning and Management. The purpose of this questionnaire is to gather data used in the investigation of the practice and challenges of using instructional technologies in selected government secondary schools in Bole Sub City and then to suggest solutions for the identified problems. The response for each item in the questionnaire could be of great help to the intended purpose. Hence, you are kindly requested to respond honestly, kindly and thoughtfully. The success of the study depends on your genuine information. All the responses will be treated with utmost confidentiality. You do not need to write your name, and you will not be able to be identified or traced. ANONYMITY AND NON-TRACEABILITY ARE ASSURED.

When completed, If you wish to discuss any aspects of the study then please do not hesitate to contact me. I very much hope that you will feel able to participate.

May I thank you, in advance, for your valuable cooperation?

Yours sincerely,

Fantu Wolde Gebremariam

Tel. No. 911-00-53-16; Email: fantushalom@gmail.com

Part one: General information

Name of School: Beshale ☐ Bole Preparatory ☐ Bole community ☐ Ayer Amba ☐

1. Sex: Male ☐ Female ☐

2. Age: 21-30 ☐ 31-40 ☐ 41-50 ☐ 51 and above ☐

3. Educational Level: Diploma ☐ BSc/BA ☐ MSc/MA ☐

5. Years of experience in teaching:

☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ Above 20 ☐

Part two: The extent of availability of instructional technologies

Adequacy: instructional technologies are available for the school teachers to use them for classroom instruction purposes whenever they need.

The meaning of four instructional technologies is given in the last page.

Rate the following questions by putting a tick (✔) on the appropriate box using the scale given below.

5 = strongly agree (SA); 4 = agree (A); 3 = undecided (U) (neither agree nor disagree);

2 = disagree (D); 1 = strongly disagree (SA)

Item No.		The following instructional technologies are adequately available in the school	Rating scales				
			SD	D	U	A	SA
Non projected	1a	Graphics					
	1b	Realia					
projected	2a	Slides					
	2b	Film strips					
	2c	Overhead projector					
	2d	LCD projector					
	2e	Silent films					
Three dimensional	3a	Models					
	3b	Mock ups					
	3c	Diorama					
Display boards	4a	White board					
	4b	Peg board					
	4c	Bulletin board					

Audio	5a	Tape recorder					
Audio visual	6a	Video					
	6b	Plasma TV					
ICT related	7a	Internet					
	7b	School net					
	7c	Computers					

8. What other types of instructional technologies are available in your school?

_____

_____

Part three: The extent to which instructional technologies are used by teachers

Rate the following questions by putting a tick (✔) on the appropriate box using the scale given below.

1=Strongly Disagree (SD); 2=Disagree (D); 3=Undecided (U) (neither agree nor disagree); 4= (Agree) (A); 5=Strongly Agree (SA) = 5

Item No.		I use one or more of these instructional technologies for whenever i present lessons in the classroom	Rating scales				
			SD	D	U	A	SA
Non projected	9a	Graphics					
	9b	Realia					
projected	10a	**S**lide**s**					
	10b	Film strips					
	10c	Overhead projector					
	10d	LCD projector					
	10e	Silent films					
Three dimensional	11a	Models					
	11b	Mock ups					
	11c	Diorama					
Display board	12a	White board					
	12b	Peg board					

	12c	Bulletin board					
Audio	13a	Tape recorder					
Audio visual	14a	Video					
	14b	Plasma TV					
ICT related	15a	Internet					
	15b	School net					
	15c	Computers					

Part four: Factors affecting the use of instructional technology

The descriptions of the possible factors that can affect the use of instructional technologies in the classroom are listed in the table below. Rate by putting a tick (✔) on the appropriate box using the scale given below

1=Strongly Disagree (SD); 2=Disagree (D); 3=Undecided (U) (neither agree nor disagree); 4= (Agree) (A); 5=Strongly Agree (SA)

Item No.	Description of items	Rating scales				
		SD	D	U	A	SA
16	There is sufficient time for the school teachers to learn how to use instructional technologies in the classroom.					
17	Teachers get enough support from the school administration to motivate them use instructional technologies in the classroom.					
18	Teachers are given trainings whenever new technologies are introduced into the school.					
19	The school teachers have no lack of knowledge in the use of instructional technologies.					
20	Teachers obtain technical assistance from the school to help them properly utilize instructional technologies in the classroom					
21	There is reliable electric power supply to enable teachers to use instructional technologies for instruction purposes.					
22	There are enough computers in the school to help teachers support the classroom teaching with technology.					
23	There is internet connection in the school for teachers to use it for teaching purpose.					
24	The school has a continual monitoring and evaluation system for ensuring the use of instructional technologies by teachers					
25	Teachers have interest in using instructional technologies					
26	The more the number of teachers teaching experience, the better their extent of usinginstructional technology for instruction					

	purpose.					
27	The school is known to go with the rapid technological changes.					
28	The school teachers improvise instructional technologies in the school pedagogical center.					

29. In your opinion, what other challenges are teachers facing in using instructional technology?

_____

_____

Suggest the possible ways of overcoming the challenges faced

_____

_____

Part five: ICT integration in teaching learning

Indicate your response for each ICT related statement by placing a tick (✔) in one space only

1=Strongly Disagree (SD); 2=Disagree (D); 3=Undecided (U) (neither agree nor disagree); 4= (Agree) (A); 5=Strongly Agree (SA) = 5

Item No.	Description of items	Rating scales				
		SD	D	U	A	SA
31	There is a well equipped ICT room in your school					
32	There are enough computers in the school for the implementation of teaching with ICT technology					
33	There is an internet access in your school for teachers to use it for teaching purpose					
34	There is an internet access in your school for students to use it for learning purpose					
35	ICTs are making positive changes in the teaching learning activity in your school					
36	In your school, ICTs provide teachers and students with more opportunities of obtaining the required information					
37	The school administration has a mechanism to support teachers to improve their teaching activity with ICT technology.					
38	You are well equipped with basic skills of using computer for instruction purpose.					
39	You know how to operate LCD projector					

40	You know how to download videos from the internet and use it for instruction purpose.					
41	You are able to prepare PowerPoint presentations to use in the class					

What challenges do you think are present in your school to have impact on teaching with ICT technology?

_____

_____

What measure do you think should be taken to overcome the challenges?

_____

_____

If you have more to say about the integration of technology into the teaching and learning process

Definition of terms

REALIA: objects used by teachers to illustrate everyday life. (e.g. gold coins, tools, a real frog etc. brought into classroom for instruction purpose)

MOCK-UPS: a replica of a machine or structure used for instructional purposes.

PEG-BOARD: pre-drilled with evenly spaced holes. The holes are used to accept pegs or hooks to support various

	Dear respondent: Would you check each page to make sure that no answer has been	

Appendix - G

Addis Ababa University

College of Education and Behavioral Studies

Department of Educational Planning and Management

Questionnaire to be completed by department heads

Dear respondent,

The researcher of this study is working on a partial fulfilment of Master of Arts in Educational Planning and Management. The purpose of this questionnaire is to gather data used in the investigation of the practice and challenges of using instructional technologies in selected government secondary schools in Bole Sub City and then to suggest solutions for the identified problems. The response for each item in the questionnaire could be of great help to the intended purpose. Hence, you are kindly requested to respond honestly, kindly and thoughtfully. The success of the study depends on your genuine information. All the responses will be treated with utmost confidentiality. You do not need to write your name, and you will not be able to be identified or traced. ANONYMITY AND NON-TRACEABILITY ARE ASSURED.

When completed, If you wish to discuss any aspects of the study then please do not hesitate to contact me. I very much hope that you will feel able to participate.

May I thank you, in advance, for your valuable cooperation?

Yours sincerely,

Fantu Wolde Gebremariam

Tel. No. 911-00-53-16, Email: *fantushalom@gmail.com*

Part one: General information

Name of School: Beshale ☐ Bole Preparatory ☐ Bole community ☐ Ayer Amba ☐

1. Sex: Male ☐ Female ☐

2. Age: 21-30 ☐ 31-40 ☐ 41-50 ☐ 51 and above ☐

3. Educational Level: Diploma ☐ BSc/BA ☐ MSc/MA ☐

5. Years of experience in department head position: ☐3 ☐4-6 ☐7-9 12 a☐ above

Part two: The extent of availability of instructional technologies

Adequacy: instructional technologies are available for the department teachers to use them for instruction purposes whenever they need.

Rate the following questions by putting a tick (✔) on the appropriate box using the scale given below.

5 = strongly agree (SA); 4 = agree (A); 3 = undecided (U) (neither agree nor disagree); 2 = disagree (D); 1 = strongly disagree (SA)

Item No.		The following instructional technologies are adequately available for teachers in your department to use it for instruction purpose	Rating scales				
			SD	D	U	A	SA
Non projected	1a	Graphics					
	1b	Realia					
projected	2a	**S**lide**s**					
	2b	Film strips					
	2c	Overhead projector					
	2d	LCD projector					
	2e	Silent films					
Three dimensional	3a	Models					
	3b	Mock ups					
	3c	Diorama					
Di spl ay	4a	White board					

	4b	Peg board					
	4c	Bulletin board					
Audio	5a	Tape recorder					
Audio visual	6a	Video					
	6b	Plasma TV					
ICT related	7a	Internet					
	7b	School net					
	7c	Computers					

8. What other types of instructional technologies are available in the school for teachers in your department to use them?

_____

_____

Part three: The extent of using instructional technologies for classroom instruction purposes

Rate the following questions by putting a tick (✔) on the appropriate box using the scale given below.

1=Strongly Disagree (SD); 2=Disagree (D); 3=Undecided (U) (neither agree nor disagree); 4= (Agree) (A); 5=Strongly Agree (SA) = 5

Item No.		Teachers under your supervision use one or more of following instructional technologies for classroom instruction	Rating scales				
.			SD	D	U	A	SA
Non projected	9a	Graphics					
	9b	Realia					
project	10a	**S**lide**s**					
	10b	Film strips					

	10c	Overhead projector					
	10d	LCD projector					
	10e	Silent films					
Three dimensional	11a	Models					
	11b	Mock ups					
	11c	Diorama					
Display boards	12a	White board					
	12b	Peg board					
	12c	Bulletin board					
Audio	13a	Tape recorder					
Audio visual	14a	Video					
	14b	Plasma TV					
ICT related	15a	Internet					
	15b	School net					
	15c	Computers					

Part four: Factors affecting the use of instructional technologies

The descriptions of possible factors that affect the use of instructional technologies in your department are listed in the table below. Rate by putting a tick (✔) on the appropriate box using the scale given below

1= Strongly disagree (SD); 2= Disagree (D); 3= Undecided (U)(neither agree nor disagree, 4= Agree (A)

5= Agree (A)

Item No.	Description of items	Rating scales				
		SD	D	U	A	SA
16	There is sufficient time for teachers in your department to learn how to use the available instructional technologies.					

17	The school administration delivers sufficient support to your department in order for teachers to use instructional technologies for classroom teaching.					
18	Teachers in your department are given trainings whenever new technologies are introduced into the school.					
19	Teachers in your department are skilled in the use of all the available instructional technologies.					
20	The school provides technical assistance to your department in the use of instructional technologies					
21	There is reliable electric power supply in the department and in classrooms to enable teachers to use instructional technologies for classroom teaching.					
22	There is sufficient number of computers in the department for teachers to use for instruction purpose.					
23	There is internet connection in the department for teachers to use it for preparing lessons for classroom teaching.					
24	Your department has a continual monitoring and evaluation system for ensuring the use of instructional technologies by teachers.					
25	Teachers in your department have interest in using instructional technologies for classroom teaching.					
26	The more the number of teachers teaching experience in your department, the better their extent of using instructional technologies for instruction purpose.					
27	The department is known to go with the rapid technological changes.					
28	Teachers in your department take time for improvisation of instructional technologies in the school pedagogical center.					

29. In your opinion, what other challenges are teachers in your department facing in using instructional technology

_____

_____

30. Suggest the possible ways of overcoming the challenges faced by teachers in your department

_____

_____

31. If you have more to say about the integration of technology into the teaching and learning process in your department, please mention them here under.

_____

32. Do all teachers under your supervision prepare plan regularly to use instructional technologies in the Classroom teaching? _____ if no, what do you think is the reason?

_____

33. Do all teachers under your supervision use instructional technologies in the classroom teaching according to their plan? _____

_____ If no, what do you think is the reason?

_____

34. Are teachers under your supervision making effort to improvise instructional technologies for instruction purpose?

_____ If your answer is yes, how do they improvise?

_____

Part five: ICT integration in teaching learning

Rate the following questions by putting a tick (✔) on the appropriate box using the scale given below
1= Strongly disagree (SD); 2= disagree(D); 3= Undecided (U)(neither agree nor disagree, 4= agree (A) 5= Agree(A)

Item No.	Description of items	Rating scales				
		SD	D	U	A	SA
35	There is a well equipped ICT room in your school for your department teachers to use it for instruction purpose whenever they need.					
36	There are enough computers in the school for the department teachers to implement teaching with ICT technology					
37	There is an internet access in your school for teachers to gather information to enable them deliver lesson with ICT					

	technology.					
38	ICTs are making positive changes in the teaching learning activity in your department.					
39	ICTs provide teachers in your department with more opportunities of obtaining the required information					
40	The department has a mechanism to support teachers to improve their teaching activity with ICT					
41	Teachers in your department are well equipped with skill of using computer					
42	Teachers in your department know how to operate LCD projector					
43	Teachers in your department know how to download videos from the internet and use it for instruction purpose.					
44	Teachers in your department are able to prepare PowerPoint presentation					

45. What challenges do you think are present in your department to have impact on teaching with ICT technology?

_____

46. What measure do you think should be taken to overcome the challenges?

_____

Definition of terms

REALIA: objects used by teachers to illustrate everyday life. (e.g. gold coins, tools, a real frog etc. brought into classroom for instruction purpose)

MOCK-UPS: a replica of a machine or structure used for instructional purposes.

PED-BOARD: pre-drilled with evenly spaced holes. The holes are used to accept pegs or hooks to support various items such as tools in a workshop or classroom.

	Dear respondent: Would you check each page to make sure that no answer has been inadvertently missed	

Appendix - H

Interview guideline for school principal

I thank you in advance for your willingness to be interviewed. The purpose of this interview is to find out the practice and challenges of utilizing instructional technology in selected government schools in Bole Sub City. All information provided will be kept confidential.

ለቃለመጠይቁ ፍቃደኛ ስለሆኑ በቅድሚያ አመሰግናለሁ፡፡ የዚህ መጠይቅ ዓላማ በቦሌ ክ/ከተማ በሚገኙ የተመረጡ ሁለተኛ ደረጃ የመንግስት ት/ቤቶች የማስተማሪያ ቴክኖሎጂዎች የመጠቀም ትግበራና ተግዳሮቶች በሚል ርዕስ ለሚጠናው ጥናት መረጃ ለማሰባሰብ ነው፡፡ የሚሰጡት መረጃዎች ሁሉ ሚስጥራዊነታቸው በጣም የተጠበቀ ነው፡፡

1. What are the administrative challenges you are experiencing in your school with regard to the use of instructional technologies?
   - የማስተማሪያ ቴክኖሎጂዎችን በመምህራን መጠቀምን በተመለከተ በት/ቤትዎ ያጋጠምዎ አስተዳደራዊ ተግዳሮቶች ምንድን ናቸው?

2. What are your views on the use of instructional technology for classroom teaching and learning?
   - የማስተማሪያ ቴክኖሎጂዎችን ክፍል ውስጥ መጠቀም በተመለከተ የእርስዎ አመለካከት (እይታ) ምንድን ነው?

3. How well is the school equipped with instructional technology? If no, which major types do you think you are missing for your school?
   - ት/ቤቱ በማስተማሪያ ቴክኖሎጂዎች በምን ያህል አቅም የተሟላ ነው? በቂ የማስተማሪያ ቴክኖሎጂዎች ከሌሉ የትኞቹ ዋና ዋና የማስተማሪያ ቴክኖሎጂዎች የሉም ብለው ያስባሉ?

4. To what extent are your teachers skilled to use some of the instructional technologies?
   - መምህራኖቻችሁ ክፍል ውስጥ የማስተማሪያ ቴክኖሎጂዎችን ለመጠቀም በምን ያህል መጠን ክህሎታቸው የዳበረ ነው?

5. Given the current state of the use of instructional technology in your school, what are some of the challenges hindering its widespread use?
   - አሁን ያለውን የት/ቤታችሁን የማስተማሪያ ቴክኖሎጂዎችን የመጠቀም ነባራዊ ሁኔታ ከግምት ውስጥ በማስገባት ቴክኖሎጂዎችን ለወደፊቱ በስፋት ለመጠቀም ምን ዓይነት ተግዳሮቶች አሉ ብለው ያስባሉ?

6. As a school principal how have you tried to overcome some of these challenges which are responsible for hindering the use of instructional technologies in your school?
   - እንደ ት/ቤት ርዕሰ መምህርነትዎ እንዚህን ተግዳሮቶች ለማስወገድ/ለመቀነስ ምን ጥረት እያደረጉ ይገኛሉ?

7. How does the school motivate teachers to use instructional technologies in classroom teaching?

   - ት/ቤትዎ መምህራን የማስተማሪያ ቴክኖሎጂዎችን ክፍል ውስጥ እንዲጠቀሙ እንዴት እያነሳሳ/እያበረታታ ይገኛል?

Appendix - I

ለተማሪዎች የሚቀርብ ቃለ መጠይቅ

ተማሪው የሚማርበት የት/ቤት ስም፡

የሚያስተምሩበት ት/ቤት ስም፡: በሻሌ ☐ ቦሌ መሰናዶ ☐ ቦሌ ህብረተሰብ ☐ አየር አምባ ☐

ክፍል አንድ፡

1. መምህራን በክፍል ውስጥ የማስተማሪያ ቴክኖሎጂዎችን ይጠቀማሉ? ምን ዓይነት የማስተማሪያ ቴክኖሎጂዎችን ይጠቀማሉ?
2. በየትኛው ትምህርት ዓይነት መምህራን ይበልጥ የማስተማሪያ ቴክኖሎጂዎችን ይጠቀማሉ? በየትኛውስ የትምህርት ዓይነት መምህራን የማስተማሪያ ቴክኖሎጂ በፍጹም አይጠቀሙም?
3. መምህራን የማስተማሪያ ቴክኖሎጂዎችን ሳይጠቀሙ በክፍል ውስጥ ትምህርት ከሚያስተምሩት ጋር ሲነጻጸር የማስተማሪያ ቴክኖሎጂዎችን ሲጠቀሙ ተማሪዎች ምን የተሻለ ጥቅም ያገኛሉ ብለህ/ሽ ታስባለህ/ሽ?
4. በት/ቤቱ የሚገኙትን ቁሳቁስ በመጠቀም የማስተማሪያ ቴክኖሎጂዎችን በት/ቤቱ የትምህርት መርጃ መዕከል ለማዘጋጀት መምህራን ተማሪዎችን እንዲሳተፉ ያደርጋሉ? ካደረጉ እንዴት?
5. ተማሪዎች በት/ቤቱ ኮምፒተሮችን ለትምህርት ሥራ ለመጠቀም በቀላሉ የማግኘት ዕድል አላቸው? ካገኙ የትና እንዴት ነው የሚያገኙት?
6. ተማሪዎች በት/ቤቱ የኢንተርኔት አገልግሎት ለትምህርት ሥራ የማግኘት እድል አላቸው? ካላቸው የትና እንዴት ነው የሚያገኙት?
7. መምህራኖቻችሁ አይሲቲ ቴክኖሎጂን በመጠቀም ትምህርት ያስተምራሉ?

ክፍል ሁለት፡ መምህራን በክፍል ውስጥ የማስተማሪያ ቴክኖሎጂዎችን እንደሚጠቀሙና እንደ ማይጠቀሙ ለማመላከር የሚያስችል መረጃ መሰብሰቢያ ቼክሊስት

የማስተማሪያ ቴክኖሎጂዎችን ለክፍል ውስጥ ትምህርት ሁሉም መምህራን እንደሚጠቀሙ፣ የተወሰነ መምህራን እንደሚጠቀሙ ወይም መምህራን በፍጹም እንደማይጠቀሙ ለማመልከት ይህንን ምልክት (✔) በመጠቀም አመልክቱ

ተ/ቁ	የትምህርት ቴክኖሎጂ ዓይነቶች	ሁሉም መምህራን ይጠቀማሉ	የተወሰኑ መምህራን ይጠቀማሉ	መምህራኖች አይጠቀሙም
9	Non-projected a) Graphics ⇨			
	b) Realia ⇨			
	Projected a) Slides ⇨			
	b) Film strips ⇨			

10	c) Overhead projector ⇨ d) LCD projector ⇨ e) Silent films ⇨			
11	**Three dimensional** a) Models ⇨ b) Mock ups ⇨ c) Diorama ⇨			
12	**Display board** f) Peg board ⇨ g) White board ⇨ h) Bulletin board ⇨			
13	**Audio** Tape recorder ⇨			
14	**Audio visual** a) Video ⇨ b) Plasma TV ⇨			
15	**ICT related** a) Internet ⇨ b) School net ⇨ c) Computers ⇨			

Appendix - J

Interview guidelines for the cluster supervisors

ለክላስተር ሱፐርቫይዘሮች የሚቀርብ ቃለመጠይቅ

I thank you in advance for your willingness to be interviewed. The purpose of this interview is to gather information for the research study entitled the practice and challenges of utilizing instructional technologies in selected government schools in Bole Sub City. I assure you that all information provided will be kept confidential.

ለዚህ መጠይቅ ፍቃደኛ ስለሆኑ በቅድሚ አመሰግናለሁ፡፡ የዚህ መጠይቅ ዓላማ በቦሌ ክ/ከተማ በሚገኙ የተመረጡ ሁለተኛ ደረጃ የመንግስት ት/ቤቶች የማስተማሪያ ቴክኖሎጂዎች የመጠቀም ትግበራና ተግዳሮቶች በሚል ርዕስ ለሚጠናው ጥናት መረጃ ለማሰባሰብ ነው፡፡ በዚህ ቃለ መጠይቅ ላይ የሚሰጡት መረጃዎች ሁሉ ሚስጥራዊነታቸው በጣም የተጠበቀ እንደሚሆን አረጋግጣለሁ፡፡

1. What are the challenges you have so far experienced in the schools you are given responsibility to supervise with regard to the use of instructional technologies?
    - ❖ ድጋፍ በሚሰጡት ት/ቤት የማስተማሪያ ቴክኖሎጂዎችን በመምህራን መጠቀም በተመለከተ እስከ አሁን ድረስ ምን ዓይነት ተግዳሮቶች አሉ?
2. How well is the school equipped with instructional technology for use in teaching and learning? And If yes, which kind? If no, which ones do you think the schools lacks?
    - ❖ ድጋፍ የሚሰጡት ት/ቤት በማስተማሪያ ቴክኖጂዎች አቅም ምን ያህል የተሟላ ነው? በቂ የማስተማሪያ ቴክኖሎጂዎች ከሌሉ ምን ዓይነቶችን ቴክኖሎጂዎች አጥቷል ብለው ስባሉ?
3. To what extent are teachers skilled to use some of the instructional technologies?
    - ❖ በእርሶ እይታ የት/ቤቱ መምህራን ያሉትን የማስተማሪያ ቴክኖሎጂዎችን የመጠቀም የክህሎት መጠናቸው ምን ያህል ነው?
4. What are your views on the use of instructional technology for classroom teaching and learning of **students?**
    - ❖ በአጠቃላይ ሲታይ የማስተማሪያ ቴክኖሎጂዎችን ለክፍል ውስጥ ትምህርት መጠቀምን በተመለከተ እንደ ድጋፍ ሰጪ ባለሙያ የእርሶ ዕይታ ምንድን ነው?
5. Given the current state of the use of instructional technology in schools, what are some of the challenges hindering its widespread use?
    - ❖ የሙያ ድጋፍ በሚሰጡበት ት/ቤት አሁን ያለውን የማስተማሪያ ቴክኖሎጂዎችን የመጠቀም ወቅታዊ ሁኔታ በማገናዘብ ቴክኖሎጂዎችን በቀጣይ በስፋት ለመጠቀም ምን ዓይነት ተግዳሮቶች አሉ ብለው ያስባሉ?
6. How do you think that these challenges can be overcome?
    - ❖ ያሉትን ተግዳሮቶች ለማስወገድ/ለመቀነስ እንዴት ያቻላል ብለው ያስባሉ?

Appendix - K

Observation checklist

የሚያስተምሩበት ት/ቤት ስም፡፡ በሻሌ ☐ ቦሌ መሰናዶ ☐ ቦሌ ህብረተሰብ ☐ አየር አምባ ☐

ይህ ምልከታ የሚካሄደው በት/ቤቱ የትምህርት ማበልጸጊያ ማዕከል፣ በአይሲቲ ክፍልና በመማሪያ ክፍሎች ውስጥ ነው፡፡

የማስተማሪያ ቴክኖሎጂ ዓይነቶች	የመገኘት መጠን		
	አሉ	የሉም	ብዛት
Non-projected a) Graphics (such as figures, diagrams, graphs, maps, pictures, photographs, etc.). b) Realia			

Projected a) Slides			
b) Film strips (fixed sequence of still pictures and the text to be projected			
c) Overhead projector			
d) LCD projector			
e) Silent films			
Three dimensional			
a) Models			
b) Mock ups			
c) Diorama			
Display boards			
a) White board			
b) Peg board			
c) Bulletin board			
Audio Tape recorder			
Audio visual a) Video			
b) Plasma TV			
ICT related a) Internet			
b) School net			
c) Computers			
እላይ ከተጠቀሱት ውጪ ሌሎች የማስተማሪ ቴክኖሎጂዎች ካሉ ይጠቀሱ _____			

Appendix - L

<u>የሰነዶች ማመሳከሪያ ቼክሊስት</u>

ለተጠቀሱት የሥራ ዝርዝሮች ድጋፍ የሚሆኑ አግባብነት ያላቸው የዶክመንት መረጃዎች በተጠቀሱት ክፍሎች ስለመገኘታቸው

ዝርዝር መግለጫ	ዶክመንቱ የሚታበት ክፍል	የሚታየው ዶክመንት ዓነት	አለ	የለም	በከፊል ተግባዊ ይደረጋል
ነ. መምህራን የማስተማሪያ ቴክኖሎጂ ለመጠቀም ያቅዳሉ ሀ) ዓመታዊ የትምህርት ዕቅድ ለ) ሣምንታዊ/እለታዊ የትምህርት እቅድ	የትምህርት ክፍል	ዓመታዊ የትምህርት ዕቅድ			
	የትምህርት ክፍል	ሣምንታዊ/ዕለታዊ የትምህርት ዕቅድ			
2. መምህራን በክፍል ውስጥ የማስተማሪ ቴክኖሎጂዎችን ይጠቀማሉ ሀ) የትምህርት ክፍል	የትምህርት ክፍል	የሥራ ሪፖርት መመዝገቢያ ቅጽ			
ለ) የትምህርት መርጃ ማዕከል	የትምህርት መርጃ ማዕከል ክፍል	የሥራ ሪፖርት መመዝገቢያ ቅጽ			
3. መምህራን የትምህርት ቴክኖሎጂዎችን ስለመጠቀማቸው በት/ቤቱና በትምህርት ማበልጸጊያ ማእከል/ አይሲቲ ክፍል በመደበኛነት የሪፖርት መለዋወጫ ቅጽ አለ	የት/ቤቱ የትምህርት ማበልጸጊያ ማዕከል/አይሲቲ ክፍል እና የት/ቤቱ ም/ር/መምህር ቢሮ	ሪፖርት ማቅረቢያ ቅጽ			
4. በመምህራን የትምህርት ቴክኖሎጂ መጠቀምን በተመለከተ በትምህርት ክፍሎችና በትቤቱ ም/ር/መምህር ቢሮ ሪፖርት የመለዋወቻ ሥርዓት አለ	የትምህርት ክፍሎች እና ም/ር/መምህር ቢሮ	ሪፖርት ማቅረቢያ ቅጽ			
5. መምህራን የማስተማሪ ቴክኖሎጂዎችን መጠቀም በተመለከተ በመምህራን የሥራ አፈጻጸም መገምገሚያ ውስጥ ተካትቷል፡፡	የትምህርት ክፍሎች እና ም/ር/መምህር ቢሮ	የመምህራን የሥራ አፈጻጸም መገምገሚያ ቅጽ			
6. መምህራን የማስተማሪያ ቴክኖሎጂዎችን መጠቀም በተመለከተ ያሉ ተግዳሮቶችን መቋቋም እንዲችሉ የልምድ ልውውጥ ፕሮግራሞች በት/ቤቱ/በዲፓርትመንቶች ይዘጋጃል	የትምህርት ክፍሎች እና ም/ር/መምህር ቢሮ	የዲፓርትመንት ዕቅድና ቃለ ጉባኤዎች			
7. መምህራን የማስተማሪያ ቴክኖሎጂዎችን ለማስተማር ሥራ እንዲጠቀሙ ት/ቤቱ መምህራንን የሚያበረታታበት ሥርዓት አለው፡፡	የትምህርት ክፍሎች እና ም/ር/መምህር ቢሮ	ደብዳቤዎችና የምስክር ወረቀቶች			
8. መምህራን በት/ቤቱ ከሚገኙ ቁሳቁሶች የማስተማሪ ቴክኖሎጂዎችን የማዘጋጅት ተግባር ሲያከናውኑ የት/ቤቱ የትምህርት መርጃ ማዕከል የተሰራውን ሥራ የሚመዘግብበት ሥርዓት አለው፡፡	የት/ቤቱ የትምህርት ማበልጸጊ ማዕከል	የመመዝገቢ ቅጾች			
9. ተማሪዎች በት/ቤቱ ከሚገኙ ቁሳቁሶች የማስተማሪያ ቴክኖሎጂዎችን የማዘጋጅት ተግባር ሲያከናውኑ የት/ቤቱ የትምህርት መርጃ ማዕከል የተሰራውን ሥራ የሚመዘግብበት ሥርዓት አለው፡፡	የት/ቤቱ የትምህርት ማበልጸጊ ማዕከል	የመመዝገቢ ቅጾች			

Appendix - M

አዲስ አበባ ዩኒቨርስቲ

የትምህርት ባህሪይ ጥናት ኮሌጅ

የትምህርት ዕቅድና አመራር ትምህርት ክፍል

<u>በመምህራን የሚሞላ መጠይቅ</u>

ውድ መረጃ ሰጪ መምህር

ውድ ጊዜዎትን ሰውተው መጠይቁን ለመሙላት ፍቃደኛ ስለሆኑ በቅድሚያ ምስጋናዬን አቀርባለሁ፡፡ የዚህ ጥናት አጥኚ በትምህርት ዕቅድና አመራር ለሁለተኛ ዲግሪ ማሟያ የሚሆን ጥናት የሚያግዝ መረጃ እያሰባሰበ ነው፡፡ የዚህ መጠይቅ ዓላማ በቦሌ ክ/ከተማ በሚገኙ የተመረጡ ሁለተኛ ደረጃ የመንግስት ት/ቤቶች የማስተማሪያ ቴክኖሎጂዎች የመጠቀም ትግበራና ተግዳሮቶች (the practice and challenges of using instructional technologies in selected government secondary schools in Bole Sub City) በሚል ርዕስ ለሚካሄደው ጥናት መረጃ ለማሰባሰብ እና በጥናቱ ለተለዩ ችግሮች የመፍትሔ ሃሳቦችን ለማቅረብ ነው፡፡ ለእያንዳንዱ ጥያቄ የሚሰጠው ምላሽ ለታቀደው ዓላማ መፈጸም ትልቅ እገዛ የሚያደርግ ነው፡፡ በመሆኑም የዚህ ጥናት ስኬት እርሶ በሚሰጡት ምላሽ ላይ የተመሰረተ ስለሆነ ለጥያቄዎቹ በታማኝነት፣ በግልጽነትና በማስተዋል ምላሽ እንዲሰጡ በትህትና ይጠየቃሉ፡፡ ለመጠይቁ የሚሰጡት ሁሉም ምላሽ ለጥናቱ ዓላማ ብቻ የሚውልና በከፍተኛ ሚስጥር የሚጠበቅ ይሆናል፡፡ ለዚህም ሲባል ስምዎትን መጻፍ አያስፈልግዎትም፡፡

ይህን መጠይቅ ካጠናቀቁ በኋላ ከዚህ ጥናት ጋር በተያያዘ ለሚኖሮት ማንኛውም ጥያቄና አስተያየት ከጥናቱ አጥኚ ጋር መወያየት ከፈለጉ ከታች የተጻፈውን የስልክና የኢሜል አድራሻ መጠቀም ይችላሉ፡፡

ከክበረ ሰላምታ ጋር

ፋንቱ ወልዴ ገ/ማርያም

ስልክ ቁጥር፡ 0911-00-53-16 ኢሜል፡ fantushalom@gmail.com

ክፍል አንድ፡ አጠቃላይ መረጃ

ይህንን ምልክት (✔) ትክክል ነው ብለው በሚመርጡት ሳጥን ውስጥ በማስቀመጥ ምላሾትን ይስጡ

የሚያስተምሩበት ት/ቤት ስም፡: በሻሌ ☐ ቦሌ መሰናዶ ☐ ቦሌ ህብረተሰብ ☐ አየር አምባ ☐

1. ጾታ: ወንድ ☐ ሴት ☐

2. ዕድሜ: 21-30 ☐ 31-40 ☐ 41-50 ☐ 51 and above ☐

3. የትምህርት ደረጃ: ዲፕሎማ ☐ ቢኤስሲ/ቢኤ ☐ ኤምኤስሲ/ኤምኤ ☐

5. በመምህርነት የአገልግሎት ዘመን፡

1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ Above 20 ☐

ክፍል ሁለት: የማስተማሪያ ቴክኖሎጂዎች በት/ቤት ውስጥ የመገኘታቸው መጠን

ምላሾትን መስጠት በሚፈልጉበት ትክክለኛ ሳጥን ውስጥ ይህንን ምልክት (✔) በመጠቀም ምላሽ ይስጡ

በቂ መጠን (Adequacy): በትምህርት ቤቱ የሚገኙ መምህራን የሚፈልጉትን ማስተማሪያ ቴክኖሎጂዎችን ዓይነት ለክፍል ውስጥ ትምህርት መጠቀም በሚፈልጉበት ጊዜ ሁሉ ማግኘት መቻላቸው::

- የአራት የማስተማሪያ ቴክኖሎጂዎች ምንነት የሚገልጽ ትርጉም መጨረሻው ገጽ ላይ ይገኛል::

5 = በጣም አስማማለሁ; 4 = እስማማለሁ; 3 = ለመወሰን እቸገራለሁ (እስማማለሁ ወይም አልስማማም ለማለት እቸገራለሁ);

2 = አልስማማም; 1 = በጣም አልስማማ

መለያ ተ/ቁ .		በዚህ ሰንጠረዥ ከ1a እስከ 7c የተዘረዘሩት የማስተማሪያ ቴክኖሎጂዎች በት/ቤቱ በበቂ መጠን ይገኛሉ	ምላሽ				
			በጣም እስማማለሁ	እስማማለሁ	ለመወሰን እቸገራለሁ	አልስማማም	በጣም አልስማማም
Non projected	1a	Graphics					
	1b	Realia					
	2a	**S**lide**s**					
	2b	Film strips					
	2c	Overhead projector					
	2d	LCD projector					
	2e	Silent films					
Three dimension	3a	Models					
	3b	Mock ups					
	3c	Diorama					
Display boards	4a	White board					
	4b	Peg board					
	4c	Bulletin board					

Audio	5a	Tape recorder					
Audio visual	6a	Video					
	6b	Plasma TV					
ICT related	7a	Internet					
	7b	School net					
	7c	Computers					

8. በት/ቤትዎ እላይ በሰንጠረዡ ከተዘረዘሩት ውጪ የሚገኙ የማስተማሪያ ቴክኖሎጂዎች አሉ? ካሉ ይጥቀሱ

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ክፍል ሦስት: የማስተማሪያ ቴክኖሎጂዎችን በት/ቤቱ መምህራን ለክፍል ውስጥ ትምህርት የመጠቀም መጠን ሁኔታ

ምላሾትን መስጠት በሚፈልጉበት ትክክለኛ ሳጥን ውስጥ ይህንን ምልክት (✔) በመጠቀም ምላሽ ይስጡ

5 = በጣም አስማማለሁ; 4 = እስማማለሁ; 3 = ለመወሰን እቸገራለሁ (እስማማለሁ ወይም አልስማማም ለማለት እቸገራለሁ);

2 = አልስማማም; 1 = በጣም አልስማማ

መለያ ተ/ቁ .		በዚህ ሰንጠረዥ ከ9a እስከ 15c የተዘረዘሩት የማስተማሪያ ቴክኖሎጂዎች ለክፍል ውስጥ ትምህርት እጠቀማለሁ	ምላሽ				
			በጣም እስማማለሁ	እስማማለሁ	ለመወሰን እቸገራለሁ	አልስማማም	በጣም አልስማማም
Non projected	9a	Graphics					
	9b	Realia					
projected	10a	**S**lide**s**					
	10b	Film strips					
	10c	Overhead projector					
	10d	LCD projector					

	10e	Silent films					
Three dimensional	11a	Models					
	11b	Mock ups					
	11c	Diorama					
Display boards	12a	White board					
	12b	Peg board					
	12c	Bulletin board					
Audio	13a	Tape recorder					
Audio visual	14a	Video					
	14b	Plasma TV					
ICT related	15a	Internet					
	15b	School net					
	15c	Computers					

ክፍል አራት: በክፍል ውስጥ በመምህራን የማስተማሪያ ቴክኖሎጂዎችን ለመጠቀም ያሉ ተግዳሮቶች

መምህራን በክፍል ውስጥ የማስተማሪያ ቴክኖሎጂዎችን ለመጠቀም ተጽዕኖ የሚያስከትሉ ተግዳሮቶችን የሚያመለክቱ መግለጫዎች ከዚህ በታች ባለው ሰንጠረዥ ተዘርዝረዋል፡፡ እርሶ ትክክል ነው ብለው የሚያስቡትን ምላሽ ከተሰጡት አምስት አማራጮች በሚፈልጉበት አንድ ሳጥን ውስጥ ይህንን ምልክት (✔) በመጠቀም ምላሽ ይስጡ

5 = በጣም አስማማለሁ; 4 = አስማማለሁ; 3 = ለመወሰን እቸገራለሁ (አስማማለሁ ወይም አልስማማም ለማለት እቸገራለሁ);
2 = አልስማማም; 1 = በጣም አልስማማም

ተ/ቁ	የተፅኖዎች መግለጫ	ምላሽ				
		በጣም አስማማለሁ	አስማማለሁ	ለመወሰን እቸገራለሁ	አልስማማም	በጣም አልስማማም
16	የት/ቤቱ መምህራን የማስተማሪያ ቴክኖሎጂዎችን እንዴት መጠቀም እንዳለባቸው ክህሎታቸውን ለማዳበር በቂ ጊዜ አግኝተው ይጠቀማሉ፡፡					
17	የት/ቤቱ መምህራን የማስተማሪያ ቴክኖሎጂዎችን ለማስተማር ስራ ለመጠቀም ከት/ቤቱ በቂ የሆነ ድጋፍ ይደረግላቸዋል፡፡					
18	በት/ቤቱ አዳዲስ የማስተማሪያ ቴክኖሎጂዎች ሲመጡ መምህራን አጠቃቀሙን እንዲረዱ ስልጠና ይሰጣቸዋል፡፡					
19	የት/ቤቱ መምህራን በት/ቤቱ የሚገኙትን የማስተማሪያ ቴክኖሎጂችን ለመጠቀም የዕውቀት እጥረት የለባቸውም፡፡					
20	የት/ቤቱ መምህራን በት/ቤቱ ያሉትን የማስተማሪያ ቴክኖሎጂዎችን በአግባቡ ለመጠቀም ችግር ሲያጋጥማቸው					

	ቴክኒካዊ ድጋፍ ይደረግላቸዋል፡፡					
21	የት/ቤቱ መምህራን የማስተማሪያ ቴክኖሎጂዎችን ለማስተማር ሥራ እንዲጠቀሙ የሚያስችል አስተማማኝ የኤሌክትሪክ አቅርቦት አለ፡፡					
22	የት/ቤቱ መምህራን የትምህርት ዝግጅት ለማድረግና በክፍል ውስጥ የሚሰጡትን ትምህርት በቴክኖሎጂ ለማስደገፍ እንዲችሉ በቂ ኮምፒተሮች አሉ፡፡					
23	መምህራን የትምህርት ዝግጅት እንዲያደርጉ የሚያስችላቸው በት/ቤቱ የኢንተርኔት አገልግሎት አለ፡፡					
24	የት/ቤቱ መምህራን የማስተማሪያ ቴክኖሎጂዎችን ለማስተማር ሥራ መጠቀማቸውን ለማረጋገጥ ተከታታይ የሆነ የክትትልና የቁጥጥር ሥርዓት ተዘርግቶ ሥራ ላይ ውሏል፡፡					
25	የት/ቤቱ መምህራን የማስተማሪያ ቴክኖሎጂዎችን ለመጠቀም ፍላጎትና ተነሳሽነት አላቸው፡፡					
26	የት/ቤቱ መምህራን የመምህርነት የአገልግሎት ዘመናቸው በጨመረ ቁጥር የማስተማሪያ ቴክኖሎጂዎችን ለክፍል ውስጥ ትምህርት የመጠቀም መጠናቸው ይጨምራል፡፡					
27	ት/ቤታችሁ ፈጣን ከሆነው የቴክኖሎጂ ለውጥ ጋር አብሮ የመሄድ ባህልን አዳብሯል፡፡					
28	መምህራን በት/ቤቱ የትምህርት ማበልጸጊያ ማዕከል በት/ቤታችሁ የሚገኙትን ቁሳቁስ በመጠቀም የማስተማሪያ ቴክኖሎጂዎች ይዘጋጃሉ፡፡ (improvisation of instructional technologies)					

29. በእርሶ አመለካከት የማስተማሪያ ቴክኖሎጂን በክፍል ውስጥ ለመጠቀም እንቅፋት ሊሆኑ የሚችሉ ሌሎች ተግዳሮት ካሉ ይጥቀሱ፡፡

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30. በእርሶ አመለካከት እላይ ያሰፈሯቸውን ተግዳሮቶች ማስወገድ/መቀነስ የሚቻልባቸው መንገዶች ካሉ ይጥቀሱ

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ክፍል አምስት፡ ከአይሲቲ ጋራ በማቀናጀት የመማር ማስተማሩን ሥራ ማካሄድ (ICT integration in teaching learning)

ለሚከተሉት ከአይሲቲ ጋር የተዛመዱ መግለጫዎች ይህንን ምልክት (✔) በመጠቀም ምላሽዎትን ይስጡ

5 = በጣም አስማማለሁ; 4 = አስማማለሁ; 3 = ለመወሰን እቸገራለሁ (አስማማለሁ ወይም አልስማማ ለማለት እቸገራለሁ);

2 = አልስማማም; 1 = በጣም አልስማማ

		ምላሽ

ተ/ቁ	ከአይሲቲ ጋር የተዛመዱ መግለጫዎች	በጣም እስማማለሁ	እስማማለሁ	ለመወሰን እቸገራለሁ	አልስማማም	በጣም አልስማማም
31	በት/ቤታችን በግብአት የተሟላ አይሲቲ ክፍል አለ፡፡					
32	መምህራን በአይሲቲ የተደገፈ የማስተማር ሥራ ለማካሄድ በት/ቤቱ በቂ ኮምፒተሮች አሉ					
33	የት/ቤቱ መምህራን በአይሲቲ ቴክኖሎጂ የተደገፍ ተምህርት ለመስጠት ዝግጅት እንዲያደርጉ የሚያስችላቸው አስተማማኝ የኢንተርኔት አገልግሎት በት/ቤቱ አለ					
34	የት/ቤቱ ተማሪዎች ለትምህርት አገልግሎት እንዲጠቀሙ የሚያስችል በት/ቤቱ የኢንተርኔት አገልግሎት አለ					
35	የአይሲቲ ቴክኖሎጂ በት/ቤቱ መማር ማስተማር ሥራ እንቅስቀሴ አወንታዊ ለውጥ እያመጣ ነው					
36	በት/ቤታችሁ መምህራንና ተማሪዎች አስፈላጊውን የትምህርት መረጃ እንዲያገኙ አይሲቲ ተጨማሪ ዕድሎችን አየፈጠረ ነው፡፡					
37	በት/ቤቱ የመማር ማስተማሩ ሥራ በአይሲቲ የተደገፈ እንዲሆን ት/ቤቱ አስፈላጊውን ድጋፍ የሚሰጥበት የአሰራር ዘዴ (mechanism) ተግባራዊ ያደርጋል፡፡					
38	ለማስተማር ሥራ ኮምፒተርን የመጠቀም በቂ መሠረታዊ ክፍሎት አዳብሬአለሁ፡፡					
39	ኤልሲዲ ፕሮጀክተርን ለማስተማር ሥራ እንዴት መጠቀም እንዳለብኝ ጠንቅቄ አውቃለሁ፡፡					
40	በክፍል ውስጥ ለማስተምረው ትምህርት የተለያዩ ቪዲዮዎችን ከኢንተርኔት በማውረድ የመጠቀም ክህሎቱና ልምዱ አለኝ					
41	ትምህርቶችን በፓወር ፖይንት(power point) በማዘጋጀት በክፍል ውስጥ አስተምራለሁ፡፡					

42. አይሲቲን ከትምህርቱ ሥራ አዋህዶ ለመጠቀም ተጽእኖ የሚያስከትሉ ምን ተግዳሮቶች አሉ ብለው ያስባሉ?

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43. እነዚህን ተግዳሮቶች ለማስወገድ/ለመቀነስ ምን ዓይነት የመፍትሄ እርምጃዎች መውሰድ ይቻላል ብለው ያስባሉ?

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44. በት/ቤታችሁ ቴክኖሎጂዎችን ከመማር ማስተማር ስራው ጋር በማዋሃድ ማስተማር የሚቻልባቸው ሌሎች አሉ ብለው የሚያስቧቸውን መንገዶች ይጥቀሱ

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	ውድ መረጃ ሰጪ መምህር፣ ምንአልባት ሳያስተውሉት መልስ ሳይሰጡ ያለፉአቸው ጥያቄዎች ካሉ እያንዳንዱን ገጽ በድጋሚ ቢያዩ	

በድጋሚ በጣም አመሰግናለሁ!

Appendix - N

አዲስ አበባ ዩኒቨርስቲ

የትምህርት የባህሪይ ጥናት ኮሌጅ

የትምህርት ዕቅድና አመራር ትምህርት ክፍል

<u>በትምህርት ክፍል ተጠሪዎች የሚሞላ መጠይቅ</u>

ውድ መረጃ ሰጪ

ውድ ጊዜዎትን ሰውተው መጠይቁን ለመሙላት ፍቃደኛ ስለሆኑ በቅድሚያ ምስጋናዬን አቀርባለሁ፡፡ የዚህ ጥናት አጥኚ በትምህርት ዕቅድና አመራር ለሁለተኛ ዲግሪ ማሟያ የሚሆን ጥናት የሚያግዝ መረጃ እያሰባሰበ ነው፡፡ የዚህ መጠይቅ ዓላማ በቦሌ ክ/ከተማ በሚገኙ የተመረጡ ሁለተኛ ደረጃ የመንግስት ት/ቤቶች የማስተማሪያ ቴክኖሎጂዎች የመጠቀም ትግበራና ተግዳሮቶች (the practice and challenges of using instructional technologies in selected government secondary schools in Bole Sub City) በሚል ርዕስ ለሚካሄደው ጥናት መረጃ ለማሰባሰብ እና በጥናቱ ለተለዩ ችግሮች የመፍትሔ ሃሳቦችን ለማቅረብ ነው፡፡ ለእያንዳንዱ ጥያቄ የሚሰጠው ምላሽ ለታቀደው ዓላማ መፈጸም ትልቅ እገዛ የሚያደርግ ነው፡፡ በመሆኑም የዚህ ጥናት ስኬት እርሶ በሚሰጡት ምላሽ ላይ የተመሰረተ ስለሆነ ለጥያቄዎቹ በታማኝነት፣ በግልጽነትና በማስተዋል ምላሽ እንዲሰጡ በትህትና ይጠየቃሉ፡፡ ለመጠይቁ የሚሰጡት ሁሉም ምላሽ ለጥናቱ ዓላማ ብቻ የሚውልና በከፍተኛ ሚስጥር የሚጠበቅ ይሆናል፡፡ ለዚህም ሲባል ስምዎትን መጻፍ አያስፈልግዎትም፡፡

ይህን መጠይቅ ካጠናቀቁ በኋላ ከዚህ ጥናት ጋር በተያያዘ ለሚኖሮት ማንኛውም ጥያቄና አስተያየት ከጥናቱ አጥኚ ጋር መወያየት ከፈለጉ ከታች የተጻፈውን የስልክና የኢሜል አድራሻ መጠቀም ይችላሉ፡፡

ከከበረ ሰላምታ ጋር

ፋንቱ ወልዴ ገ/ማርያም

ስልክ ቁጥር፡ 0911-00-53-16 ኢሜል፡ fantushalom@gmail.com

ክፍል አንድ፡ አጠቃላይ መረጃ

ይህንን ምልክት (✔) ትክክል ነው ብለው በሚመርጡት ሳጥን ውስጥ በማስቀመጥ ምላሾትን ይስጡ

የሚያስተምሩበት ት/ቤት ስም፡፡ በሻሌ ☐ ቦሌ መሰናዶ ☐ ቦሌ ህብረተሰብ ☐ አየር አምባ ☐

ነ. ጾታ: ወንድ ☐ ሴት ☐

2. ዕድሜ: 21-30 ☐ 31-40 ☐ 41-50 ☐ Above 51 ☐

3. የትምህርት ደረጃ: ዲፕሎማ ☐ ቢኤስሲ/ቢኤ ☐ ኤምኤስሲ/ኤምኤ ☐

4. በትምህርት ክፍል ተጠሪነት ያገለገሉበት ዓመት ብዛት፡ 1-3 ☐ 4-6 ☐ 7-9 ☐ 10 እና በላይ ☐

5. የትምህርት ክፍሎ የሚመደበው፡ በቋንቋ፡ ☐ በተፈጥሮ ሣይንስ ህብረተሰብ ሣይንስ

ክፍል ሁለት: የማስተማሪያ ቴክኖሎጂዎች በበቂ መጠን መገኘታቸው

ምላሾትን መስጠት በሚፈልጉበት ትክክለኛ ሳጥን ውስጥ ይህንን ምልክት (✔) በመጠቀም ምላሽ ይስጡ

በቂ መጠን (Adequacy): በትምህርት ክፍሉ የሚገኙ መምህራን የማስተማሪያ ቴክኖሎጂን መጠቀም በሚፈልጉበት ጊዜ ማግኘት

በሚችሉበት መጠን መገኘቱ

5 = በጣም አስማማለሁ; 4 = እስማማለሁ; 3 = ለመወሰን እቸገራለሁ (እስማማለሁ ወይም አልስማማም ለማለት እቸገራለሁ); 2= አልስማማ ; 1 = በጣም አልስማማ

መለያ ተ/ቁ		በትምህርት ክፍሉ የሚገኙ መምህራን ለማስተማር ሥራ እንዲጠቀሙ በዚህ ሰንጠረዥ ከ1a እስከ 7c የተዘረዘሩት የማስተማሪያ ቴክኖሎጂዎች በበቂ መጠን ይገኛሉ	ምላሽ				
			በጣም እስማማለሁ	እስማማለሁ	ለመወሰን እቸገራለሁ	አልስማማም	በጣም አልስማማም
Non projected	1a	Graphics					
	1b	Realia					
projected	2a	**S**lide**s**					
	2b	Film strips					
	2c	Overhead projector					
	2d	LCD projector					
	2e	Silent films					
Three dimensional	3a	Models					
	3b	Mock ups					
	3c	Diorama					
Display boards	4a	White board					
	4b	Peg board					

	4c	Bulletin board					
Audio	5a	Tape recorder					
Audio visual	6a	Video					
	6b	Plasma TV					
ICT related	7a	Internet					
	7b	School net					
	7c	Computers					

8. በትምህርት ክፍሉ *መ*ምህራን ለትምህርት ስራ የሚጠቀሙባቸው እላይ ከተጠቀሱት ውጪ ሌሎች ምን ዓይነት የማስተማሪያ ቴክኖሎጂዎች አሉ? ካሉ ይጥቀሱ

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ክፍል ሦስት: የማስተማሪያ ቴክኖሎጂዎችን በትምህርት ክፍሉ *መ*ምህራን የመጠቀም መጠን

ምላሾትን መስጠት በሚፈልጉበት ትክክለኛ ሳጥን ውስጥ ይህንን ምልክት (✔) በመጠቀም ምላሽ ይስጡ

5 = በጣም አስማማለሁ; 4 = እስማማለሁ; 3 = ለመወሰን እቸገራለሁ (እስማማለሁ ወይም አልስማማም ለማለት እቸገራለሁ); 2 = አልስማማም; 1 = በጣም አልስማማ

መለያ ተ/ቁ		በትምህርት ክፍሉ የሚገኙ *መ*ምህራን ለማስተማር በዚህ ሰንጠረዥ ከ9a እስከ 15c የተዘረዘሩት የማስተማሪያ ቴክኖሎጂዎች አንድ ወይም ከዚያ በላይ ክፍል ውስጥ ስያስተምሩ ይጠቀማሉ	ምላሽ				
			በጣም አስማማለሁ	እስማማለሁ	ለመወሰን እቸገራለሁ	አልስማማም	በጣም አልስማማም
Non projected	9a	Graphics					
	9b	Realia					
project	10a	**S**lide**s**					
	10b	Film strips					

	10c	Overhead projector					
	10d	LCD projector					
	10e	Silent films					
Three dimensional	11a	Models					
	11b	Mock ups					
	11c	Diorama					
Display boards	12a	White board					
	12b	Peg board					
	12c	Bulletin board					
Audio	13a	Tape recorder					
Audio visual	14a	Video					
	14b	Plasma TV					
ICT related	15a	Internet					
	15b	School net					
	15c	Computers					

ክፍል አራት: የማስተማሪያ ቴክኖሎጂዎችን ለመጠቀም ያሉ ተግዳሮቶች

በትምህርት ክፍሎ የማስተማሪያ ቴክኖሎጂዎችን ለመጠቀም ተጽዕኖ የሚያስከትሉ ምክንያቶች ከዚህ በታች ባለው ሰንጠረዥ ተዘርዝረዋል፡፡ እርሶ ትክክል ነው ብለው የሚያስቡትን ምላሽ ከተሰጡት አምስት አማራጮች በሚፈልጉበት አንድ ሳጥን ውስጥ ይህንን ምልክት （ ✔ ） በመጠቀም ምላሽ ይስጡ

5 = በጣም አስማማለሁ; 4 = አስማማለሁ; 3 = ለመወሰን እቸገራለሁ (አስማማለሁ ወይም አልስማማም ለማለት እቸገራለሁ); 2 = አልስማማም; 1 = በጣም አልስማማ

ተ/ቁ	የተፅኖዎች መግለጫ	ምላሽ				
		በጣም እስማማለሁ	እስማማለሁ	ለመወሰን እቸገራለሁ	አልስማማም	በጣም አልስማማም
	በእርሶ ትምህርት ክፍል የሚገኙ መምህራን የማስተማሪያ ቴክኖሎጂዎችን እንዴት መጠቀም እንደሚችሉ ክህሎታቸውን ለማዳበር በቂ ጊዜ አግኝተው ይጠቀማሉ					

16						
17	የት/ቤቱ እስተዳደር በእርሶ ትምህርት ክፍል የሚገኙ መምህራን የማስተማሪያ ቴክኖሎጂዎችን ለማስተማር ሥራ መጠቀም እንዲችሉ በቂ ድጋፍ ይሰጣል፡፡					
18	አዲስ የማስተማሪያ ቴክኖሎጂዎች ወደ ት/ቤቱ ሲመጡ በእርሶ ትምህርት ክፍል የሚገኙ መምህራን አጠቃቀማቸውን እንዲያውቁ ስልጠና ይሰጣቸዋል					
19	በትምህርት ክፍሉ የሚገኙ መምህራን በትምህርት ክፍሉ የሚገኙትን የማስተማሪያ ቴክኖሎጂዎችን ለመጠቀም የሚስችል ክህሎት አዳብረዋል፡፡					
20	ት/ቤቱ በዲፓርትመንቱ የሚገኙ መምህራን የማስተማሪያ ቴክኖሎጂዎችን እንዲጠቀሙ ቴክኒካዊ ድጋፍ ይሰጣል፡፡					
21	በትምህርት ክፍሉ የሚገኙ መምህራን የማስተማሪያ ቴክኖሎጂዎችን ለመጠቀም እንዲችሉ በትምህርት ክፍሉና በክፍል ውስጥ በቂ የኤልክትሪክ አቅርቦት አለ፡፡					
22	በትምህርት ክፍሉ የሚገኙ መምህራን የማስተማሪያ ቴክኖሎጂዎችን እንዲጠቀሙ በትምህርት ክፍሉ በቂ ኮምፒውተሮች አሉ፡፡					
23	በትምህርት ክፍሉ የሚገኙ መምህራን ለትምህርት ዝግጅት የሚረዳ መረጃ ለማግኘት በትምህርት ክፍሉ አስተማማኝ የኢንተርኔት አገልግሎት አለ፡፡					
24	በትምህርት ክፍሉ የሚገኙ መምህራን የማስተማሪያ ቴክኖሎጂዎችን መጠቀማቸውን ለማረጋገጥ የክትትልና የቁጥጥር ሥርዓት ዘርግቶ ሥራ ላይ ያውላል፡፡					
25	በትምህርት ክፍሉ የሚገኙ መምህራን በት/ቤቱ የሚገኙትን የማስተማሪያ ቴክኖሎጂዎችን የመጠቀም ፍላጎት አላቸው፡፡					
26	በዲፓርትመንትዎ የሚገኙ መምህራን የማስተማር አገልግሎታቸው ዘመን በጨመረ ቁጥር የመምህራኑ የማስተማሪያ ቴክኖሎጂ የመጠቀም መጠን ይጨምራል፡፡					
27	በትምህርት ክፍል ያለውን የመማር ማስተማር ሥራ ቀልጣፋና የተመቻቸ ለማድረግ ት/ቤቱ ከፈጣን ቴክኖሎጂ ለውጥ ጋር አብሮ የመራመድ ባሕል አዳብሯል፡፡					
28	በትምህርት ክፍሉ የሚገኙ መምህራን በት/ቤቱ የትምህርት ማበልጸጊያ ማእከል የሚገኙትን ቁሳቁስ በመጠቀም የማስተማሪያ ቴክኖሎጂዎችን የማዘጋጀት ሥራ ላይ ተሳትፎ ያደርጋሉ፡፡					

29. በእርሶ አስተያየት በትምህርት ክፍሉ የማስተማሪያ ቴክኖሎጂዎችን ለመጠቀም እንቅፋት የሚሆኑ ምን ተግዳሮቶች አሉ ብለው ያስባሉ?

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30. በትምህርት ክፍሉ ያሉትን እነዚህ ተግዳሮቶች ማስወገድ/መቀነስ የሚቻልባቸው ብለው የሚያስቧቸውን መንገዶች ይጥቀሱ

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31. በትምህርት ክፍሉ ቴክኖሎጂዎችን በመማር ማስተማር ስራ መጠቀም የሚቻልባቸው መንገዶችን በተመለከተ በተጨማሪነት ለመጥቀስ የሚፈልጉትን ሃሳብ ይጻፉ

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32. በእርሶ ሥር ያሉ መምህራን የሚስተማሪያ ቴክኖሎጂዎችን ለመጠቀም በመደበኛነት በሚያዘጋጁት የክ/ጊዜ የትምህርት ዕቅዳቸው ያካትታሉ? _____ መልስዎ አያካትቱም ከሆነ ምክንያቱ ምን ይሆናል ብለው ስባሉ?

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33. በእርሶ ሥር ያሉ መምህራን የማስተማሪያ ቴክኖሎጂዎችን ባዘጋጁት የትምህርት ዕቅድ መሠረት ከፍል ውስጥ ለሚሰጡት ትምህርት ይጠቀማሉ? _____

የማይጠቀሙ ከሆነ ምክንያቱ ምንድን ነው ብለው ያስባሉ?

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34.በእርሶ ሥር የሚገኙ መምህራን በት/ቤቱ በሚገኙ ቁሳቁሶች በመጠቀም የማስተማሪያ ቴክኖሎጂዎችን ለማዘጋጀት ጥረት ያደርጋሉ? _____ መልሶ አዎን ከሆነ ምን ዓይነት ስልት ተጠቅመው ነው የሚያዘጋጁት?

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ክፍል አምስት: ከአይሲቲ ጋራ በማዋሃድ የመማር ማስተማሩ ሥራ (ICT integration in teaching learning)

ለሚከተሉት ከአይሲቲ ጋር የተዛመዱ መግለጫዎች ይህንን ምልክት (✔) በመጠቀም ምላሽዎትን ይስጡ

5 = በጣም አስማማለሁ; 4 = እስማማለሁ ; 3 = ለመወሰን እቸገራለሁ (እስማማለሁ ወይም አልስማማ ለማለት እቸገራለሁ); 2 = አልስማማም; 1 = በጣም አልስማማ

ተ/ቁ	መግለጫ	ምላሽ				
		በጣም		ለመወሰን		በጣም

		እስማማለሁ	እስማማለሁ	እቸገራለሁ	አልስማማም	አልስማማም
35	በትምህርት ክፍሉ የሚገኙ መምህራን ለማስተማር ሥራ እዲጠቀሙ የሚያስችል በት/ቤቱ በግብአት የተሟላ አይሲቲ ክፍል አለ፡፡					
36	በትምህርት ክፍሉ በአይሲቲ የተደገፈ ትምህርት ለመስጠት እንዲቻል በቂ ኮምፒተሮች አሉ፡፡					
37	በትምህርት ክፍሉ የማስተማር ስራን ለመደገፍ የሚያስችል የኢንተርኔት አገልግሎት አለ					
38	በትምህርት ክፍሉ አይሲቲ በመማር ማስተማሩ ሥራ አወንታዊ ለውጥ እያመጣ ነው፡፡					
39	በትምህርት ክፍሉ መምህራን ለትምህርት ሥራ አስፈላጊውን መረጃ እንዲገኙ አይሲቲ መልካም አጋጣሚ እየፈጠረ ነው፡፡					
40	በትምህርት ክፍሉ የመማር ማስተማሩ ሥራ በአይሲቲ የተደገፈ እንዲሆን ት/ቤቱ አስፈላጊውን ድጋፍ የሚሰጥበትን የአሰራር ዘዴ (mechanism) ይጠቀማል፡፡					
41	በትምህርት ክፍሉ የሚገኙ መምህራን ኮምፒተርን የመጠቀም በቂ ክህሎት አዳብረዋል፡፡					
42	በትምህርት ክፍሉ የሚገኙ መምህራን ኤልሲዲ ፕሮጀክተርን የሚጠቀም ክህሎት ያዳበሩ ናቸው፡፡					
43	በትምህርት ክፍሉ የሚገኙ መምህራን ከኢንተርኔት ቪዲዮዎችን በማውረድ (download videos)ለትምህርት ሥራ ይጠቀማሉ፡፡					
44	በትምህርት ክፍሉ ያሉ መምህራን ትምህርቶችን በፓወር ፖይንት(power point) በማዘጋጀት በክፍል ውስጥ ለማስተማር ሥራ ይጠቀማሉ፡፡					

45. በእርሶ ትምህርት ክፍል አይሲቲን ከትምህርቱ ሥራ አዋህዶ ለመጠቀም ተጽእኖ የሚያስከትሉ ምን ተግዳሮቶች አሉ ብለው ያስባሉ?

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46. እነዚህን ተግዳሮቶች ለማስወገድ/ለመቀነስ ምን ዓይነት የመፍትሄ እርምጃዎች መውሰድ ይቻላል ብለው ያስባሉ?

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Definition of terms

REALIA: objects used by teachers to illustrate everyday life. (e.g. gold coins, tools, a real frog etc. brought into classroom for instruction purpose)

MOCK-UPS: a replica of a machine or structure used for instructional purposes.

PED-BOARD: pre-drilled with evenly spaced holes. The holes are used to accept pegs or hooks to support various items such as tools in a workshop or classroom.

DIORAMA: a three dimensional representation of events, ideas or concepts against a scenic background.

	Dear respondent: Would you check each page to make sure that no answer has been inadvertently missed out?	

በድጋሚ በጣም አመሰግናለሁ!