CHALLENGES FACING TEACHERS AND STUDENTS IN THE USE OF INSTRUCTIONAL TECHNOLOGIES: A CASE OF SELECTED SECONDARY SCHOOLS IN KISII COUNTY, KENYA.

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university or any other award.

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DEDICATION

I dedicate this work to the almighty God, my beloved children Faith Moraa, Melody Mong'ina, Isaac Sure, niece Debora, my dad Omariba and mum Moraa and Dr. Abere. May God always sustain them, Amen!

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ABBREVIATIONS AND ACROYNMS

ANSTI   –   African Network of Scientific Technology Institution

CAI   -   Computer Assisted Instructions

CMI   -   Computer Managed Instructions

ESTRELLA   –   An acronym for Encouraging Students through Technology to Reach High Expectations in Learning Life skills and Achievement.

ICT   –   Information Communication Technology

IJEDICT   –   International Journal of Education and Development Using Information Communication Technology

LANS   –   Local Area Networks

LCD   -   Liquid Crystal Display

SMASE   -   Strengthening Mathematics And Science Education

QUASO   -   Quality Assurance Standards Officer

ABSTRACT

This study was concerned with the challenges facing secondary schools' teachers and students in the use of instructional technologies. The rationale was based on the view that properly designed, learning materials inspired by instructional technology and delivered by technology add value to a teaching environment on which contact hours are limited. This is because the curriculum needs academic standards and the development of digital age skills for the 21st century learners. The literature review focuses on the meaning of instructional technology, the use of instructional technologies in teaching and learning in institutions in other parts of the world as well as Kenya, however, the challenges faced in the use of instructional technologies in secondary schools have not been addressed. This was a descriptive survey design. The study was conducted in ten (10) provincial public secondary schools in Kisii County. Data was collected using questionnaires, interview schedules and observation schedules. The obtained data were analyzed systematically using descriptive statistics and presented with the help of frequency tables, graphs and percentages. The study findings revealed that most of the instructional technologies were available but inadequate in terms of quantity. Not all the instructional technologies were easily accessible for both teachers and students for teaching and learning processes. The use of instructional technologies was influenced by their availability, how the technology will enhance learning, knowledge and skills on use, syllabus requirement, accessibility and administration among others. Further, that the teachers' academic and professional qualifications had little influence on how successfully the teacher uses instructional technologies for teaching and learning. Finally, teachers and students faced several challenges such as teachers having limited skill on use of some instructional technologies, inadequate instructional technologies, inadequate funds and lack of support from the school's administration whereas students revealed among others lack of accessibility and overcrowded classrooms which need resolutions. The Ministry of Education together with all other education stakeholders need to come-up with strategies to curb this menace.

CHAPTER ONE

1.0 INTRODUCTION

Quality education is a global concern in virtually all societies. To achieve it, efficient and quality teaching needs to be employed. However, this may not occur without the use of instructional technologies. Instructional technologies play a vital role in teaching and learning process and have proved to have several inherent advantages when well utilized (Grabe and Grabe 1998).Instructional technologies helps to provide students with the necessary experiences, concrete or simulated and integrate prior experiences as well (Dale1969).Hence, a student who has an advantage of reacting to well-selected instructional technologies can learn more effectively than those who are provided largely through verbal information.

Instructional technologies can enrich learning settings by showing things that are far away, those that took place in the past, those that are minute to see, too large to bring to class, too complex to understand at first sight with explanations only, or things that cannot be seen, heard, or perceived by other channels (Kemp and Dayton 1985).Due to rapid technological changes, instructional technologies have become part and parcel of the teaching and learning process. Thus, Heinich, Molenda and Russel (1985) observe that:

> …facilitation of learning. More modern media are also making it possible for students to use all their senses. Therefore, any instructional setting, or otherwise can become a classroom with the aid of and sometimes near total dependence upon instructional resources. Such media as tapes, records, films, transparencies, filmstrips and slides, have overtaken the chalkboard in the media becoming increasingly valuable.

Teachers nowadays find themselves with a lot of content to cover within very a short time. The use of instructional technologies can help reduce the length of time required for instruction leaving more time for practice of skills. Most instructional technologies are effective in the

delivery of content and also helps sustain learners' interest. Moreover, the students can study details of instructional technologies at a time and place more convenient to them (Kemp and Dayton 1985).

The main purpose of teaching is to impart knowledge, information, values and skills to the student. The use of instructional technologies also promotes sharing of ideas, thoughts, feelings and knowledge (Macharia 1987). According to Betz (1990), visuals attract attention, which is paramount in learning. He further observes that many distractions compete for students' attention making it important to employ attention-catching devices to focus on the lesson.

Clearly, the importance of instructional technologies in the teaching-learning process cannot be exhausted. Teachers' awareness of these benefits can motivate them to appreciate, embrace acquire and use the technologies in their teaching. It can create one of the ingredients of developing a positive attitude by the teacher regarding the use of instructional technologies. It was for this reason therefore this study sought to establish the challenges teachers and students face in the use of instructional technology. A case of selected secondary schools in Kisii County.

1. 1 Background to the Study

Education the world over has, been recognized as an important means for promoting economic and social development both at individual and national levels. The growth of the global economy and the information based society has pressurized education systems around the world to use technology to teach students the knowledge and skills they need (UNESCO 2005). In Kenya, Learning institutions are under increasing pressure to use instructional technologies in imparting knowledge and skills needed in the 21st century. The challenge confronting our educational

system is how to transform the curriculum and teaching and learning process to provide students with the skills to function effectively in continuously changing environment. Even after the teacher's initial fear of getting involved with technology has been overcome, serious challenges still remain in terms of providing enough technical support that teachers will not be discouraged by equipment failure or software behavior that they do not understand (IJEDICT, 2007).

Though the hope is that information technology can add a powerful punch to the modern educational environment, many educators in the United Emirates as Moore et al. (2003) notes have found that it is the proper use of available instructional technologies rather than the presence of that technology that advances learning. Even longtime favorites pencil and paper and the Overhead Projector still have a place in the well-rounded modern classroom. Whether old or new, each technology has inequalities (or "affordances") (sic) of which advantages can be taken. Brown et al. (1973) acknowledges that, researchers in education have shown that with present inadequate infrastructure, large class sizes, and lack of technologically skilled teachers and traditional modes of training of teachers; it is difficult to intensively achieve the goals of education and training objectives. Further, most of the teachers use expository methods which do not have the potentiality of achieving technological know-how in the modern world of technology. Essentially, in modern classroom teaching, the objectives should be multidimensional in nature, so for their achievements, multiple, methods are used in an integration whereby instructional technology will be highly recommended.

According to (IJEDICT 2007), children are keen to use relevant modern equipment to help them with their learning at school and their confidence enables them to acquire competence quickly and easily. Computer as one of the instructional technologies is now offered as a subject but Amutabi (2004) notes that the computerization project in Secondary Schools in Kenya is at its

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infancy according to a study on ICT in Kenya Public Universities. Moore et al (2003) notes that "properly designed learning materials by technology and delivered by modern technology and delivered by technology (sic) add value to a teaching environment in which contact hours are limited."

At present, the use of instructional technologies may be of great help. It is a well-known fact that, not a single teacher is capable of giving up to date and complete information in his/her own subject. The use of instructional technologies can fill this important gap because it will provide access to different sources of information. It will provide comprehensive information in different formats with different examples. (ANSTI Nov. 2005). Duffy et al. (1993) notes that:

> Tools are being helpful in developing the learner's mental models of objects, systems or other phenomena that brings about visual spatial capabilities. Visualization tools help learners to construct those mental images and visualize activities.

The use of instructional technologies will provide chat facility (text messages) so that learners will make use of it, exchange their ideas and views and get clarification of any topic with different experts, practitioners so as to broaden there information base. Instructional technologies will assist teachers to provide variety in the presentation of content which will improve upon learners' ability to concentrate, and long retention of information. The learners will get opportunities to work on live projects with counterparts from other countries. (Omwenga 2008). The use of instructional technologies will actually provide 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 instructional technologies. Betz (1990) notes that instructional technologies attract attention; which is paramount to learning. Instructional

technology also helps teachers to engage students through production work (Dale 1969).To make learning more meaningful to students; teachers often try to involve them in creating their own technology based products. Instructional technologies promote learning by linking students to information resources. This lets them access the materials, obtain information and have experiences that they will not have had. They also help students visualize problems, solutions and link students to learning tools especially when using computers (Newby et al. 2006).

Roblyer (2003) acknowledges that there is substantial empirical evidence indicating that teachers frequently capitalize on the novelty and attraction of the media used to achieve the essential instructional goal of capturing and holding students' attention.

Moore et al. (2003), have described rich-texts of instructional technologies as:

> …potentially enriching experiential, flexible, fun, powerful, self-paced, and time saving. They also believed that properly used technology could further critical thinking and independent learning, expand individual exploration, Shift some of the learning out of the classroom expand time for classroom activities, Liberate (students and teachers alike) form the mundane, create an environment of learning, experimenting, doing and enjoying ,and level of playing field between the public and private schools.

Kenya is at an infant state in the use of instructional technology (**IJEDICT** 2007). Muriithi (2005) further notes that in Kenya like most developing countries, instructional technology usage is still limited.

The pertinent question one would ask at this point is whether the schools in Kenya are benefiting from these emerging technologies. If not, then why are they not benefiting from these emerging technologies? Therefore; this study was set to establish challenges facing teachers and students in using instructional technologies.

1.2 Statement of the Problem

In the twentieth and the start of the twenty first centuries more significant changes have already occurred or will occur than have taken place in any similar period of time in our history (UNESCO 2002). These revolutionary changes demand that the teachers and students use the instructional technology in teaching and learning process (Facer, Furlong &Sutherland 2003). It is apparent that when instructional technology is properly used, it captures the human 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 (IJEDICT2007). We must move towards the goal of transforming the traditional paradigm of learning.

 Recently the government of Kenya through the Ministry of Education launched a multi-million Information and Communication Technology Trust Fund. In November 28,2004 the Minister for Education was at Kenya Institute of Education workshop quoted in a speech saying that the government was committed to providing 2500 of the 3500 public secondary schools in Kenya with computers by the year 2008.We also note that Kenya is among 16 countries selected to benefit from the first phase of the e-initiative by the New Partnership for Africa's Development (Nepad).The programme is to provide knowledge and real-life experience by implementing information communication technologies (ICT) in schools across Africa that will form a model for a large-scale rollout. The rationale is to integrate instructional technology into our education system and invest access, equipment and skills (Omwenga, 2008).

There is need to use instructional technology to promote learner-centred education by integrating instructional technologies in teaching and learning process (Muriithi 2005).Despite their major contribution to learning, availability and use of instructional technologies has been wanting. The question is; are those instructional technologies being used to enhance teaching and learning in our secondary schools? For instance, in the current curriculum, Computer Studies is a separate

subject taught. Students are taught how to become computer literate but not how to use computers to enhance learning (Omwenga , 2008).

Muriithi (2005) further notes that in Kenya like most developing countries, instructional technology usage is still limited. She contends that even the present ICT curriculum merely deals with 'teaching about computers 'and not how the computers can be used for teaching and learning in our schools. She advices in her thesis that a wide range of instructional technologies should be selected and incorporated into the teaching and learning programme which is not the case in our secondary schools. This study therefore sought to establish why these instructional technologies are not used and the challenges both teachers and students face in the use of instructional technologies in the teaching and learning process as other researchers have also proved that use of instructional technology tend to act as permanent stimuli to the learner for they can present a comprehensive overview of what is presented (Dale 1969, Moore et al.2003, and Gagne 1965). But some teachers do not use either due to lack of skills or they do not want to use them.

However, in-as-much as instructional technology is important, there are several challenges experienced by both teachers and learners in a normal classroom setting. These challenges to a large extent inhibit effective classroom teaching and learning consequently, this affects the teaching, the performance of the learners and the quality of the end product of the graduates in this era of technology. Schools in Kisii County are greatly affected by these challenges whereby teachers are not able to use instructional technology techniques in teaching and learning and at the same time students are not exposed to the use of technology. The lack of exposure puts students at a disadvantage in conveniently accessing information and in the foreseeable future favourably competing for the scarce global job markets. Schroll (1986) observes that linked

synergistically through education technology enables students to become more effective individuals to function as capable, coping members of the society and improve their self-esteem.

1.3 Purpose of the study

The purpose of the study was to find out the challenges of using instructional technologies: what resources were available, Whether or not the resources were adequate, their accessibility, interactivity and use of instructional technologies between the teachers and students, school organization policy on use of instructional technologies, novelty of the instructional technologies and trendiness on use. Based on the findings of the study, the researcher has made suggestions on improving the use of instructional technologies in teaching and learning process.

1.4 Specific Objectives

The overall objective of the study was to establish the challenges faced by teachers and students in the use of instructional technology in teaching and learning process. In order to achieve this, the study used the following objectives:

[i] Investigate the type of instructional technologies used in the teaching and learning processes.

[ii] Examine factors which influence interactivity and effective use of instructional technologies in the teaching and learning processes.

[iii] Investigate the preparedness of teachers on how they successfully use instructional technologies in teaching and learning process.

[iv] Establish the challenges both: (a) teachers and (b) students face in coping with the use of various instructional technologies in the teaching and learning processes.

1.5 Research Questions

i] What types of instructional technologies are used in teaching and learning in secondary schools in Kisii sCounty?

ii] What factors influence interactivity and effective use of instructional technologies in teaching and learning processes?

iii]] Are teachers adequately prepared, trained and equipped to successfully use instructional technologies?

iv] What challenges do: (a) teachers and (b) students face in the use of instructional technologies?

1.6 Significance of the Study

The use of instructional technology in the teaching and learning process in the Kenyan education system has received little attention. Extensive research has not been carried out on the use of instructional technologies in the teaching and learning processes in secondary schools (UNESCO 2002).When instructional technologies are properly used, they capture the human mind and enhances better understanding of concepts (IJEDICT, 2007).Hung & Khine (2006) note that instructional technologies make instructions real and spice the teaching and learning. Further, research on the use of instructional technologies is largely on tertiary institutions such as Kimui (1988), Shanguya 1995) and those findings could not be generalized to secondary schools. This study therefore sought to fill this existing gap created by the inconsistencies. It was the hope of the researcher that the findings of the study would be helpful in the following ways:

i).That the findings of the study will serve as a useful reference material for teachers, policy makers of education, schools administration to embrace the new move of using

instructional technology and support it by providing computers and other instructional technologies.

ii). The Teachers Service Commission to deploy instructional technology specialists and all persons interested in the use of instructional technology. The instructional technology specialists will also appreciate the need for developing and infusing learning instructional technologies in teaching learning process which will be accommodated in the changes in the syllabus when they occur hence improving educational performance and the Ministry of Education to develop programmes and in-service courses to sensitize its office bearers on the same as Roblyer (2003) observes that there is substantial empirical evidence indicating that teachers frequently capitalize on the novelty and attraction of media used to achieve the essential instructional goal of capturing and holding students' attention.

iii).The researcher hopes that this study will be able to stimulate further research in the area of education involving the use instructional technologies. Further, the study will provide information on the extent to which the use of instructional technologies prepares both teachers and students for the world of technology.

1.7   Basic assumptions

This research was conducted with the following assumptions:

i] That the secondary schools under investigations being public schools, were using the 8-4-4 Curriculum.

ii] That availability of instructional technologies does not guarantee the effective use of these instructional technologies.

iii] That there is a high demand for the use of instructional technologies in education.

iv] That teachers teaching learners of different levels are capable of effectively and efficiently using instructional technologies in their teaching.

1.8 Scope of the Study

For the purpose of this study the researcher confined the study to only teachers, students and the principals of the selected public secondary schools. Teachers and students are the end users of the instructional technologies used in teaching learning process. The study aimed at establishing how instructional technologies were utilized by both teachers and students and which instructional procedures were most suitable for the use of these instructional technologies in conveying content to the learners.

1.9 Limitation of the Study

The limitations of this study included: the size of the sample which was limited within Kisii County which gave only a generalization according to Murray and Lawrence (2000) of challenges teachers and students faced in the use of instructional technologies in the selected schools. The study used form three students. This was because they were better placed, had a longer experience in the school, they were focused as they had already chosen subjects based on career and therefore focused to achieve their target unlike form two students who were still contemplating on which subjects to register for; form ones were new and had yet to orient themselves and form fours were very busy preparing for the national examination.

The sampled secondary schools in Kisii County were not a representative of all secondary schools in Kenya, but it is the sample population to which the researcher intended to generalize her findings as Nkpa (1997) and Orodho (2008) notes. Also, an extensive literature review indicated that there was no adequate information to warrant thorough investigation into the use

of instructional technology in the teaching and learning processes. Thus, this study would be treated as a trend but not a definite conclusion. Further, the study was not interested in looking at specific subjects but the researcher observed any subject that was taught in the randomly selected form three streams on the use of instructional technology.

The study involved teachers, students, heads of departments and the principals of the sampled schools for the study. Private schools were omitted because they are under different management and resources they use are highly varied. Last but not least, teachers and students face a myriad challenges but this study limited itself to the challenges faced in the use instructional technologies in the teaching and learning processes.

1.10 Theoretical Framework

The study was based on the theoretical formulation of the ACTIONS model making decisions about the use of pedagogic technology and planning lessons that the technology will enhance. This model was developed by Bates (1990) for making decisions about the use of technology and it suggests factors to be considered when using the model so as to enhance effective teaching and learning.

ACTIONS are an acronym for the description of a set of tasks central to the informed selection and use of instructional technologies in classroom teaching. The tasks are;

A – Accessibility

C – Cost

T – Training

I – Interaction

O – Organization policy

N – Novelty

S – Speed

In this case the 'A' stands for accessibility which deals with how accessible is the resource to the teachers- students or learner to learner. How accessible is the technology in your school. This first step is based on the recognition that some factors such as administration and storage may interfere with how well the students and teachers utilize instructional technologies. The 'C' stands for cost meaning capital and recurrent fixed and variable in variable budgeting. If the resources are expensive and the schools will not be able to afford it. Cost is a key thing in deciding on the technology. This can be overcome by proper management of both internal and external publics by the school managers if the school goals and guidelines on teaching and learning process have to be realized meaningfully. The 'T' stands for training/teaching function. A pertinent question to ask is, do teachers use instructional technologies in their teaching? Are they trained to use the technology technologies? What are presentational requirement of the subject? What are the required teaching and learning approaches? This can be overcome by in-servicing the teachers. The 'I' stands for interaction, that is, what kind of teacher and student interaction will be possible? Is it teacher -student or student - student interaction in the use of the technologies? Are they able to interact with instructional technologies or there is no Learning Resource Center or laboratory? Or the instructional technologies are kept in the principals offices? The 'O' stands for organization what changes in the organization will be required to facilitate the use of instructional technologies or a particular technology? Do policies in the school assist or inhibit the use of resources? Is there bureaucracy in the use of instructional

technologies? This can be possible if there is "openness" in resources and use proper communication flow. The 'N' stands for novelty meaning, how new are the instructional technologies? Will the "trendiness" newness of the technology stimulate funding and innovation? This can be possible if the staff is involved in decision making on the purchase of new equipment and resources and networking of the instructional technologies available in the school.

The 'S' stands for speed. This looks at how quickly and easily materials can be updated and changed? How fast can we launch teaching using these technology resources?

ACTIONS model is just one strategy in the attempt to effectively integrate instructional technology into the curriculum. However, Patel (1986) argues that the availability of the materials does not guarantee the realization of stated objectives. The material should be presented in an orderly manner at an appropriate time and in conducive environment. Doing so poses a lot of challenges to both teachers and students which this study seeks to investigate and thus make recommendations on how to overcome the challenges.

1.11 Conceptual Framework

This study was conceptualized to contribute to the improvement of Kenyan Secondary Curricular instruction through the use of instructional technology.

Human learning is naturally an active mental and social process (Hung & Khine 2006). Students must interact with their environment and manipulate objects so as to determine proper interpretations of phenomena. For teaching and learning to be meaningful, instructional technology must be incorporated in the process which is geared towards the student's interests, abilities and readiness to become involved in the teaching and learning situations. Dale (1969) notes in his 'cone of experience' that for learning to be meaningful, there must be interrelated

learning experiences through the use of instructional technologies so as to make learning as interesting as possible. There must be connection between symbolic (words), observation of phenomena and participation that make up the foundation of learning. Bates (1990) calls this an informed selection and use of educational technology in classroom teaching as demonstrated in the ACTIONS discussed in the theoretical framework above.

Relevant strategy, instructional technology and methods must be employed in order to achieve the intended objectives (Grabe and Grabe 1998). Learners begin their learning of specific matter with a broad base of direct experience in action. Gradually they omit these specific, firsthand, concrete occurrences and impressions as they come to rely on iconic substitutes or pictorial representations. At both stages the learners develop a summarizing idea or symbol. Dale (1969) illustrates these important ideas by indicating the broad base that direct experiences provides for students learning and communication. It classifies various types of instructional technologies according to the relative degree of experiential concreteness that each can provide. The cone suggests the interrelated interdependent nature of learning experiences and use of instructional technologies; hence making mediated learning simple, enjoyable and stimulating for the learners. Bates' ACTIONS model therefore becomes handy if this has to be realized.

The teacher observes the learners behavior and measures the success of the instructional process as the learners receive from instructional technology (use of it) and reacting to them as well. This gives the teacher a clear feedback and helps in assessing the learning outcomes which is the new trend in modern teaching (Newby et al. 2006). Patel (1986) notes that, effective use of instructional technologies should be guided by; learning needs, quality of materials and possibility of combination of materials. The teacher should select instructional technologies that will accomplish the task of meeting the learning needs by helping learners to achieve the specific

objectives constructed for specific content, hence the technological pedagogy in teaching and learning.

According to Grabe and Grabe (1998), an effective and meaningful teaching–learning process must provide for reflective practice. It should pave way for core educational activities through which students will acquire determined skills and a myriad of diversified learning opportunities as provided technology. It will be easy to design and plan of a common activity and at the same time cater for individual differences of students (Hung & Khine 2006). According to the Ministry of Education, Science and Technology (2005) sessional paper No.1, teachers should be provided with a variety of instructional technologies as these are tools that facilitate effective teaching. In an individualized approach, the students are encouraged to undertake tasks from which it is possible to understand whether they reach the required level of performance related to a specific activity (task given). However, optimal use of instructional technologies can be embedded in unavailability, inadequacy, inaccessibility, cost, lack of knowledge to operate the equipment among other reasons. As stipulated in the cone of learning experience, teachers must therefore refine the techniques for effective use of instructional technologies if maximum contribution of instructional technology to learning is to be accomplished. The conceptual framework is summarized in figure 1.1 below:

Figure 1.1: Conceptual Framework on the use of instructional technologies for teaching and learning.
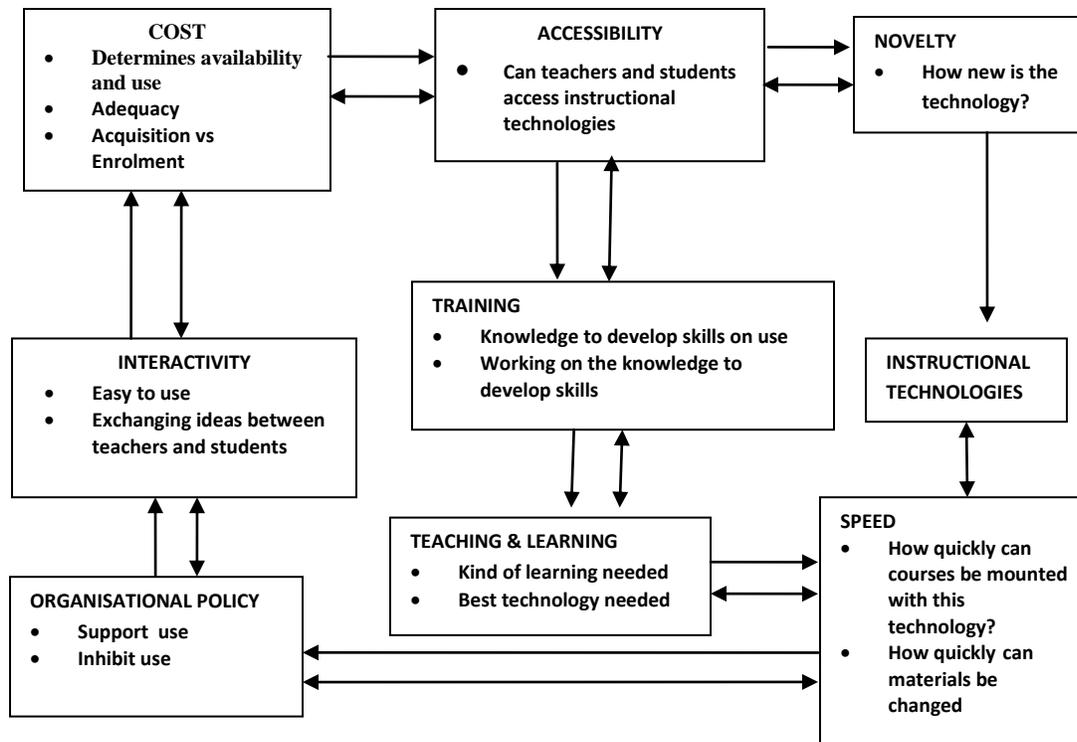
Source: Synthesized from Theoretical Framework

1.12 Summary

The use of instructional technologies is a deliberate process, dependent on clear goals, rational and thought strategy for matching characteristics with expected results (outcomes). It is therefore paramount to investigate the challenges that impede the use of instructional technology to achieve the intended goals in secondary schools in Kisii County, Kenya.

1.13 Definition of terms

In this study the following words have been used for the purpose and with the intention as explained below:

Instruction – Is the purposeful, orderly, controlled sequencing of experiences to reach specific educational goals.

Instructional technologies – Complex, integrated process involving people, procedures, ideas, devices and organization ,for analyzing problems and evaluating and managing solutions to those problems in situations in which learning is purposive and controlled.

Integration:-The adoption, inclusion and use of resource materials / equipments to aid instruction in the teaching and learning process.

Pedagogy- Is the study or science of ways and methods of teaching.

Preparedness-The readiness, knowledge and skills teachers have in using instructional technologies.

Technology- Is a planned systemic method of working to achieve planned outcomes a process not a product. Technology is the applied side of scientific developing a systematic body of facts and principals related to a comprehensive practical and useful end.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

To empower teaching and learning through guided inquiry, both teachers and students must have access to instructional technologies in schools (Linns, 1997). This section of the literature review focused on the challenges facing teachers and students in the use of instructional technologies in teaching and learning process. It highlights on a brief history on instructional technologies , the meaning of instructional technology, categories of instructional technologies, the use of instructional technologies in teaching and learning process, the availability and use of instructional technologies, challenges facing teachers and students in the use of instructional technologies: A case of selected secondary schools in Kisii County, Kenya just as Atchison (1998) notes that the literature search should show what has been done in relation to the problem being investigated.

2.1 Brief History of instructional technologies

Instructional technologies have been used for a long. That is; they have travelled a long way from military through industry to higher education, just to arrive at primary and secondary education virtually intact, and therefore have been looked with suspicion by educators (Azeb, 1975).According to Seattler (1990), use of instructional technologies can be traced years back when tribal priests systemized bodies of knowledge, and early cultures invention of sign writing to record and transmit information. It is a product of a great evolution consisting trial and error, long practice, imitation and sporadic manifestation of unusual individual creativity and persuasion. Four important developments have created the need for instructional technology namely:

i) establishment of training programme in military and industries which produced unprecedented demand for an effective and successful technology of instruction, ii) the application of this technology of instruction which was based on pre-war scientific research which proved very productive under controlled environment as observed by Stabler (1969),

iii) the emergence of an official military policy which encouraged the production of a wide variety of instructional material and abroad use of instructional technology and finally,

iv) the allocation of almost unlimited financial resources available to the development of the programme. The new concern of education is the scale on which they are being used, their variety and the complexity of the learning systems into which they are being fitted.

According to Bogonko (1992), the concept of using resources can be traced back to the indigenous African education. This is because indigenous African education was resource based localized and practical. Children learnt through play and recreational activities such as wrestling for the youth. Values, knowledge and skills of the society were transmitted by word and

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apprenticeship. The focus of indigenous African education was learning by doing as well as being expository in nature. One major challenge faced by early schools in the use and acquisition of resources was relying upon spoken word from a school master as both print and non-print media were non-existence or scarce hence making him the sole source of information (Wiman, 1969)

When the Christian missionaries came to Kenya, they introduced western education which was associated with modernization. The same was emphasized by colonialists when they later came in the 18th centaury. Western education emphasized both academic and vocational education. This meant that indigenous African education had to undergo some changes to cope with challenges of development and modernization (Bogonko, 1992). The traditional methods of education were to be modified and improved so as to bring schools to close harmony with the requirements of a modern society (Mukwa 1979). In order to realize this goal, several countries turned to the application of the process and instructional development involving the use of instructional technology in education to confirm to changes with time. Vygotsky (1978) observes that:

Many courses can combine old and new technologies and thus create a more effective and dynamic classroom. The successful combination of old and new means blending the delivery of class materials and creating 'rich-text materials'… Rich text instructional technologies are those that combine multimedia such as a print, audio and video into one well thought out and designed package with a full consideration each educational technology can be for what it does best .

Traditionally most instruction in the elementary secondary and higher education involved the presentation of information whereby the role of the teacher was of 'a giver of information' observed Gerlach and Ely (1971). The process begun with the teacher as the sole source of

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wisdom and if all went on well the process ended with the student as a passive receiver. The teaching process here was transmission of the material from the instructor's note book to the students by-passing in both minds Vygotsky (1978).

Over the years, the traditional role of the teacher in the classroom has changed. New technologies for learning have become available many of which designed for individual use (Hung & Khine 2006). The vision for technology-supported reform-oriented classroom is one in which student groups work on long-term, multidisciplinary projects involving challenging content that is interesting and important to them with the support to instructional technology (Newby et al. 2006). Making this vision a reality poses many challenges such as Providing adequate technology access, equalizing technology access involving a majority of teachers and providing technical support for technology use and maintenance (UNESCO, 2008). However, when instructional technologies are provided, the teacher becomes the facilitator of a learning experience. He/she must learn how to use technology as part of instructional technology not merely to enrich or supplement the present methods of instruction but giving high quality technologic experiences to students who would have less access to technology in their homes. Use of instructional technology form a vital role in education. According to Gerlach and Ely (1971): Good teachers have been using instructional technology for centuries.

2.2 The meaning of instructional technologies

There is no single precise definition of instructional technologies; however, according to Dahiya (2004), unhappily the terms 'instructional technology' to many suggests a world of whirling gears, tools and machinery, assembly an line, time clocks, computers, depersonalizations. Indeed; to some teachers, administrators and curriculum specialists consider technology only as

"machines". Omwenga (2008) observes that, once one talks of technologizing the teaching and learning, it is received with a low profile.

According to Heinich, Molenda & Russell(1989); instructional technologies is complex, integrated process involving people, procedures, ideas, devices, and organization, for analyzing problems and devising, implementing, evaluating and managing solutions to those problems in situations in which learning is purposive and controlled. It is the purposeful, orderly, controlled sequencing of experiences to reach specific educational goals where teaching-learning devices are used for education instruction purposes (Locatis and Atkinson 1984).

Grabe and Grabe (1998) view them as ones as money, materials and people necessary for the pursuit o some goal. He observes further that they are resources and equipment which include teachers, students, computers, skill models and other people knowledge in a specific subject area from which students might learn. Romiszowski (1974) calls these instructional technologies as teaching aids which must aid the teaching of a topic. They are rich text materials that combine multimedia such as print, models, mockups, filmstrips slides, transparencies, audio and video into one well thought-out and designed package (Roblyer, 2003). It means that aids do not do the whole tasks as parts of the tasks are done by a teacher in a well controlled manner. Hoban (1962) observes that: "… a single method or a single medium of instruction will not suffice even if only because it will become unbearably monotonous. Variety among instructional media seems more efficient than a monopoly of one…."

Wagner (1961) observes instructional technology as "the fulcrum in which the balance of the whole educational system of the future may rest, from buildings to books, from the teachers to the teaching machines, from curriculum to classroom." Kemp and Dayton (1985) refer to it as instructional technology. The term instructional technology refers to audio-visual and related

materials that serve instructional functions for education and training (Johassen 2000). Whereas Walton and Ruck (1975) refer to it as instructional resources which are planned to contribute to the education enterprise.

Hooper and Reinartz (2002) argue that these days, instructional technology refers to the contemporary computer software that contains combinations of texts, graphics, animation, audio and video. They further acknowledge that instructional technology refers to several different classes of software that are used to achieve clearly defined educational goals.

Muchiri (1997) looks at technology as online resources which offer teachers access to a vast and diverse collection of educational materials, enabling them to design curriculum that best suits the needs of their learners. Mehra and Mital (2007) asserts that it is integrating technology into teaching-learning transaction. Duffy et al. (1993) refers these as constructivist approach verse Intelligent Teaching and Methodologies. Brown et al. (1973) defines instructional technologies 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 bring about effective instruction. One can therefore generally define instructional technology as "a combination of resources including people, materials, machines, facilities as well as purposes and processes that support effective and meaningful facilitation of learning".

2.3 Categories of instructional technologies

Different educational technologists have attempted to classify instructional technologies as follows:

Dale (1969) categorizes instructional technologies as visual, audio and audio visual materials. The visual materials include; illustrated books, pictures, photographs, flashcards, charts, maps, posters, exhibits, self instructional materials, flip books, bulleting boards, magnetic boards,

flannel graphs, dioramas, models, mock-ups, filmstrips, slides, transparencies, silent films, chalkboards, drawing and cartoons. Audio materials include; radio, language laboratories, tape and disc recording, telephone, telecture and sound distribution system and audio visual materials comprises of television, films (8mm, 16mm, 35mm) video tapes, sound filmstrips printed materials with recorded sound, study trips and demonstration.

Ayot (1986) has categorized instructional technologies in three broad groups. The first category comprises software resources such as books, periodicals, newspapers, posters, flashcards, charts, cartoons, globes and maps, flannel boards, chalkboards, exhibits and bulletin boards. The second category consists of resources such as projectors record players, radios, films, televisions, magnetic tapes, slides, aural aids, sound and still projectors and the third category is of community resources like field trips, environment and people. According to Kemp and Dayton (1985), instructional technologies are categorized into nine kinds of media. They include; print media, display media, overhead transparencies, audio-tape recordings slide series, filmstrips, multi-image presentations, video recordings and computer –based instruction.

 According Gerlach and Ely (1971), instructional technologies are real things, verbal presentation, still pictures, audio recordings programmes, and simulations.

Gacegoh (1990) observes that; a comprehensive and detailed taxonomy of media has not yet appeared in literature. This observation is upheld by Unwin and Mc Aleese (1987) who urges that the function of a good taxonomy of media is not merely to order materials but, should be based on functioning if has to be relevant to the teaching and learning process. Despite the above argument, attempts have been made by media specialists, educational technologists and psychologists to develop a multi dimensional taxonomy of instructional technology. Thus

instructional technology has been classified differently by various media specialists and educational technologists.

In this study, the researcher proposes to categories instructional technology into three broad categories namely; print materials, display materials and ICT materials. The print materials comprises of books, magazines, brochures, newspapers, journals, periodicals and school pamphlets, display materials include realia, model, diorama, globe, diagrams, maps, graphs, charts, pictures, photographs, posters and paintings while ICT materials will include televisions, videos, live radio broadcasts and computer/internet. This categorization is justified due to the fact that these are the most commonly used materials for teaching and learning in most secondary schools (Grabe and Grabe, 1998).

Great teachers have instructional technologies used effectively and this is an indication that teachers can also use them today to make their teaching effective (Anglin and Gary 1995) .From the above classifications by different scholars; one is justified to argue that there is no uniformity in classification of instructional technologies.

2.4 The use of instructional technology in the teaching and learning process

Properly designed learning materials inspired by technology and delivered technologically add value to a teaching environment in which contact hours are limited but balancing between the potential of technology and the careful grooming and attention students sometimes require is critical observe Moore et al. (2003). Technologically inspired teaching materials should create a "cognitive apprenticeship" they should help develop underlying thought processes such as critical thinking, analysis and problem solving. Instructional technology can do other things as well. New materials delivered via the internet that help with the repetition necessary for developing reading, writing and listening in English can eliminate drudgery for educators and

can be entertaining. Because of their lifestyles, entertainment value is a key consideration for students in media-rich environments urges Vygotsky (1978) and Grabe and Grabe (1998). Gamble (1984) asserts that instructional technology in teaching learning process makes learning an interesting and fulfilling experience as the students find it easier to follow, understand, respond to and retain the content learnt. Instructional technologies heighten motivation for learning thus the lesson becomes emotionally stimulating as well as intellectually rewarding, they provide freshness and variety thus provide students with experiences that are fresh exhilarating delightfully new and varied, they appeal to students of varied abilities, they encourage active participation in the learning process as students heighten their sense of involvement by engaging in stimulating, provocative discussion and allows students to make immediate use of their learning as they apply it in meaningful ways to new situations and unexpected events hence making involvement inevitable observes Hoban (1962) and Newby et al.(2006).

Dale (1969) quotes Jean Piaget a Swiss psychologist who argues that "the more a child has seen and heard the more he/she wants to see and hear..." This means that resources give needed reinforcement such as the programmed instruction and computers provide many ways in which a student is rewarded by finding out how well he/she has learnt, they widen the range of students' experience, assure order and continuity of thought especially if it is a well-prepared television program, motion picture or film trips, will present the subject matter in a logical carefully structured fashion and finally improve the effectiveness of other materials as they provide a rich variety of sensory experience to amplify and reinforce the concepts that have been presented in textbooks, observes Grabe and Grabe (1998) and Newby et al. (2006).

Dale (1969) urges that: "…through meaningful diversity of instructional methods, we help the child to develop meaningful concepts. His/her relatively sense …involved learning modify and extend the range of his/her abstraction."

Moore et al. (2003) have observed that:

> Education described rich text materials (materials combining multimedia such as audio and video among others) as potentially enriching, experiential, flexible, fun, powerful, self-paced and time saving. They also believe that properly used technology could further critical thinking and independent learning, expand individual exploration, shift some of the learning out of the classroom, expand time for other classroom activities liberate (student and teachers alike) from the mundane, create an environment of learning, experimenting doing and enjoying and the level of the playing field between public and private schools.

This implies that many courses can combine old and new technologies and thus create a more effective and dynamic classroom. The successful combination of old and new means, blending the delivery of class materials and creating "rich text materials". Blending delivery is delivering educational materials in multiple means, including textbooks, online learning management systems, the internet, the intranet and CD ROM observes Grabe and Grabe (1998). Rich text materials are those that combine multimedia such as print, audio, video into one well thought and designed package. With careful consideration, each instructional technology can be used for what it does best (Vygotsky 1978 and Grabe and Grabe 1998).

That is because both blending and creating rich text maximize the affordances of a technological medium: what the medium offers, what it provides, what it furnishes and what it invites. For instance, paper offers several common affordances. Paper is thin, light, porous, opaque and flexible. That means one can write on it, fold it and bind it. Digital technology also offers several unique affordances. It is dynamic, keyboardable and can manage large amounts of information. That means one can create interactivity and dimensionality and can simultaneously appeal to more senses than paper acknowledges Grabe and Grabe (1998).

Newby et al. (2006) argue that because of complexities and the need for expertise, educators should not be expected to create solutions on their own. While they should be familiar with the software that powers it, they are full-fledged technicians and should not be expected to be. Because of the workload, lack of dedicated time and occasional technological intimidation, educators should be partnered with others in "production cells" to author rich text materials and to determine means of delivery. Some who have had success in integrating multimedia into course structures have found that these production cells should include a content expert, an instructional designer and software expert observer notes Moore et al. (2003).

According to the republic of Kenya Report on education sector strategy (2007-2010), knowledge evolves. It is always a new trend; Kenya is now poised to infuse ICT in all her subject areas. This then demands of an increase in number of professional organizations through which teachers can acquire new knowledge in their respective subject specializations. According to Newby et al. (2006), secondary schools' teaching and learning ICT can be incorporated in Computer Assisted Instruction (CAI) and Computer Managed Instructions (CMI). In addition, the use of internet, electronic mail, the conferencing file transfer and topic searching have provided access to information that covers a variety of topics in research, Science and technology.

In conclusion, as a means of facilitating teaching and learning in schools, instructional technology is not just a means of transforming knowledge, but the most important thing is, an extension of both the teacher and the chalkboard Newby et al. (2006). In this case, the curriculum or the syllabus can apply instructional technology with ease and students can be comfortable with minimal assistance. Instructional technologies increase interest, comprehension and retention. Instructional technologies add concreteness to the teaching situation and increase motivation.

2.5 The availability and use of instructional technology

The use of instructional technology should greatly depend on their functions. One of Zayed university's publicly articulated missions is to lead education in the United Arab Emirates through teaching, learning, research and outreach and to achieve this leadership in a technologically advanced environment. In fulfilling this goal, the university actively promoted instructional technology application among faculty, staff and students delivery (and completion) of lessons through advanced technology; use of sophisticated software and information gathering via internet (Moore et al. 2003).Though the hope was that information technology could add a powerful punch to the modern educational environment, many educators in the United Arab Emirates have found that it is the proper use of available instructional technology rather than the presence of that technology advances learning (Moore et al. 2003). Even longtime favorite pencil and paper and the overhead projector still have a place in the well-rounded modern classroom Grabe and Grabe (1998). Whether old or new, each technology has unique qualities (or "affordances") of which advantage can be taken (Moore et al. 2003).They make instructions real and spice the teaching and learning processes (Hung & Khine, 2006).

A study by (Newby et al. 2006) on use of instructional technology in American schools indicated that technology cannot become a meaningful support for students work if they have access to it for only a few minutes a week. The kind of technology supported project-based instruction described requires a high level of access to the sorts of technology tools that researchers and other professionals use in a daily basis to support their work. According to IJEDICT (2007), Gyorgy Katona used instructional technology (ICT in teaching Physical Education (PE) and it increased pedagogical effectiveness in schools and the University of West Hungary in Hungary. In the state of Illinois in the United State of America, ESTRELLA a collaborative effort among

five states and key partners have demonstrated how technology can be used to improve the achievement of migrant students especially those from high school who had difficulties in transferring credits from one school to another and from one state to another. These students are assisted on available career and educational opportunities too. In addition, ESTRELLA also provides professional development for teachers working with participating students to further their own technological skills, observes Pessin as a scholar of IJEDICT (2007) journal.

Onadivan (1981) carried out a study on the use of library resources ion Nigeria. The study revealed that there was an acute shortage of print and audio-visual materials in most schools. The study findings were similar irrespective of the geographical location, type of bordering facilitates and the size of student involvement. According to Azeb (1975), study on the use of community resources in elementary schools in Ethiopia indicated that most schools lacked adequate and appropriate instructional material. Teachers used the books assigned to the class as the only instructional resource. The study further revealed that most teachers did not explore the different possible sources of instructional technologies to supplement their teaching. The knowledge gap as portrayed in the study is that only community resources were investigated. Omwenga, (2008) did a study on how Information Technology (ICTs) provide a window of opportunity for educational institutions and other organizations to harness and use technology to complement and support the teaching and learning in Kenya. From this study, there is knowledge gap on the use of other instructional technologies which the current study proposes to investigate other instructional technologies acquired and used in secondary schools.

The above studies did not address the challenges teachers and students face in the use of instructional technology in secondary schools. Globally new resources have been developed especially the use of ICT which is currently gaining prominence and one of the most important

component bridging the gap of basic competencies of students Newby et al. (2006). For instance, Waema (2005) did a study on the impact of ICT revolution throughout the world which cannot be ignored where he cites that most countries have gotten computer literacy. He cites India as the country with the largest scientific management in the world whereby the country is able to provide computer education through television and via internet. Australia also prioritizes ICT education according to NewHouse (2005). Malaysia is another country which too gives priority to ICT education. The government grants a tax exemption on import of multi-media equivalent as incentive to one of its ICT city referred as cyber Taya.

According to IJEDICT (2007) report, incorporating ICT into the educational curriculum has been promoted as a key step in bridging the digital divide in Kenyan schools in recent years and the sacrifices made to finance these there has been little evaluation of their effectiveness. Further the article by Padraig Wims and Mark Lawler "investigating ICTs in educational institutions in developing countries; an evaluation of their impact in Kenya" describes research that seeks to redress this by examining in Kenya revealed tangible benefits to students from exposure to ICT. It was also found that exposure to computers in schools influenced the career choices of former students. Muriithi (2005) has argued that in Kenya like most developing countries, ICT usage is still limited to computer literacy training. She contends that the present ICT curriculum merely ideals with "teaching about computers" and not how computers can be used to transform teaching and learning in our schools. In her thesis, she says that integration should consider learning pedagogy, the pattern of student use of ICT, and the extent of use in teaching and learning programme. A wide range of instructional technologies should be selected and incorporated into the teaching and learning program.

However, the study failed to look into other instructional technologies and challenges facing both the teachers and students in the use of those instructional technologies in secondary schools which the researcher of this study seeks to investigate.

2.6 Challenges facing teachers and students in the use of instructional technology

Grabe and Grabe (1998) notes that if teachers want to search for more effective learning experiences for their students, they need to have some general ideas about productive learning experiences that integrating instructional technology enhances. Misoy (1987) reveals that instructional technology for teaching and learning process was neither inadequate nor available. Some of the resources are available but inadequate were manila papers, brochures, journals, pamphlets and pictures. However, audio-visual resources such as films, slides, radios, television and tapes were not available. Models and specimen were not available and yet they can be improvised.

Omwenga (2001) observes that while many teachers complain about lack of instructional resources, they are guilty of not using what is available. The current researcher seeks to find out why these teachers are not acquiring and use what is available in their environment of reach/schools.

Ogechi (1992) and Orina (2001) further revealed that print media was commonly used in teaching without being mediated. The above studies have not investigated why teachers don't use the available instructional technologies or challenges facing these teachers and students in the use of instructional technologies.

 The proposed study sought to investigate the challenges faced by both teachers and students in the use of instructional technologies. Maleche and Krystall (1974) argue that through user

education, the users of technology are supposed to acquire skills which are not in our case whereas Newby et al. (2006) observes that:

> Rapid skimming of great bulky of materials of selecting important points of filling together bits of pieces of a variety of resources, come primarily from exposure to a wide range of materials and the demand to organize it into useful form for some purpose.

These views are further supported by other scholars who note that many instructional technologies do not have staff to cope with the use and failure to do so reduce uses of the materials. A survey carried out in (2003/2004) as cited by Lumumba (2008) reveal that of 70% secondary schools require need to establish standards local area networks (LANS) in order to improve on sharing of learning resources. To add on the above, there is limited capacity for effective the use and maintenance of instructional technology in the learning institutions (Dahiya 2004).

According to Brown et al. (1973) for their part argue that Instructional technology goes beyond any particular medium or devise. 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… They further explain that, for improvement of instruction and learning, systematic planning wise and skillful use of the products of instructional technology are basic…"

However, under the 8-4-4 system of education in Kenya, teachers have a lot of content to cover within limited time allocations. Teachers continually complain of inability to cover the syllabus in time and adequately prepare students for the Kenya National Examinations; yet the use of instructional technology can help them reduce the length of time for instruction as most instructional technologies contain and can assist in presenting a lot of content in summary form

(Kemp and Dyton 1985). The use of instructional technologies for teaching is a principle role for any person who teaches (Grabe and Grabe 1998). A lot of research has been done on instructional technology in teacher education curriculum such as Shanguya (1995),Kimui (1988) and Omwenga (2001),but not the challenges facing teachers and students in the use of instructional technology in secondary schools which the current researcher seeks to investigate.

2.7 Summary

In concluding the review of literature on the study of instructional technologies in the facilitation of teaching and learning, the researcher observes that there are several gaps that need to be researched on. For instance; some scholars have carried out studies in primary teacher training colleges such as, Kimui (1988), Shitahi(1992),Shanguya(1995), Kinyua(2009),Msei(1985),Ogechi(1992),Andafu (1996), Omwenga (2001) and Mogeni (2005). Their findings could not be generalized to the use of instructional technologies in teaching and learning process. The above studies did not investigate the challenges facing teachers and students in the use of instructional technologies in secondary schools. The current study therefore sought to fill the gaps created by the inconsistencies in the areas covered by the above scholars whose findings could not be generalized to secondary schools.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter highlights the following: Research design, Locale of the study, Description of the Target population, Research tools, Sampling procedures and Sample size, Pilot study, Procedure used in data collection and Data analysis techniques.

3.1 Research Design

The study was conducted by using a descriptive survey design. Sproul (1995) states that; a survey research design collects background information. He recommends the technique for research where attitudes, ideas, comments and public opinion on a problem under investigation. It helps a researcher gain insight in generalizing a situation without utilizing the whole population. It is suitable in determining reasons or causes for the current status under study. This is supported by Bless and Higson (1995), Mugenda and Mugenda (1999).Further, Bell (1993) says, it also aims to obtain information from a representative selection of the population from which the investigator presents the findings as being representative of the population as a whole. Babbie (1992) adds that a careful reporting methodology of the descriptive survey promotes replication later by other researchers and re-testing the finding. Survey technique does secure situations that identify standards or norms in order to plan the next step, says (Best and Kahn 2000), Borg and Gal (1989) note that, descriptive survey research is intended to produce statistical information aspects of education that interests policy makers and educators. By involving a broad category of stakeholders, the proposed study fitted with the cross sectional sub-types of descriptive survey study design.

This study used both quantitative and qualitative techniques in collecting and analyzing data. Quantitative involved the collection of numerical data in order to explain, predict and or control phenomena of interest: data analysis was mainly statistical. Qualitative technique involved the collection of extensive narrative data in order to gain insights into phenomena of interests: data analysis included the coding of the data and production. It was studying the phenomena as they were in natural setting (Gay, 1996 and Locke et al. 2004). To achieve this, the researcher employed different methodologies and data collection strategies. The design chosen for the study was suitable because it helped the researcher to:

  i.   Describe the type of instructional technology used in the teaching and learning in secondary schools in the identified county.

  ii.   Describe media used and the challenges both teachers and students experience in the use of instructional technology.

3.2 Variables

A variable is a quantitative or qualitative entity which can take on different values or levels (Nkpa 1997). Variables interact to bring about an outcome. There are two types variables to be used in this study. Independent variables which included the resources, equipments, charts, and computers, academic qualification of teachers and years of teaching experience, while the dependent variable was the effective use of instructional technologies.

3.3 Locale of the Study

The study was carried out in Kisii County in Nyanza Province, Kenya. Kisii County was previously known as Kisii Central District that was curved out of the great Kisii District. The county has four (4) educational divisions namely: Getembe, Kiogoro, Keumbu and Mosocho. It has sixty seven (67) public secondary schools. Kisii County is in the true highlands of Kenya

which extends to the Kericho highlands. It receives rainfall throughout the year. It has rich volcanic soils which make it agriculturally potential, thus producing coffee, tea and the famous 'Wanjare cakes' sweet bananas. It serves major cities and towns with traditional vegetables like 'managu' and 'sagaa'. It is densely populated, and self-sufficient in terms of food and nutrition. Communication wise, it is accessible through the Nairobi-Kisii-Kisumu-Malaba highway, it is served by Suneka airstrip and Lake Victoria. The researcher has chosen the county because of her familiarity with the region which will enhance better management of the study and adopting Gay (1996)'s argument that factors such as familiarity with an area, time limitations and money may influence the researcher's choice locale. It was an ideal setting for the researcher's interest, easily accessible and allowed good rapport with the participants for easy data collection just as Nkpa (1997) advices. Kisii County is one of the counties that perform poorly and in Kenya Certificate of Secondary Education and lags behind in adopting technology.

3.4 Target Population

This is a complete enumeration of all items in the population as used in a study. Thus, it is the population to which the researcher intends to generalize his/her findings (Nkpa 1997 and Orodho 2008). The target population for this study comprised of 67 public secondary schools in Kisii County. The researcher targeted all teachers and students in the 67 schools. The principals of the selected secondary schools were also part of the target population.

3.5.0 Sampling Procedure and sample Size

3.5.1 Sampling procedures

Sampling is the process of selecting individuals for study. A sample is any group on which information is obtained (Fraenkel and Wallen 1993) or part or section of a population (Nwana, 1981).

The target population was 67 provincial public secondary schools. This population was generally too large for a thesis study. The researcher was interested in having a deeper understanding of the phenomena being studied and how teachers differed in using instructional technologies Meridith et al.(1996).The sample selected suits the purpose of the study. For this reason, Michael Patton as cited by Meridith at el. (1996) describes this type of sampling procedure purposive sampling. The author further contends that in purposive sampling the goal is to select cases that are likely to be 'information-rich' with respect to the purpose of the study .In this case therefore; the researcher used purposive sampling to pick ten schools that were used in the study. According to Meridith at el. (1996), purposive sampling is not designed to achieve population validity. The intent is to achieve an in-depth understanding of selected individuals, not to select a sample that will represent accurately a defined population. According to Bogdan & Biklen (2003), 'it is sampling to ensure that characteristics of the subjects in one's study appear in the same proportion as they appear in the total population'. Kerlinger (1973) observes that purposive sampling is characterized by the use of judgment and deliberate effort to obtain representative samples by including presumably typical areas or groups of the sample. According to Patton (1990) purposive sampling helps a researcher to use triangulation, flexibility and meet multiple interests and needs.

Upon choosing the ten schools, the researcher used form three (3) students for the study because they were better placed, had longer experience in the school, they were focused as they had already chosen subjects based on career and therefore focused to achieve their targets unlike form twos who were still contemplating on what to do about subject selection, thus they were undecided. Form one students were new in the school and form fours were candidates preparing for their Kenya certificate of education.

Since some schools had about six streams of form three classes the researcher used simple random sampling to pick two streams from each school of the sample and for those schools with less than six streams, the researcher picked one stream randomly, totaling to 16 streams in ten (10) schools. The researcher used all the students in each of the selected streams for the study. All the subject teachers for the selected streams in the ten schools, all heads of departments in the ten schools and the principals of the ten schools part of the study. In case of where a teacher was a head of department and a subject teacher in the selected stream, the researcher took the subject head or substitutes the stream.

3.5.2 Sample Size

This means the sampled population for the study. The researcher targeted 720 students from the sampled schools however worked with 544 students because some students were sent home for school levies and others delayed from half term due to personal reasons thus the researcher got information from those who were available and who fully represent the targeted population as shown below:

Table 1.2: Sampling grid size used

	Sampled Schools	No. of streams	Sampled streams	Average No. of students
1.	Kereri Girls High School	6	2	72
2.	Kisii High School	6	2	74
3.	Nyabururu Girls High Sch.	6	2	70
4.	Nyanchwa Mixed	6	2	63
5.	Musa Nyandusi Sec Sch.	6	2	68
6.	Cardinal Otunga	6	2	71
7.	Kiogo Secondary	2	1	30
8.	Kanunda Secondary Sch.	2	1	32
9.	Bobaracho Secondary Sch.	2	1	30
10.	Nyatieko Secondary Sch.	4	1	34
	Total Streams	46 streams	16 streams	544 students

As for teachers, the researcher targeted 130 teachers and 50 heads of departments of the ten selected schools however worked with 104 teachers and 46 heads of departments. This was

because at the agreed time some teachers were campaigning for KUPPET and KNUT elections which were at the corner, and finally 10 Principals of the selected schools.

3.6 .0 Research Instrument

According to Wellington (2000), in carrying out a research, a researcher should use methods which provide high accuracy, generalisability and explanatory power with minimum management demands with administrative convenience. Mwiria and Wamahiu (1995) note that: "the qualitative researcher uses multi-techniques for data collection in order to obtain holistic view of the respondent". Data was collected using three instruments namely; the questionnaire, interview schedule and observation schedule. The instruments supplemented each other to close the gap which might have been left if one instrument only was used as Travers (1973) sensitize that optimal strategy is to use a variety of instruments. This is also supported by Reiser & Dempsey (2002) and Kane (1995). The researcher was guided by the study objectives when constructing these instruments.

3.6.1 Questionnaire

Questionnaires were the main instrument for data collection in the study. According to Kothari (2004), some of the merits of the questionnaire are; low cost, freedom from the Interviewer's bias as answers are in respondents' own words and that it gives respondents adequate time to give well thought answers.

These questionnaires were divided into three categories one for the teachers, Heads of departments and students. These questionnaires had three sections as Nkpa (1997) advises. i) Biographical information, ii) closed ended questions weighted on a Likert scale of 1-5 with questions on Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree, iii) Open

ended type of questions. The questionnaires were developed to address specific objectives just as Orodho (2008) notes. This type of questions saved time, they were direct in analysis and they ensured that the respondents had a similar range of options to chose from, thus making coding more convenient on challenges of using instructional technology in teaching and learning process as they allowed respondents to choose form the available alternatives provided.

3.6.2. Interview Schedule

Kane (1995) states that, interviews can be modified to fit needs of the situations, they can convey empathy, build trust, collect rich data and provide a clear understanding of the respondents view. However, the researcher chose interview technique because it gave her an opportunity for in-depth-data, ensuring high response rates and it encouraged naturalness (Nkpa 1997).Thus, ensuring that more information was obtained just as Stone et al. (1984) and Bell (1993) notes. These were for the principals of selected public secondary schools.

3.6.3 Observation Schedule

Orodho (2004) state that observation schedule is a method of collecting data in which a researcher notes things or occurrences as they occur naturally. Mugenda and Mugenda(1999) sensitize that observation schedule record what the researcher observes during data collection. In the study the researcher prepared observation schedules containing instructional technologies such as audio, visual and audio-visual which could be used in the teaching learning process in secondary schools. The researcher then observed and recorded the available instructional technologies in the targeted schools as Gay (1996) acknowledges. Thus a total of ten (10) items of observation schedules were used, each for every secondary school selected.

3.7.0 Piloting

In order to ensure that the entire class of teachers, students, heads of departments and Principals was circumscribed, a try-out was conducted.

This was undertaken to determine the effectiveness of the research tools used to give the feasibility of the proposed study. The pilot study to pre-test the research tools was carried out among the form three (3) students in two public provincial secondary schools in the county, not participants in the actual study. The schools were Amasago mixed boarding secondary school and Marani mixed secondary schools which are well established public schools. As Nkpa (1997) advices the schools were not used in the main study. The purpose of pilot study was to ascertain whether the instruments were logical and clear. The items in those instruments found unclear with distorted meanings were rectified. However, the students had similar features to the schools that were used for the final study.

3.7.1 Validity of the instruments

Validity is the extent to which an instrument measures what is supposed to measures what it is supposed to measure. That is asking the right question and framed accordingly. For the instrument to be valid the content selected and included in the questionnaire and interview must be relevant to the variable being investigated. For this study, validity refers to the content validity. Validity also refers to the extent to which differences found with a measuring instrument reflects a true difference among those being tested (Kothari, 2004). According to Mugenda and Mugenda (1999), content validity is a measure of the degree to which data collected using a particular instrument presents a specific content of a particular concept; whereas construct validity is a measure of the degree to which data obtained from an instrument accurately and meaningfully reflects a theoretical framework (concept).

To validate the test items, the questionnaires and interview were submitted to the two supervisors for verification. A pilot study was conducted in two public mixed secondary schools to eliminate items that were likely to elicit irrelevant or no responses. After piloting the instrument were amended accordingly.

3.7.2 Reliability of the instruments

Reliability is the ability of the tools to return same responses after repeated administration. This is concerned with the degree to which a particular measuring procedure gives similar result over a number of repeated trials (Orodho, 2004). According to Best and Kahn (2000), reliability of an instrument is the degree of consistency that an instrument demonstrates; that is, the accuracy of the test scores which are free of choice errors. As Orodho (2008) says, the researcher uses test-retest strategy which involves administering the instruments in one of the schools which are not be used in the final study. After waiting for two weeks the researcher re-administers the instruments.

To determine the extent to which the content instruments were consistent in eliciting the same responses, the researcher employed Spearman rank order correlation coefficient. A correlation coefficient of more than 0.5 and above meant that the instrument was reliable and was considered high enough to judge the reliability of instruments used.

Any inaccurate responses, inconsistencies, blank spaces and other weaknesses noticed in the pretest were rectified. Piloting enabled the researcher come up with suitable research instrument which were well polished.

3.8 Data collection Procedures

Before going to the field, the researcher obtained permission from the government authorizing her to carry out the research. The researcher then visited the sampled schools to establish rapport,

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get permission from the school principals and arrange with subject teachers and class teachers of the randomly sampled form 3 classes to arrange for when to give out the questionnaires. Data was collected as discussed below.

3.8.1 Teachers questionnaire and heads department

The researcher sought permission from the principals of the selected schools. Once permission was granted, the researcher met the teachers and explained the purpose of the research and reassured them of confidentiality. Administered the questionnaires and agreed on the time to pick them at a central place within the schools.

3.8.2 Students' questionnaire

The researcher sought permission from the school's administration. Once permission was granted, the researcher discussed with the teachers of the chosen classes on the venue and time to administer the questionnaires. The researcher came on the agreed date and time, met with the students in the agreed venue; she explained the purpose of the study went through the instructions and let the students fill the questionnaires. The researcher then collected the questionnaires after the students were through. The same procedure was followed in each school for the ten (10) selected schools for the study.

3.8.3 Interview schedule

The researcher arranged with the principals of the ten (10) schools when to administer the interview schedules. Then, the researcher agreed with the principals of the ten (10) schools on the convenient time for the interview schedules to be collected. The researcher then administered the interview schedules as agreed with the above respondents.

3.9 Data Analysis

The study was a descriptive survey. Data was analyzed using the SPSS programme. The analysis was systematically done as per the objectives of the study. Quantitative data collected using questionnaires for the students, teachers and heads of departments were processed by coding the closed ended questions and entering the data into the computer to run descriptive analysis including frequencies, percentages and graphs. In the case of open ended questions in the questionnaires and data collected from the interview schedules for principals, the data was categorized, themes established, the data coded and entered into the computer and analyzed descriptively. After the descriptive analysis, the researcher reported and discussed the findings using charts and tables. Finally, summary, conclusion and recommendations of the study were done as shown in chapter 4 and 5.

3.10 Logistics and ethical considerations

These are post field logistics. The researcher collected completed instruments from the field gave them serials and immediately started coding and analyzing. This was after ensuring that the instruments were properly completed. Once the coding to the computer was done, the instruments were kept safely for reference in case of an error noted when making statistical analysis or future reference.

3.10.1 Ethical issue related to research

Ethics is a branch of philosophy that deals with moral values which guide one's behavior (Mugenda and Mugenda, 1999). A research should therefore take note of following:

i) That the researcher did not refer to another person's work as his/her own without acknowledging the author or give false research methodology and results.

ii) The researcher was an integral person who did not undertake research for self gain or the research to have had a negative impact or other people's lives.

iii) That the research did not use the collected data to victimize or stigmatize people/a person.

3.10.2 Ethical issue on research subjects

The researcher sought permission from the government authorities and the principals of selected schools before involving teachers and students. The researcher explained to the students that the research was voluntary. Students were assured of confidentiality and no elements of individual identification were attempted. The researcher did not ask embarrassing questions or make statements that interfered with the self esteem of the respondents just as Gay (1996) advices.

The researcher had self funding to undertake (facilitate) the research and the funds were not used for other purposes as this was to interfere with the quality of the research leading to false data. A letter of introduction presented to the principals of the identified public schools served as an indicator of the intended research and the rationale of the study.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

The purpose of this study was to establish the challenges faced by teachers and students in the use of instructional technologies in teaching and learning process in selected secondary schools. More specifically, the study was:

i) to investigate the type of instructional technologies used in the teaching and learning processes,

ii) to examine factors which influence the effective use of instructional technologies in teaching and learning processes,

iii) to investigate the preparedness of teachers on how they successfully use instructional technologies in teaching and learning process, and

iv) to establish the challenges both a) teachers and b) students face in coping with the use of various instructional technologies in teaching and learning processes. The data was analyzed as per the objectives and the findings are reported and discussed her below.

4 .1 Teachers' background information

The background information that was sought included gender, age, academic and professional qualifications, teaching experience and subjects they taught. The available teachers from the sampled schools responded. The teachers were both male and female. The purpose of their bio data was to make them feel committed to respond to the items basing their arguments on what they handled in their sampled classes.

4.2 Type of instructional technologies available

Objective one of the study was to investigate the type of instructional technologies used in the teaching and learning processes. An item inquiring on the availability of instructional technologies was administered to one hundred and four (104) teachers in the sampled schools. The teachers' responses were analyzed as follows:

Table 4.1 Teachers' responses on the availability of instructional technologies

	No		Yes	
Items	Frequency	Percentage	Frequency	Percentage
Text books	1	1	102	99
Journals	81	79	22	21
Magazines	72	70	31	30
School pamphlets	68	66	35	34
Wall Maps	49	48	53	52
Computers	46	45	56	55
PowerPoint	93	90	10	9.7
Slides	98	96	4	3.9
Videos Recorders	90	87	13	13
Charts	34	33	69	67
Globes	55	53	48	47
Models	56	54	47	46
Cartoons	98	95	5	4.9

N/B: Percentages are based on the number of responses for each item.

Respondents responded more than once.

According to the above table 4.1, out of 104 respondents, 102(99%) reported the availability of textbooks while 1(1%) said there were no text books available, 22(21%) reported the availability of journals while 81(79%)reported non-availability of journals, 31(30.1 %) revealed availability of magazines 72(70%) reported non-availability of magazines ,35(34%) reported availability of school pamphlets while 68(66%) reported non-availability,53(52%) reported the availability of wall maps while 49(48%) reported non-availability , 56(55%) reported the availability of computers while 46(45.1%) reported non-availabilty,10(9.7%) reported the availability of power point while 93(90%) reported non-availability of power point, 4(3.9%) reported availability of slides while 98(96%) reported non-availability of slides,13(13%)reported availability of videos while 90(87%) reported non-availability of videos, 69(67%)reported the availability of charts while 34(33%)reported non-availability of charts, 48(47%)reported availability globes while 55(53%) reported non-availability of globes,47(46%) reported availability of models while 56(54%)reported non-availability of models and 5(4.9%) reported availability of cartoons while

98(95%) reported non-availability of cartoons. From the percentages shown above, out of the total number of respondent 104, it seems that the largest group of respondents conform 102(99%) the availability of textbooks which shows that they were the most commonly available instructional technology. Figure 4.1 below further illustrates the distribution of table 4.1.

Figure 4.1 Teachers' responses on the availability of instructional technologies
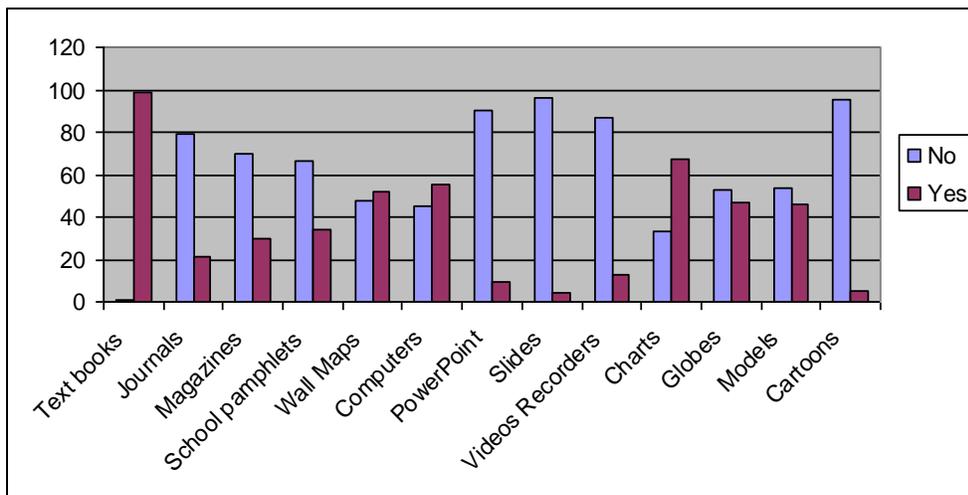
The researcher wanted to find out whether whatever was self reported by teachers was so, therefore, in regard to this objective, the researcher sought information from students. Table 4.2 analyzes students' issued with all textbooks as follows.

Table 4.2 Students issued with text books

		Frequency	Percentage
	No	403	74.2
	Yes	140	25.8

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N/B: Percentages are based on the number of responses given.

According to table 4.2, out of 544 respondents, 403(74.1%) reported that they were not issued with all textbooks whereas 140(25.8 %) reported that they were issued with all textbooks. The pie-chart (figure 4.2) below emphasizes the distribution of students' responses on how they were issued with all textbooks.

Figure 4.2 Students issued with textbooks
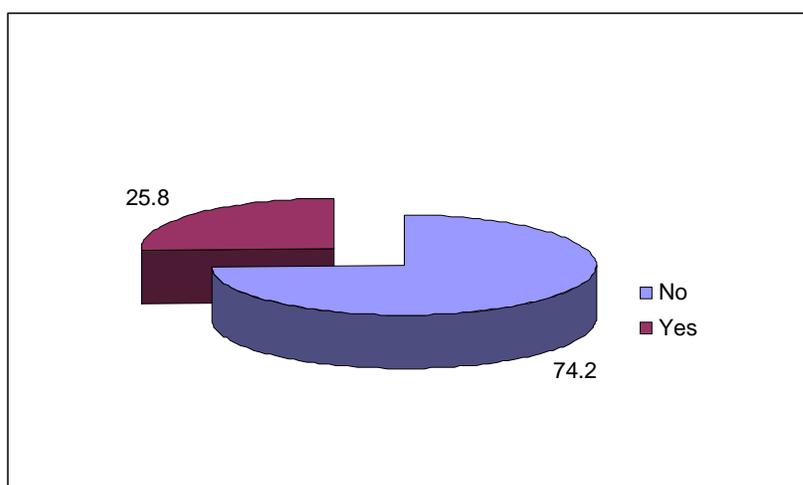
Further, the researcher wanted to know why students were not issued with all text books; an item in the students' questionnaire asked for reasons why they were not issued with all textbooks. The respondents gave various responses. Table 4.3 analyzes various student responses as follows:

Table 4.3 Reasons why students were not issued with textbooks

	Frequency	Percentage
School lacks funds for buying enough text books	100	19.6
School does not issue hence parents buy	107	21.0
Too many students	104	20.4
School library low equipped	55	10.8

Limited books in library	67	13.2
There are enough books in library	96	18.9

N/B: Percentages are based on the number of responses per each item

From table 4.3, out of 544 respondents, 100(19.6%)of students reported that the school lack funds for buying enough textbooks, 107(21.0%) reported that parents buy a few copies, 104(20.4%) reported that there were many students(over enrolment) in the classrooms,55(10.8%)reported that the schools libraries were not quipped,67(13.2%)reported that there were limited books in the library and 96(18.9%)reported that there were no enough books in the library. Others reported that they were not issued due to poor management, it was the school policy, and that there was fear of the books getting lost, some schools provided a few copies but the percentages were negligible. The heads of department and the principals both confirmed the availability of instructional technologies in all sampled schools. Printed instructional technologies and chalkboard were the most available. This confirms with table 4.1 which revealed that textbooks were the most available.

Figure 4.3 further emphasizes the distribution of students' responses on reasons why they were not issued with textbooks.

Figure 4.3 Students' Reasons why they are not issued with textbooks
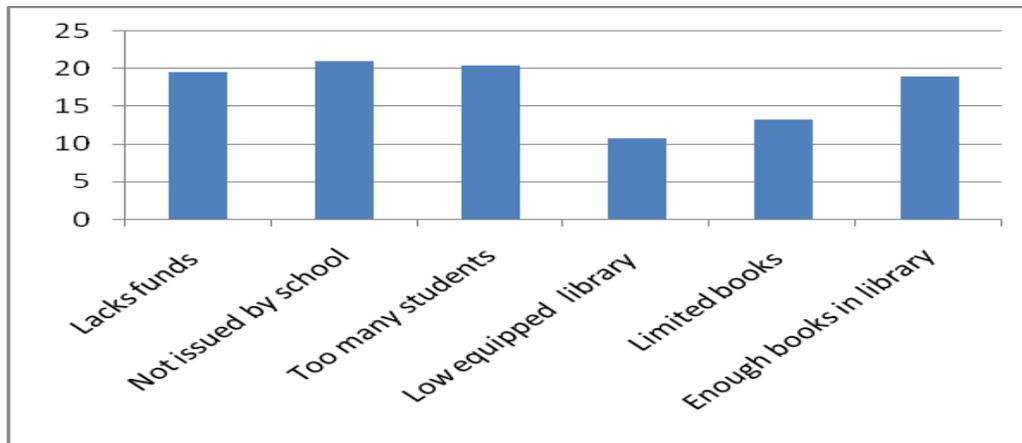
Kemp and Dayton (1985) categorizes instructional technologies into nine kinds and each of them is unique in use. The use of instructional technologies is important in teaching and learning because; according to Hung & Khine (2006), instructional technologies make instructions real and spice the teaching and learning and afford students the opportunities to engage in meaningful learning. Students own the knowledge which is important to meaning making and knowledge construction, they add value to a teaching environment in which contact hours are limited Moore et al.(2003), and help students develop meaningful concepts Dale (1969). Further, according to IJEDICT(2007), use of instructional technologies increased pedagogical effectiveness in schools in Hungary. A similar study by veterans of the United Emirates (Zayed University) revealed that using instructional technology efficiently, valuable classroom can be preserved for high-order processes (http://groups.yahoo.com).

However, in as much as the use of instructional technologies is important, the findings of this study revealed that the available instructional technologies were inadequate. This concurs with a study by Onadivan(1981) which revealed inadequate instructional technologies in Nigeria. Azeb (1975) also in a survey on availability of instructional resources in Ethiopia got similar results. Moreover, the findings also revealed that textbooks and chalkboard were commonly used. The

findings concur with studies done in other parts of Kenya. Kinyanjui (1997)'s study revealed that despite availability of different resources, only textbooks, chalkboard and handouts were widely used in teaching the subjects partly because most tutors were not conversant with the use of other resources. Ogechi(1992) and Orina(2001)s' studies also revealed that print media were commonly used without being mediated. The findings of this study therefore agree with many past researches that most of the Kenyan schools continue to wallop in demand for instructional technologies. Studies done in Kenya on the availability and utilization of instructional media generally show that our schools have scarce instructional technologies whose utilization is wanting. Munyilu (1985) in a study on instructional resources for teaching of Mathematics in Kathonzweni zone, Machakos District, revealed that most primary schools experienced a severe shortage of textbooks, stationary and teaching aids.

Similarly, Oure (1985) in a survey on learning resources in primary schools in Busia District, found out that there was an acute shortage of books and non-book materials for use in teaching and learning process. Kimui (1988), also revealed that teachers training institutions lacked many instructional media, in a study on the availability and use of resources in Kenyan teachers training colleges. Gacegoh (1990), in a study on the utilization of learning resources in teaching secondary Christian Religious Education in Embu District, also revealed that the most commonly available instructional technologies were textbooks, pictures, charts, maps, newspapers and magazines. Many of the teaching-learning resources were inadequate, with an acute shortage of audio-visual resources.

4.3 Interactivity and effective use of instructional technologies

Objective two of this study was to examine factors that influence interactivity and effective use of instructional technologies in teaching and learning processes. It is obvious that for teaching and learning to be effective and meaningful, the use of instructional technologies was inevitable. The instructional technologies also determine the instructional method the teacher will employ in the teaching and learning process. Since the researchers was to examine the factors that influence effective use; it was necessary for her to first find out the availability of the instructional technologies in the sampled schools. Apart from that, the researcher was to find out whether the instructional technologies used for in other countries in the world were available in Kenya. This was with good intentions to finding whether teachers and students in the country benefited from teaching the same way those other parts of the country and world do**. Table 4.4** analyzes factors that influence teachers' interactivity and use of instructional technologies:

Table 4.4 factors that influence interactivity and use of instructional technologies

	Frequency	Percentage

Availability of instructional technologies	11	11.1
Skills and knowledge of technology to use	11	11.1
Importance of the instructional technology	12	12.1
If readily available in the school	19	19.2
Enrolment of students in a particular class	15	15.2
Availability of money to buy instructional technologies	12	12.1
If the resources are enough for the enrolment in class	23	23.2

N/B: Percentages are based on the number of responses for each item.

From table 4.4, out of 104 respondents, 11(11.1%)of the teachers revealed that they were influenced by the availability of the instructional technologies, 11(11.1%) revealed that they were influenced by knowledge and skills on use,12 (12.1%) of the teachers were influenced by the importance of the instructional technologies to teach the topics , 19(19.2%)of the teachers were influenced if the instructional technologies were readily available, 15(15.2%) of the teachers were influenced by enrolment of students in a particular class, 12(12.1%) of the teachers were influenced by availability of funds to buy the needed materials, 23(23.2%) of the teachers were influenced if the resources were enough for the enrolment in class while other teachers in negligible percentages revealed that they influenced by the time available to prepare for the technology, versatility of the instructional technologies, reliable power supply, if involved in the procurement sprocess, attention given by the administration, if instructional technologies are provided by the school, availability of spacious room, versality of the technologies, the importance of the instructional technologies in teaching the topics, students'

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level of understanding and, accessibility to the instructional technologies, syllabus requirement, load of the subject and freedom of use and the cost of instructional technologies.

Figure 4.4 below further emphasizes the distribution of teachers' responses on factors that influence teachers' interactivity and use of instructional technologies respectively.

Figure 4.4 Factors that influences the teachers' interactivity and use of instructional
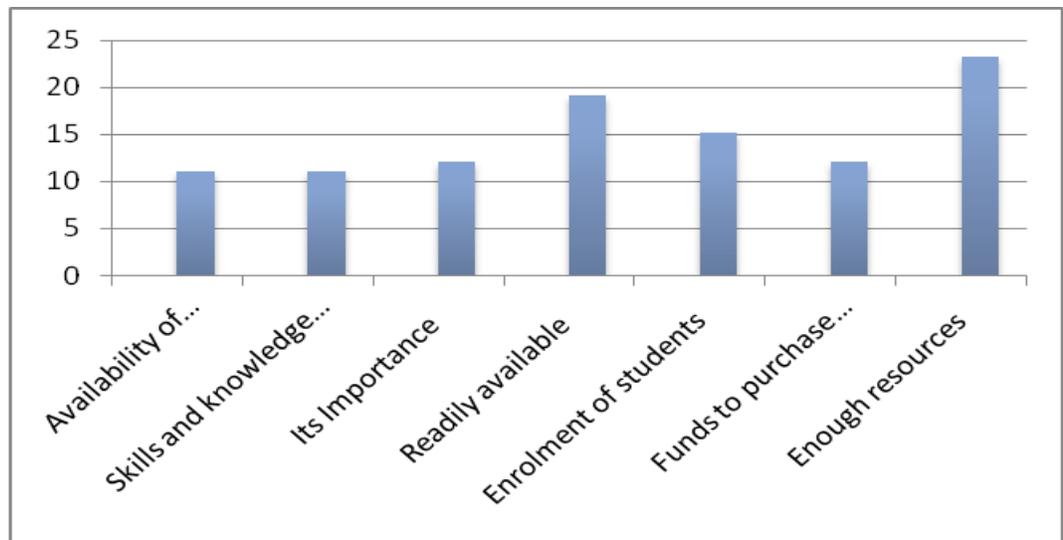
technologies

Apart from textbooks, an item in the teachers' questionnaire asked how often instructional technologies were used for learning process. **Table 4.5** analyzes teachers' responses on how often teachers used instructional technologies as follows:

Table 4.5 How often teachers used instructional technologies

	Never		Once a year		Once a month		Once a week		Every time	
	f	%	F	%	f	%	f	%	f	%
printed instructional technologies	1	1.0	1	1.0	3	2.9	4	3.9	93	91.2
projected instructional technologies	56	62.2	7	7.8	15	16.7	8	8.9	4	4.4

non-projected instructional technologies	17	18.7	4	4.4	16	17.6	26	28.6	28	30.8

N/B: Percentages were based on number of responses per item

According to this objective, table 4.5 shows that out of 104 respondents; 93(91.2%) of the teachers reported that they used printed instructional technologies every time they taught whereas other percentages were negligible, 56(62.2%) of the teachers reported they never used projected instructional technologies whereas 15(16.7%) of the teachers reported that they used projected instructional technologies once a month; other percentages on use of projected instructional technologies were negligible, 28(30.8%) of the teachers reported that they used non-projected instructional technologies every time, 26(28.6%) of the teachers that they used non-projected instructional technologies once a week, 16(17.6%) of the teachers reported that they used non-projected instructional technologies once a month and 17(18.7%) of the teachers reported that they never used instructional technologies whereas other percentages were negligible on use of non-projected instructional technologies. Figure 4.5 below further emphasizes the distribution of teachers' responses on how often they used instructional technologies.

Figure 4.5 How often teachers used instructional technologies
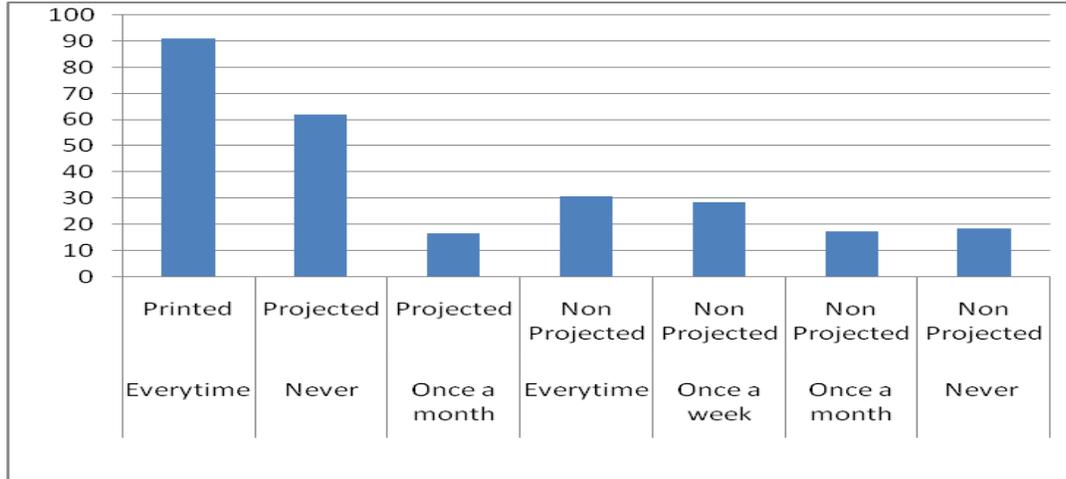
Further, teachers were asked whether the instructional technologies they used were adequate. Out of 104 respondents; 30(29.1%) of the teachers reported that instructional technologies were adequate whereas73 (70.9%) of the teachers reported that instructional technologies were not adequate. Both the head of department and principals of the selected schools confirmed their availability but inadequate. The head of departments confirmed further that teachers used instructional technologies regularly. To confirm what the teachers, heads of departments and the Principals said; an item in the students' questionnaire asked the instructional technologies used for learning process. **Table 4.6** analyzes the responses as follows:

Table 4.6 Instructional technologies for learning processes

	No		Yes	
Items	Frequency	Percentage	Frequency	Percentage
Maps and diagrams	39	7.3	494	92.7
Globes	181	36.9	310	63.1
Charts	68	13.0	455	87.0
Magazines	206	40.6	301	59.4

Journals	344	72.4	131	27.6
Radio	345	71.3	139	28.7
Television	330	68.5	152	31.5
Video recordings	391	82.3	84	17.7
Computer	247	47.7	271	52.3

N/B: Percentages are based on the number of responses for each item

According to this objective, table 4.6 shows that out of 544 respondents; 494(92.7%) of students reported the use of maps and diagrams for learning process whereas 39(7.3%) reported that they never used Maps and diagrams, 310(63.1%) reported the use of the globes whereas 181(36.9%)reported that they never used globes, 455(87%)reported the use of charts whereas 68(13.0%) reported that they never used charts, 301(59.4%) reported the use of Magazines whereas206(40.6%) reported that they never used Magazines,131(27.6%) reported the use of Journals whereas 344(72.4%)reported that they never used Journals,139(28.7%) reported the use of Radio whereas 345(71.3%) reported that they never used radio,152(31.5%)reported the use of television whereas 330(68.5%) reported that they never used television, 84(17.7%) reported the use of video recordings for learning whereas 391(82.3%) reported that they never used Video Recordings, 271(52.3 %)reported the use of computers for learning whereas 247(47.7%) reported that they never used computers for learning. On the other hand, the heads of departments confirmed that teachers' interactivity and use of instructional technologies was influenced by of their availability even though some of the instructional technologies' use posed a big challenge to some teachers.

The study used the observation schedule to confirm what was given by both teachers and students. The researcher decided to investigate further whether the instructional technologies were adequate for both teachers and students in order to make fair judgment about interactivity

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and use of instructional technologies in the sampled schools. The research confirmed interactivity and use of instructional technologies though use of some instructional technologies were challenging to some teachers. The head of departments also confirmed interactivity and use of instructional technologies though they were inadequate.

UNESCO (2002) affirms that learning is an active and not a passive process. To allow students to move towards competence, they must be actively engaged in the learning. According to Hung & Khine (2006), meaningful learning occurs when learning is interrelated, interactive and interdependent. That is, learning and instructional activities should engage and support combinations of active, constructive, intentional, authentic and cooperative learning because they are synergetic. Omwenga, (2008) in his study confirmed that other teachers in the world used instructional technologies in teaching and learning, therefore by using them both teachers and students are moving to the digital era. However, according to Patel (1986), the availability of instructional technologies does not necessarily mean the proper utilization of the same whereas Newby et al. (2006) asserts that the use of technology cannot become meaningful support for students' work if they have access to it for only a few minutes a week. But Kemp & Dayton (1985) argue that the use of instructional technologies can help to reduce the length of time for instruction and assist in a lot of content in summary form.

The findings of the study revealed that teachers were influenced by certain factors such as availability of instructional technologies, knowledge and skills on use, time available to prepare, reliable power supply, procurement process, attention given by the administration, if the instructional technologies are provided by the school, availability of room, versatility of the technology, their importance in teaching the topic, students' level of understanding and

enrolment, syllabus requirement, accessibility to the resources, teachers' load and the cost of resources.

The teachers especially if they wish to reap from the endeavors of their teaching; should pay attention to the use of instructional technologies when teaching their students. The research therefore opted to investigate the preparedness of teachers on how to successfully use instructional technologies in teaching and learning process.

4.4 Teachers' preparedness on use of instructional technologies

Objective three of the study was to investigate the preparedness of teachers on how they successfully use instructional technologies in teaching and learning process.

According to this objective, all teachers teaching the sampled streams were taken into consideration. First, an item in the questionnaire asked them on their highest academic qualifications. Table 4.7 analyzes the responses as follows:

Table 4.7.Teachers' academic qualifications

Highest academic qualifications		
	Frequency	**Percentage**
Diploma	17	16.5
Bachelors degree	78	75.7
Masters	7	6.8

N/B: Percentages are based on the number of responses given

According to the Ministry of Education Science and Technology (2005) session paper No 1, teachers are an important resource in the teaching and learning process. Their preparedness therefore should enable them acquire sufficient subject mastery and pedagogy. From **table 4.7**, out of 104 respondents; 17(16.5%) were diploma graduates, 78(75.7%) were Bachelors degree graduates and 7(6.8%) were masters graduates. Moreover, an item in the teachers' questionnaire

had an item asking whether teachers were trained on use of instructional technologies. **Table 4.8** analyzes teachers' responses as follows.

Table 4.8Teachers' preparedness on use of instructional technologies

	Frequency	Percentage
No	40	39.2
Yes	62	60.8

N/B: Percentages are based on the number of each response given

According to the objective, out of 104 respondents, 60(60.8%) of the teachers reported that they were trained on how to successfully use instructional technologies whereas 40(39.2%) reported they were not trained on instructional technologies. The pie chart below (fig.4.6) further emphasizes the distribution of the responses.

Figure 4.6 Teachers' preparedness on use of instructional technologies
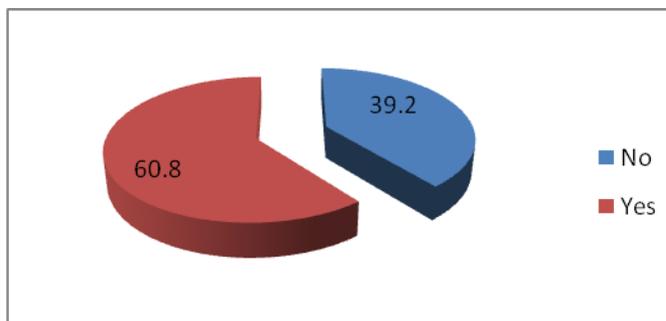
This was evident that all teachers in the sampled schools were academically and professionally qualified to teach. Further, the research sought to find out apart from textbooks and other resources; other instructional technologies used for subjects taught in the randomly sampled

streams. The teacher's questionnaires had an item asking the teachers to list other instructional technologies they used in teaching and learning process apart from textbooks.

Table 4. 9 Other instructional technologies used for teaching and learning

Responses	No		Yes	
Items	Frequency	Percentage	Frequency	Percentage
Radio	43	46.7	49	53.3
Television	52	55.9	41	44.1
Video recorders	74	81.3	17	18.7
Computers	24	25.8	69	74.2

N/B: Percentages are based on the number of responses each item

From table 4.9, out of the 104 respondents, 49(53.3%) of the teachers reported the use of radio for teaching and learning whereas 43(46.7%) reported that they don't use radio for teaching and learning, 41(41.1%) of the teachers reported the use of television for teaching and learning whereas 52(55.9%) reported that they don't use television for teaching and learning, 17(18.7%) of the teachers reported the use of video recorders for teaching and learning whereas 74(81.3%) reported that they don't use video recorders for teaching and learning and 69(74.2%) of the teachers reported that they used computers for teaching and learning whereas 24(25.8%) reported that they don't use computers for teaching and learning. The pie chart below (figure 4.7) analyzes further the distribution of the above teachers' response as follows:

Figure 4.7 Other instructional technologies used for teaching and learning
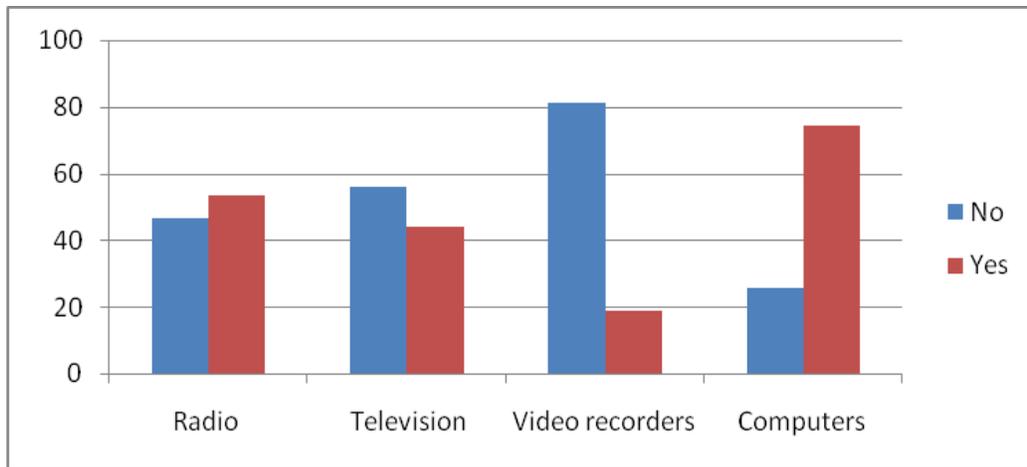
The research wanted to confirm further whether what was reported by both teachers on use of these instructional technologies was true. The research used observation schedule and observed class sessions and found out that a few teachers used different instructional technologies in teaching their subjects. It was noted that print media (textbooks) were commonly used. Moreover, the principals too confirmed that teachers were prepared on their areas of specialization however, majority of the teachers were not prepared to meet the technological changes of the 21st century. The principals further stated that even if students learnt and acquired knowledge with ease when instructional technologies were used, most schools have not equipped teachers with these instructional technologies.

Teachers reported freely that the work load was so wide that if they used the instructional technologies they may not cover it; there was limited time which some lacked know-how on the use of some instructional technologies. In order to teach properly teachers have to appropriately select the instructional technologies. For them to do so, they have to consider the students and various aspects of instructional technologies. From what was seen earlier, it was evident that teachers in Kisii County were professionally prepared and qualified. It is expected that such

teachers are competent, efficient, effective, resourceful and properly skilled in the use of instructional technologies.

The findings of the study, established that teachers' academic and professional qualification had little influence on the use of instructional technologies. Results that emanated from the classroom observations carried out on teachers revealed that these teachers rarely used other instructional technologies besides textbooks, the chalkboard and laboratory equipments for science subjects in their teaching. None of the observed teachers had anything more or different. The scenario was largely that of 'talk and chalk'. Moreover; the teachers who responded to the questionnaire gave a number of different factors as influencing their choice and use of instructional technologies in teaching and learning process. Other past studies reveal that teachers' academic and professional qualifications had no influence on teachers' use of instructional technologies. Omwenga(2001) in a study revealed that teachers don't want to use what was available, but Orina(2001) in a study found out that most Geography teachers in Kisii Central district were academically and professionally qualified, however this had very little influence on the teachers' selection and use of instructional technologies. Most teachers were using print resources; whereas Maleche and Krystall(1994) assert that users of technology are supposed to acquire skills. However, , Mishra and Koehler (2006) assert that "teachers need to know not just the subject matter they teach but also the manner in which the subject matter can be changed by the application of technology".). Additionally, Bork (2004) probably makes a valid argument that in order to guide student thinking, teachers must also understand how children's ideas about a subject develop, and the connections between their ideas and important concepts in the discipline. This is what Shulman (1986) regards as pedagogical content knowledge, that is, appropriate teaching approaches fit for

a specific content, and an understanding of how elements of the content can be arranged for better teaching.

The research therefore sought to establish the challenges both (a) teachers and (b) students face in coping with the use of various instructional technologies in the teaching and learning process.

4.5 Challenges faced by both: (a) teachers and (b) students on use of instructional technologies

According to this objective, an item in the teachers and students questionnaires asked both (a) teachers and (b) students to state the challenges they face in using instructional technologies. Table 4.10 analyzes teachers' responses as follows:

Table 4.10Challenges facing teachers on use of instructional technologies

Challenges faced by teachers	Frequency	Percentage
Limited skills on use of some instructional technologies	38	37.6
No enough instructional technologies	35	34.7
Unavailable funds to buy instructional technologies	35	34.7
Limited time to use various instructional technologies	27	26.7
Lack of support from administration/educational authorities	12	11.9
Many students	16	15.8

N/B: Percentages based on the number of responses given

According to this objective; from table 4.10, out of 104 respondents, 30(37.6 %)of the teachers reported that they had limited skills on use of some instructional technologies,35(34.7%)of the

teachers reported that instructional technologies were not enough,35(34.7 %) of the teachers reported unavailable funds to buy instructional technologies , 27(26.7%) of the teachers reported that they had limited time to use the various instructional technologies as the syllabus was so wide that they may not cover it, 12(11.9 %) of the teachers reported that they lacked support from school administration as some principals locked some instructional technologies in stores and made very strict rules for anybody who wished to use them,16(15.8 %) of the teachers reported that there were many students in classes which made it impossible to use some instructional technologies, other teachers in negligible percentages reported that they were not consulted in the procurement process, no time to improvise instructional technologies to use, some teachers reported that some teachers were lazy and did not bother to use the instructional technologies, some teachers reported of unreliable power supply, lack of infrastructure (storage facilities) and space for installing materials, poor budgeting/administration unwilling to by enough instructional technologies, lack of opportunities to apply technology, low equipped laboratories, loss of materials from students and school, lack of motivation as teachers are overtaken by events as some heads of departments and principals do things without consultation, some instructional technologies such radios breakdown hence students miss lessons and low response on material requisition in departments whereas some teachers still believed that if a teacher explained well the information to the students; the students would understand the information even if the teacher did not use the instructional technologies. The figure below (figure 4.8) further emphasizes the distribution of challenges faced by teachers on use of instructional technologies.

Figure 4.8 Challenges faced by teachers in the use of instructional technologies
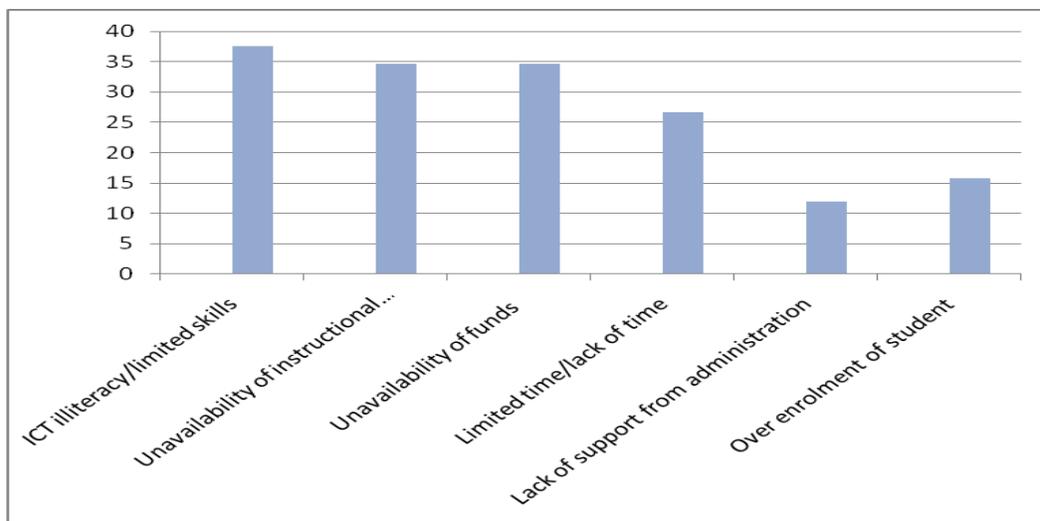
Further, an item in students' questionnaire required students to state challenges they faced when instructional technologies were used. Table 4.11 analyzes students' responses as follows:

Table 4.11 Challenges faced by students on use of instructional technologies

Challenges faced by students	Frequency	Percentage
Some instructional technologies can't be easily understood	195	37.4
Some teachers are fast when explaining	140	26.9
Some experiment/science procedures are hard to follow	79	15.2
Instructional technologies not enough thus lead to sharing of computers in the lab and lab equipment	169	32.4
Some students are illiterate on use of some instructional technologies	71	13.6
Small and congested rooms	61	11.7
Not enough explanations by teachers when using some instructional technologies	55	10.6

N/B: Percentages are based on the number of responses for each item.

According to this objective, table 4.11 shows that out of 544 respondents, 195(37.4%)of the students reported that some instructional technologies could not be easily understood, 140(26.9%) of the students reported that some teachers were fast when explaining which made them not to comprehend the lesson, 79(15.2%) of the students reported that some experiment procedures were hard to follow when done once thus they needed more practice which was denied due to inaccessibility to the science laboratories during their free time, 169(32.4%)of the students reported that some instructional technologies were not enough thus led to sharing of computers in the lab and lab equipments hence limiting individual accessibility and practice,71(13.6%) of the students reported that they were illiterate on use of some instructional technologies, 61(11.7%)of the students reported there were small and congested classrooms,79(15.2%) of the students reported that some experiment procedures were hard to follow, 55(10.6%) of the students reported that there was no enough explanations given by teachers when some instructional technologies were used. Other students in negligible percentages reported lack of accessibility to some instructional technologies during their free time, lack of skilled personnel to provide assistance especially from some teachers and laboratory assistants, some students steal the resources for others not to use, while others felt that the use of some instructional technologies waste time and others said some subject teachers use instructional technologies while others don't use at all. Figure 4.9 emphasizes further the distribution of students' responses on challenges faced by students on use of instructional technologies.

Figure 4.9 Challenges faced by students on use of instructional technologies
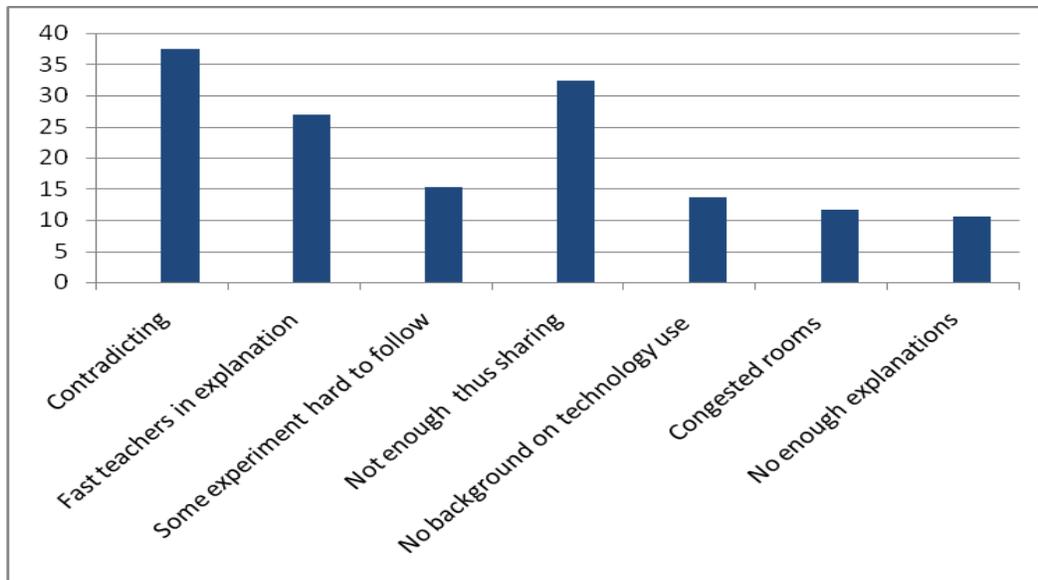
To verify the information given by teachers and students, the research sort information from the head of departments and principals whereby there was an item asking those challenges teachers and students faced and they both confirmed what was given by both teachers and students.

The teachers and students were further asked to give suggestions regarding the challenges they experienced when using instructional technologies. **Table 4.12** shows teachers' suggestions on how to overcome the challenges faced.

Table 4.12 Teachers' suggestions on overcoming the challenges faced

Suggested ways of overcoming the challenges faced	Frequency	Percentage
Train teachers how to handle instructional technology (ICT)	30	31.2
School to buy more instructional technologies	32	33.3
School organize harambees/donors to assist buying materials	10	10.4
Government to ensure electrification in all schools	10	10.4

Expose students to technology early	10	10.4

N/B: Percentages are based on the number of responses for each item

From table 4.12 above, out of 104 respondents; 30(31.2 %) of the teachers suggested that teachers should be trained on how to handle /use instructional technologies such as computers /ICT, 32(33.3 %) of teachers suggested that the schools buy more instructional technologies to cater for swollen classes,10(10.4%)of teachers suggested that the schools to organize harambee s/ask donors to assist in buying instructional technologies, 10(10.4%)of teachers suggested that the government should ensure there is reliable power supply in all schools, 10(10.4%) of teachers suggested that students should be exposed to technology early. Other teachers in negligible percentages suggested that the schools should put up infrastructure for computer installation in classes, buy modern computers/renovate and repair facilities, acquire enough instructional materials, have other power alternatives, provide security and stores for keeping facilities, management to collaborate with teachers on material requisition, admit manageable number of students, develop INSETS for teachers to replenish their skills on use of instructional technologies, provide internet to enable them share what other teachers are doing in the world, employ more teachers especially those with technical skills to reduce teachers' work load, equip the laboratories as a long term project, motivate teachers for improvisations and the government to help schools to purchase more materials by providing more funds. The figure below (figure 4.10) further emphasizes the responses given in the above table.

Figure 4.10 Teachers' suggestions on how to overcome the challenges.
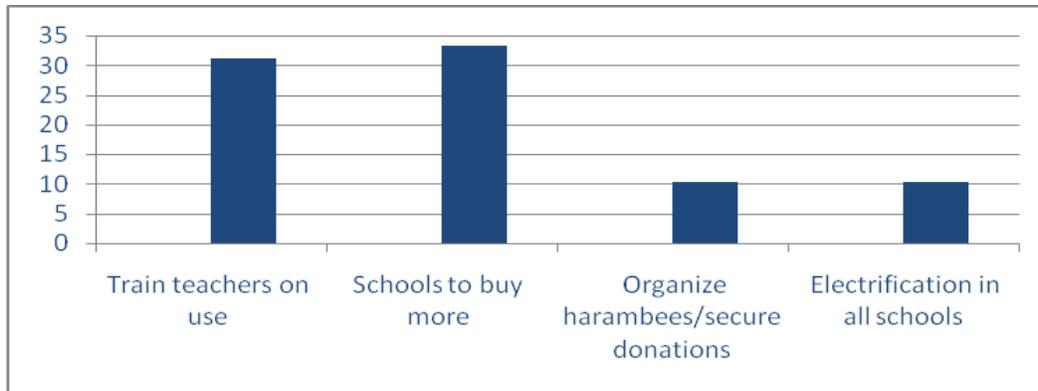
Table 4.13 Students' suggestions on overcoming the challenges faced

Suggested ways of overcoming the challenges faced	Frequency	Percentage
Teachers to use simple terms when teaching	55	11.3
Teachers to slow the speed of presenting when using some instructional technologies	81	16.6
Allow students use computers & science labs freely for practical during their free time	276	56.7
Buy enough and quality computers & other instructional technologies	242	49.7
Add more skilled and experienced teachers	53	10.9

N/B: Percentages are based on the number of responses for each item

From table 4.13, out of 544 respondents,55 (11.3 %)of students suggested that teachers to use the simple terms when teaching using some instructional technologies,81(16.6%) of students suggested teachers should slow down the speed of presenting,276(56.7%) of students suggested that students should be allowed to use computers and science laboratories freely for practice during their free time,242(49.7%) of students suggested that schools should buy enough instructional technologies such as quality computers and other instructional technologies,53(10.9

74

%) of students suggested that the schools should add more skilled and experienced teachers on use of instructional technologies. Other students suggested in negligible percentages that the schools should build bigger rooms/laboratories to accommodate the enrolled population, connect computers to the internet, be exposed to technology early, have generators in case of power failure, update/hire laboratory technicians with modern technological skills, allow students to access available materials freely and expose them fully to the resources, government to implement policies that it can meet especially on provision of instructional technologies and modify classes to be compatible with instructional technology facilities. Figure 4.11 below emphasizes the results shown on the table above, and the percentages show students' suggestions on how the challenges can be overcome.

Figure 4.11 Students' suggestions on how to overcome the challenges.
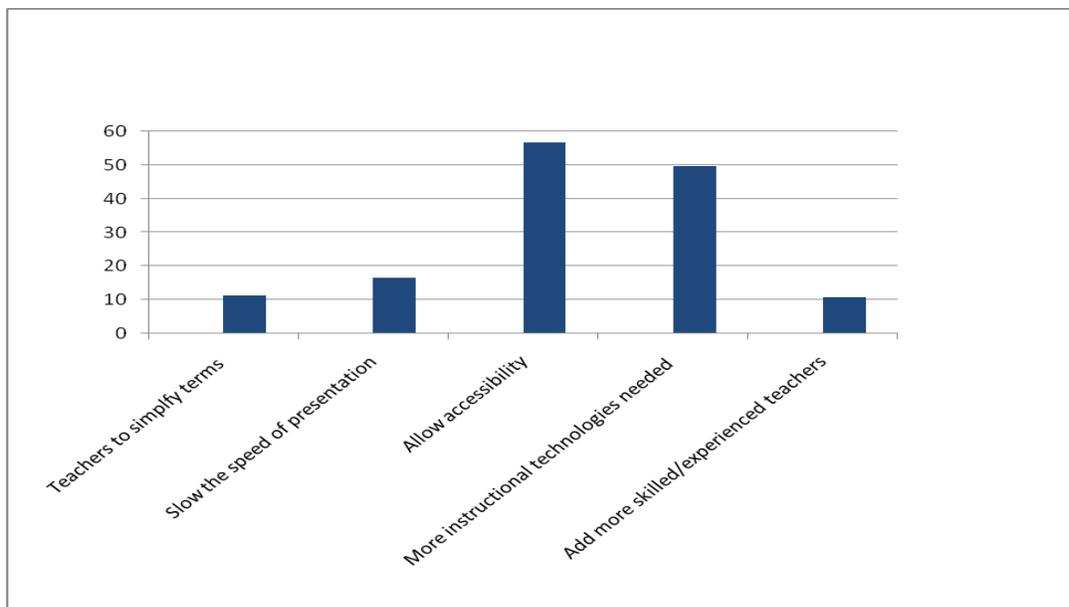
The findings revealed a myriad of challenges facing both teachers and students in the use of instructional technologies. This concurs with Mogeni (2005) in a study on factors influencing the utilization of resources in the teaching of Kiswahili in Transmara district whereas Msei (1985) in

a survey of teaching resources for teaching and learning of Kiswahili in primary schools in Central Division, Machakos District found out that most teachers in schools did not use teaching resources partly due to ignorance of their importance and called for the organization of seminars, symposia and workshops to help equip the teachers with the skills and awareness to effectively use instructional resources. Andafu (1996) also in a study of factors affecting the teaching of Kiswahili in secondary schools in Lamu District indicated that most teachers did not make any effort to use even simple teaching aids.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.

5.0 Introduction

The main purpose of this chapter is to make a summary of the findings based on the objectives of the study and make suggestions and recommendations for possible action and further research. This chapter therefore, consists of three sections namely; the summary of the findings, conclusion of the study and finally recommendations.

5.1 Major findings and implications

According to objective one of this study, most of the instructional technologies were widely available for teaching and learning process. These includedS: textbooks, journals, magazines, school pamphlets, wall maps, computers, videos, charts, globes and models. Many of the available instructional technologies were inadequate in terms of quantity. Not all the available instructional technologies were easily accessible to both teachers and students for teaching and learning process.

According to objective two of the study, the choice of instructional technologies was influenced by their availability, how the instructional technology will enhance teaching, technical knowledge and skills on how to use an instructional technology and time available to prepare. Other factors include: reliable power supply, procurement process, attention given by administration, if the technologies are provided by the school, availability of the room, versatility of the technology, their importance in teaching the topic, students' level of understanding and enrolment, accessibility to the instructional technology, syllabus requirement, teachers' load and the cost of the instructional technology.

According to objective three of the study, teachers in the selected public secondary schools were academically, professionally trained and qualified in the subjects they taught. Thus expected to

be competent, efficient, effective, resourceful sand properly skilled in the use of instructional technologies in teaching and learning process. However, academic and professional qualification had little influence on the teachers on how they successfully used instructional technologies in teaching and learning process. Teachers used textbooks, charts, models wall maps, laboratory equipments for practical, globes, videos, school pamphlets, magazines, journals, computers and liquid crystals display (LCD especially for SMASE). The teachers generally supported the use of instructional technologies in teaching but majority of teachers rarely used instructional technologies except textbooks, laboratory equipment and chalkboard.

Objective four was challenges faced by both teachers and students in the use of instructional technologies in teaching and learning process. This was further reported that:

 i)Some teachers had limited skills/unskilled in the use of some instructional technologies,

 ii) instructional technologies were not enough/unavailable, unavailability of funds to buy instructional technologies, limited time to use the various instructional technologies as the syllabus was so wide that they may not cover it,

 iii) lack of support from school administration, some principals locked instructional technologies in stores and made strict rules for anybody who wished to use them, some teachers were not consulted in the procurement process thus they are overtaken by events,

 iv) no time to improvise instructional technologies to use, some teachers were lazy and did not bother to use instructional technologies,

 v) unreliable power supply,

 vi) lack of infrastructure,

vii) lack of opportunities to apply technology,

viii) low equipped laboratories and

ix) some teachers still believed that if they explained the information well, the students would understand even if the teacher did not use the instructional technologies.

Students reported that:

i) some instructional technologies could not be understood thus they were contracting,

ii) some teachers were fast when explaining,

iii) instructional technologies not enough which made them to keep on sharing thus hindering accessibility and individual practice for competence,

iv) lack of knowledge and skills on use of some instructional technologies, congested classroom due to over enrolment,

v) limited time to access and use instructional technologies,

vi) lack of enough explanations from teachers,

vii) theft and

viii) some students felt that the use of instructional technologies wasted time and some teachers never use instructional technologies at all.

Teachers suggested the following solutions to the challenges they faced in the use of instructional technologies: That;

i) teachers should be trained on how to handle/ use instructional technologies such as computers/ICT,

ii) schools to buy more instructional technologies to cater for swollen classes,

iii) schools to organize for harambees and ask donors to assist in buying enough instructional technologies and

iv) the government to ensure reliable power supply in all schools and that students should be exposed to the use of technology early.

Students suggested that:

i) teachers should use simple terms when teaching, slow the speed of presentation, ii)students be allowed to use computers and science laboratories freely for practice during their free time,

iii) the schools to buy enough instructional technologies such as quality computers and

iv) that schools should employ/add more skilled/experienced teachers on use of instructional technologies.

5.2 Conclusion

The main question that this study endeavored to find was an answer to what challenges faced teachers and students the in use of instructional technologies.

Based on the findings of the study, the following conclusions were made:

i).Print resources were the most commonly available instructional technologies in the selected secondary schools in Kisii County. However, many of the available instructional technologies were inadequate in both quality and quantity; despite their being accessible to teachers and students.

ii) Though schools provided a few, parents were the main providers of instructional technologies for teaching and learning process. However, teachers were sparingly consulted or involved in the procurement process.

iii).The teachers appreciated the role played by the use of instructional technologies in teaching and learning process. However, they hardly use most of these instructional technologies available

in their schools. They mainly use textbooks, chalkboards and laboratory equipment for Chemistry, Biology and physics.

iv).The instructional technologies that were preferable to the teachers in teaching learning process were charts, Globe, maps models audio cassettes, handouts, class readers (books), pamphlets, radio, news papers, diagrams…….Some schools had computers but they were mainly used for computer studies subject and the Liquid Cristal Display (LCD) was rarely used by SMASE teachers (Mathematics and Science) during their teaching.

v).Although many teachers in the selected secondary schools in Kisii County were academically and professionally qualified, they had very limited post-training on the use of instructional technologies.

vi).Very minimal instructional technologies were being prepared locally by teachers for teaching learning process; thus students were hardly involved in the preparation some of the instructional technologies. This was mainly because schools lacked enough funds to buy the raw materials and provide storage facilities while on the other hand; administration does not allow students to assist in preparing instructional technologies.

vii).The major challenge teachers expressed as impeding their effective use of instructional technologies were that:

a) some instructional technologies made them spend a lot of time in teaching topics

b) rigid administration in provision and providing storage facilities and the suitability of the instructional technologies to suit topics being taught and

viii).Scarcity of some instructional technologies and especially lack of modern efficient instructional technologies in the schools, lack of trained personnel such as technological

assistants and lack of sufficient knowledge on use of these technologies made the teaching and learning process very difficult.

"Learning is facilitated when new knowledge is integrated into learners' world…''Education as central to a knowledge society must produce people who are able to create and gain from the new knowledge (Bereiter 2002).

Hung & Khine (2006) adds that; learners need access and manipulate [sic] available resources and appreciate the skills and knowledge each instructional technology provides. This is because the choice of instructional technologies can greatly affect the way information may be structured and manipulated.

This research will give educators a better understanding of the importance of functional, usable, communicative, and aesthetically appropriate use of instructional technologies.

5.3 Recommendations of the study

The following recommendations were made based on the findings of the study:

a). The study findings revealed that the instructional technologies available in schools were barely enough and some were outdated (The Ministry of Education, Science and Technology 2005).

Further, the Ministry of Education, Science and Technology should:

> i). Organize seminars, workshops and any other in-service courses frequently to familiarize and sensitize with a wide range of instructional technologies and their potentials. This could trigger teachers' creativity and innovation in the use of instructional technologies in teaching and learning process.

Moreover, the planners/organizers of such seminars and workshops should ensure that the teachers personally get information about the seminars/workshops to avoid communication breakdown and encourage them to attend.

ii). regularly review the teacher training course by integrating technology with a view of improving the trainees' skills and attitude on the use of instructional technology.

iii).Use highly qualified experts   as resource people whenever it organizes seminars and workshops to teach the teachers about the importance of instructional technologies in teaching and learning process. This will motivate teachers to take the seminars and workshops seriously and to implement whatever learnt.

iv).Have regular visits to the schools, through the Quality Assurance Officers (QUA SO), to assess the availability, state and utilization of instructional technologies. This will make teachers alert and prompt them to prepare and use the instructional technologies frequently.

v).Work hand in hand with parents, sponsors and other stakeholders in education to prioritize the provision of adequate instructional technologies to ease the problems of inadequacy of instructional technologies in public secondary schools.

vi).Provide some of the instructional technologies to schools to subsidize their costs and encourage the local publishers/authors to produce more affordable instructional technologies. This should also trigger teachers to be innovative and initiative to produce instructional technologies locally or improvise the existing ones to suit their varied needs.

vii).Ensure that the authors and publishers avail the necessary new instructional technologies especially textbooks in the market and schools promptly whenever the

syllabus is revised. This will ensure that schools acquire and use the current instructional technologies and adequately prepare students for the national examinations.

Regularly seek information from teachers and students on the challenges they face in teaching learning process using instructional technologies. This will enable the Ministry of Education to organize necessary in-service courses for the teachers to mentor direct and monitor improved production and provision of instructional technologies; design instructional technologies with the teachers and students in mind, or otherwise seek alternatives of solving or easing the teachers' problems thus enabling them to teach more effectively.

Establish instructional technologies centers as close as possible to teachers including instructional technologies mobile services.

b). The school administration should be sensitized on the importance of instructional technologies in order for them to provide them in their school budget and provide storage facilities. The administration should involve teachers in acquisition of the instructional technologies and encourage them to use technologies in teaching. They should also encourage teachers to prepare instructional technologies locally by providing them with the necessary raw materials. This will encourage the teachers to use the instructional technology since they will they co-own them. They should also allow teachers to attend workshops and seminars whenever they are organized and called for.

c). Public secondary schools should establish spacious instructional technology rooms/libraries and equip them accordingly. This will, encourage teachers to prepare for there is safety and will further, encourage the use of bulky and cumbersome instructional technologies with little movement.

d).Planning and designing learning environments and experiences. To achieve these teachers should:

> i).Design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners.

> ii).Apply current research on teaching and learning with technology when planning learning environments and experiences.

> iii).Identify and locate instructional technologies and evaluate them for accuracy and suitability.

> iv).Plan for the management of instructional technologies within the context of learning activities.

> v).Plan strategies to manage student learning in a technology-enhanced environments.

> Planning helps teachers to determine instructional technologies they will use. Instructional plan plays a critical role in directing the selection and use of all other tools within the learning environment (Newby et al.2006).

e). Plan teaching, learning, and the curriculum which apply technology to maximize student learning. To realize this teachers should:

> > i).Apply technology to develop students' higher-order of skills and creativity.

> > ii).Facilitate technology-enhanced experiences that address content standard standards and student technology standards.

> > iii).Manage student learning activities in a technology-enhanced environment.

> > iv).Use technology to support learner-centered strategies that address the diverse needs of students.

f). Teachers use technology to enhance their productivity and professional practice by: Using instructional technologies to engage in ongoing professional development and lifelong learning.

> i).Continually evaluate and make reflection on professional practice to make informed decisions regarding the use of instructional technology in support of student learning.

> ii).Apply technology to increase productivity.

g). Teachers understand the social, ethical, legal, and bu-man issues surrounding schools and apply those principles in practice. Teachers should:

> i).Promote safe and healthy use of instructional technology.

> ii).Apply instructional technology to enable and empower learners with diverse backgrounds, characteristics, and abilities.

> iii).Facilitate equitable access to instructional technology for all students.

h). Parents and communities surrounding the schools should be fully sensitized on the importance of instructional technologies especially those within there environment that can be used for education instruction purposes. This will enhance positive attitudes and co-operation by the community and parents; thus providing and preserving these instructional technologies.

Suggestions for further research

(i) Similar studies could be carried out in the whole of Kisii County within rural and urban setting to establish whether or not the findings of this study apply to other areas.

(ii) A study could be carried out to evaluate the quality and suitability of the instructional technologies used in teaching and learninsg process.

(iii) An in-depth study could be done to investigate the teachers' and students' attitude towards the use of instructional technologies in teaching and learning in Kenyan public secondary schools.

(iv) A thorough study on utilization of newer technology to teach should be carried out.

References

Amutabi,M.N(2004**).** Challenges facing the use of ICT in Kenyan Universities.

    UNESCO Forum collegiums on Research and Higher Education Policy 1 –3

    December 2004

Andafu, O.I.(1996).''A study of the Factors Affecting the Teaching and Learning

    of Kiswahili in selected selected secondary schools in Lamu District''.

    Kenyatta University- Unpublished P.G.D.E.project

Anglin,G.J. & Gary,J.(1995).Instructional Technology: Past, Present and Future.

    Second Edition. Englewood co: Libraries Unlimited, New York

 Atchison, J. (1998): Access to books and Journal articles by postgraduates'

     student. University of Natal. South Africa

Ayot, H.O. (1986). Instructional Materials for Educational Communication and

    Technology. First Edition. Kenyatta University, Kenya

Azeb, D.(1975).''An investigation of the Utilization of Community Resources in

    Elementary Schools of Ethiopia to Provide Relevant Basic Education''.

    Unpublished PhD Thesis, Ohio University

Babbie, E. (1992).The practice of Social Research. Belmont, C.A

     Wadsworth/Thomson Leaening 2001

Bates, A.W.(1990).Media and Technology in European distance education:

    proceedings of the EADTU workshop on Media Methods and Technology

    Open University, Milton Keynes

Bell, J. (1993).Doing Your Research Project. Open University Press. Buckingham

Bereiter, K.D.(2002).Education and Mind in the Knowledge Age. Lawrence

Erbaum Associates, NJ, Mahwah

Best, J.W. & Kahn J.V. (2000). Research in education. Sixth Edition. New York

Betz,B.H.(1990).Visuals and Learning. Pacific Press, Nampa

Bless, C. & Higsons S. (1995). Fundamental of social research method. An

African Perspective, second edition. Julai Kenwyn

Bogdan, R.C. & Biklen, K.S.(2003).Qualitative Research For Education. An

Introduction to Theories and Methods. Fourth Edition, New York

Bogonko, S.N (1992).Reflection on education in East Africa, OUP, Nairobi

Borg, R.W. & Gall M.D. (1989). Educational research: an introduction. Longman

Inc: New York

Bork, H.(2004).Professional Development and Teacher Learning: Mapping the

Terrain. Educational Research, 33(8), 3-15

Brown,J.W.; Lewis,R.B.;& Harcleroad,F.F.(1973).av instructional technology

media and Methods, FOUR EDITION. McGraw Hill, Inc, New York

Dahiya, S.S. (2004). Education Technology towards Better Teacher Performance.

Shipra, New Delhi

Dale, E. (1969). Audio-Visual Methods in Teaching Third Edition. The Dryden

press, New York

Facer,K., Furlong, R.& Sutherland, R.(2003).Screenplay. Children and

Computing in home. Routledge / Falmer, London

Fraenkal, J.R.& Wallen, N.E.(1993).How to Design and Evaluate Research in

Education. McGraw-Hill, Inc.

Gacegoh, J.N. (1990). "A study of the Utilization of learning Resources in

Teaching of Christian Religious Education in Secondary Schools in Embu,

Kenya". Unpublished Thesis, Kenyatta University

Gagne, R.M. (1965). The Conditions of Learning. Holt, Rinehart and Winson.

New York.

Gall, M. D., Borg, R. W.& Gall, O.J. (1996).Educational Research. An

Introduction. Sixth Edition. Longman publishers,USA

Gamble, K.T. (1984): Communication works. Random House, Inc: New York

Gay L.R. (1996). Educational Research: Competences for analysis and

application, forth edition: Macmillan Publishers, New York

Grabe, M. & Grabe, C.(1998).Integrating Technology for meaningful learning:

Second edition, Houghton Mifflin Company. Boston

Gerlach,V.S and Ely D.P(1971). Teaching Media; a systematic Approach,

Prentice – Hall, inc. Englewood cliffs (N.J)

Heinich, R.; Molenda, M. &. Russell, J.D. (1989).Instructional Media and the

New Technologies of Instruction. Third Edition, Macmillan Publishing

Company. New York

Hoban, C. (1962). Research in New Media in Education, "Three Conference

Working Papers" (Washington D.C American Association of College for

Teacher Education p.p 22 – 23)

Hooper,S. R. (2002).Educational Multimedia. In R.A. Reiser & J.V.Demps

(ed).Trends and Issues in Instructional Design and Technology. Upper

Saddle River , N.J Pearson Education .Inc. New York

Hung, D. & Khine, M.S. (2006). Engage Learning with Emerging Technologies.

Nangang Technological University, Springer publisher, Singapore

Johassen, D. H. (2000).Computers as Mind tools for Schools: Engaging Critical

Thinking. Upper Saddle River, N.J: Prentice Hall, Inc. New York

Kane, E. (1995). Seeing yourself; research handbook for Africa. Second Edition

Learning Resources

Kemp J.E and Dayton D.K,(1985). Planning and Producing Instructional Media,

Harper and Row Publishers, New York

Kerlinger, N.F.(1973).Foundations of behavioral research. Second Edition, Holt

Rinehart, New York

Kimui,V.W (1988)."A study of Availability and use of the Learning and Teaching

Resources in Primary Teachers' Colleges in Kenya" Kenyatta University-

Unpublished PhD Thesis

Kinyanjui, L. (1997). Availability and Utilization of instructional media in

Teaching and Learning Physical Education in some selected Primary Teachers

Colleges in Kenya''. Kenyatta University-Unpublished M.Ed. Thesis

Kinyua, G.W. (2009).''Availability and use of Teaching Learning Resources in

Public Diploma Teachers' Training Colleges in Kenya.'' Kenyatta University-

Unpublished M.Ed. Thesis

Kothari, C.K. (2004). Research Methodology: Methods and Techniques Second

Edition. New age international publishers, New Delhing

Linns,M.C.(1997).Learning and Instruction in Science education: Taking

advantage of Technology. In D.Toin & b.j fraser (eds), International handbook of Science Education. Kluwer,Netherlands

Locatis,C.N. & Atkinson, F.D.(1984).Media Technology for Education and Training. Charles E. Meril Publishing Co; Columbus, Ohio

Locke, F.L.T, Silverman; J. S. & Spirduso (2004). Reading and Understanding Research. Sage Publications Inc. California

Lumumba, P.O.(2008).'' A survey of challenges facing e-learning Public Secondary Schools. A case study of Nepad schools in Kenya.'' Unpublished Research Project

Macharia,K. (1987).Teaching Methodologies. Trust Printers, Nairobi

Maleche, A.J.& Krystall,A.(1974). ''The Library as an educational tool.'' Maktabar official Journal of Kenya Library Association

Mehra, P. & Mital, M. (2007). Using ICT to Transform Education. The University of the Western Indies India

Ministry of Education, Science and Technology (2005).Sessional paper No.1 of 2005, A policy Framework for Education, Training and Research, Nairobi Government printers

Mishra, P. & Koehler, M.J.(2006).Technological Pedagogical content knowledge: A framework for teacher knowledge .Teachers college Record, 108(6), 1017-1054,New York

Misoy, C.C. (1987). "Availability of instructional materials in teaching geography in Secondary Schools in Kenya with special Kenyatta to Kericho County," Unpublished P.G.D.E Project." Kenyatta University

Mogeni, J.M.(2005).''Factors Influencing Utilization of Resources in Teaching

   Kiswahili in Selected Public Secondary Schools in Transmara District,

   Kenya.'' Kenyatta University- Unpublished M.ed. Thesis

Msei, I.(1985). A survey of Resources for Teaching and Learning Kiswahili in

   some selected Primary schools of Central Divisioon, Iveti South, Machakos

   District, 'University of Nairobi-Unpublished M.Ed. Project

Muchiri K. D.(1997). Investigating the availability and use o0f teaching and

   learning resources in Mbugithi Secondary School. Unpublished PGDE Thesis.

   Kenyatta University

Mugenda, O.M & Mugenda, A.G. (1999). Research Methods: Quantitative and

   Qualitative approaches. Africa centre for technology studies (ACTS) press

   Nairobi Kenya

Mukwa, C.W. (1979).Towards a systematic Approach to Educational Media use

   in the Secondary School of the Republic of Kenya. A field Survey of Tools

   and Technologies Education for learning" Unpublished PhD Thesis Michigan

   State University

Munyilu, F.M.(1985). ''A survey of instructional Resources for Mathematics in

   Selected Primary schools of Kathonzweni Educational Zone, Machakos

   District, Kenya 'Kenyatta University-Unpublished M.Ed. project

Muriithi, P. (2005).A framework for Integrating I.C.T in the Teaching and

   Learning Process in Secondary Schools: School of Computing and

   Informatics, University of Nairobi, Kenya

Murray,L. & Lawrence,B.(2000).Practitioner-Based Enquiry: Principles for

Postgraduate Research. Falmer Press, London

Mwiria, K. & Wamahiu, S.P. (1995). Issues in Educational Research in Africa. East African Educational Publishing Limited, Nairobi

Newby, T. J., Stepich, D. A., Lehman, J. D. & Russell, J.D.(2006).Educational Technology and Learning for Teaching and Learning. Pearson Merrill Prentice Hall, New Jersey

Nkpa, M. (1997). Educational Research for Modern Schools; fourth edition: fourth dimension publishing company. Enugu-Nigeria

Nwana,O.C.(1981).Introduction to Educational Research. Heinemann Educational Books Ltd, Ibadan

Ogechi, C.O. (1992). Availability, utilization and management of geography teaching- learning resources in Kenya secondary schools: A case of Nyamira county. Unpublished M.Ed. Thesis. Kenyatta University

Omwenga, N.M (2001). Use of Media resources during teaching practice (A study of Kamagambo and St. Paul). Kenyatta University, Unpublished, Med Thesis

Onadivan, G.T. (1981): A Study of School Library Resources in selected Secondary Schools in Nigeria unpublished Ph.D. thesis Boston. University Education

Orina, W.M. (2001). Availability, utilization and management of geography teaching- learning resources in Kenya secondary schools. A case of Nyamira County" Unpublished M.Ed. thesis Kenyatta University

Orodho, J.A (2004). Techniques of Writing Research Proposal and Reports in Education and Social sciences fifth edition Mosola publishers, Nairobi

_____ (2008 edition). Techniques of Writing Research Proposal and Reports
in Education and social sciences fifth edition Mosola publishers, Nairobi

Oure,A.L.(1985).''A survey of Learning Resources in selected schools of
Amagoro Division, Busia District, Kenya.'' Unpublished M.Ed. project,
Kenyatta University

Patel, M. M. (1986). Instructional Materials for Educational Communication and
Technology First Edition. Kenyatta University, Nairobi

Patton, M.Q. (1990). Qualitative evaluation and research methods safe
publications, Newbury Park, California

Reiser, R.A.& Dempsey,J.V.(2002).Trends and Issues in Instructional Design and
Technology.Upper River,Englewood

Roblyer,M.D.(2003).Integrating Educational Technology into Teaching. Upper
Saddle River, NJ Merril prentice Hall, New York

Romiszonski, A. J. (1974). The Selection and use of Instructional Media. Kogan
Ltd. London   Heinich, R.; Molenda, M. &. Russel, J.D. (1985).Instructional
Media and the New Technologies of instruction. Third Edition, Macmillan
Publishing Company, New York

Saettler, P. (1990).The Evolution of American Educational into
Technology. Englewood, co: Libraries Unlimitted, New York

Scholl, G.T.(ed) (1986). Foundation of Education for the Blind and Visually
Handicapped Children and Youth: Theory and Practice New York.
American foundation for the Blind inc. A.W.

Shitahi, E. (1992). 'An investigation into the use of the component in training In-

Service Primary Teachers.' Kenyatta University-Unpublished M.Ed. Research
Proposal

Shulman, L.S. (1986).Those who understand: Educational Researcher, 15(2), 4-14

Shanguya, M.N.(1995)."Factors Relevant to Teacher Training Improvement. A
Case study of Instructional Technology in the curriculum of Teacher
Education Programme of Kenyatta University."Unpublished Thesis

Sproul , N. (1995). Handbook of research methods. A guide for practitioners and
students in Social Sciences, second edition. Meuthen Scare Scrow, London

Stabler,E.(1969). Eduucation Since Uhuru: The schools Kenya. Wesley
University Press, Middletown. Connectivity.

Travers, R. N.W. (1973). Second Handbook of Research on Teaching. Rand Mc
Nally Company Chicago

UNESCO, (2002). Information and Communication Technologies in Teacher
Education: A planning guide. Division of higher Education,
France(Paris):UNESCO

Unwin, D. & Mclease, R .(1978). The Encyclopedia of Educational Media
Communication and technology. The Macmillan press

Vygotsky, L.S. (1978). Mind in Society. Harvard University press, Cambridge,
Massachusetts U.S.A

Waema, J.M. (2005). In ETA, F.E and Elder, L. (ed). A Brief History of the DVI
of ICT policy in Kenya. At crossroads; ICT policy making in East Africa. East
Africa Educational publishers Ltd. Nairobi, Kenya

Wagner, R. (1961). Design in Education, the news letter volume xxvii, November

1 (college of education, the Ohio State University, coulombs, Ohio)

Walton, J. & Ruck, J.(1975).Resources and Resource Centre. London Ward Lock

Educational, London

Wellington, J. (2000).Educational Research: Contemporary Issues and Practical

Approaches. London: Continuum

Wiman R.V (1969) Educational Media; theory into practice, Merril, Columbus,

Ohio. Wirris, P. & Lawler, M.(2007). International Journal of education and

development. Volume 1. Investigating ICTs in educational Institutions in

Developing Countries.

Internet references

Duffy, J. Johassen D, and Lowyck, J. (1993). Designing constructivist learning

environments, springs- w.w.w.zu.ac.ae/the

http://groups.yahoo.com/LTHE

International Journal of Education and development using Information and Communication

Technology (IJEDICT) 2007, Vol. 3, pp 2-4.Article by Mary Daniels Brown. Archived

Information

Moore, A.H; Moore, J.F. Bofern, P; H.R (2003). Information Technology

Review, Zayed University Dubai, United Emirates. www.zu.ac.ae/the

Muriithi, P. (2005). A Framework for Integrating ICT in the Teaching and

   Learning process In Secondary Schools: school of computing and informatics,

   University of Nairobi eomwenga@uonbi.ac.ke

Newhouse, (2005).The impact of ICT on Learning and Teaching. A Literature

   Review, Western Australia Department of Education. Archived Information

Omwenga, I.E. (2008).Pedagogic Issues and E-Learning Cases: Integrating ICTS

   into Teaching- Learning process. School of computing and Informatics.

   University of Nairobi**,** eomwenga@uonbi**.ac.**k

UNESCO, (2005).Toward the Knowledge Society: UNESCO World

   Report: Paris: UNESCO. Available online, www.unesco.org/en/worldreport

APPENDIX A

TEACHERS' QUESTIONNAIRE

Welcome and thank you for sparing time to fill this questionnaire. I am undertaking a Masters Degree in Education at Kenyatta University. The purpose of this questionnaire is to find out challengess facing teachers in the use of instructional technology (Use of Resources). Please complete each section as instructed. All information provided will be highly confidential.

II SECTION A: Teachers Biographical Data

Please tick your chosen response (   ) where appropriate.

1. Sex: Male [   ]   Female   [   ]

2. Age: a) 20 – 30 yesars[   ]   b) 31 – 40 years[   ]   c) 41 - 50 years[   ]   d)

   over 50 years[   ]

3. What is your highest academic Qualifications?

   [Diploma [ ] Bachelors' Degree [ ] Masters [ ] PhD [ ]

   Others_____

4. Which subject do you teach? (i)_____

5. For how long have you taught that subjects?----yrs.

i.	Less than 12 months	[ ]
ii.	1-5 years	[ ]
iii.	6-10 years	[ ]
iv.	11-15 years	[ ]
v.	16-20 years	[ ]
vi.	21 and above years	[ ]

SECTION B: – Availability and use of instructional Technology.

6. Which of the following categories of instructional technologies are available in your school?

   i) Printed: Textbooks [ ], Journals [ ], Magazines [ ] School Pamphlets [ ],

   Wall Maps [ ]

   ii) Projected: Computers, [ ] Power point [ ], Slides [ ], Videos [ ], OHP[ ]

   iii) Non-projected: Charts [ ], Globe [ ], Models [ ], Cartoons [ ]

   iv) Any (Specify) _____

7. How often do you use the following instructional technologies to teach your subject (s)?

Resources	Every time	Once a week	Once a month	Once a year	Never
Printed					
Projected					
Non-projected					

8 a) Are the instructional technologies you use adequate in teaching your subject?

   Yes   [ ]   No   [ ]

   b) Give reasons for your answer in 8 a) above

i)_____

ii) _____

iii) _____

iv) _____

v) _____

9. Apart from textbooks which of the following Instructional technologies do you

use for teaching and learning purposes?

		No	Yes
i. Radio		[ ]	[ ]
ii.Television		[ ]	[ ]
iii. Video Recorders		[ ]	[ ]
iv. Computer		[ ]	[ ]

Other (specify)_____

10 a). Have you been trained on the use of instructional technologies?

Yes   [ ]   No   [ ]

b) Give reasons for your answer to 10 a) above

i) _____

ii) _____

iii) _____

iv) _____

v) _____

SECTION C

Challenges faced in the use of instructional technology.

Indicate by using the following Keys: Strongly Agree (SA), Agree (A) Undecided (UD),
Disagree (D) and Strongly Disagree (SD). Tick as appropriate.

STATEMENT	SA	A	UD	D	SD
11. There are inadequate text and reference books					
12. There is lack enough time for improvising Resources					
13. In my opinion students lack interest when					

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instructional technology are used.					
14. There is unreliable electricity supply					
15. There is lack of knowledge in the use of some resources					
16. There are insufficient computers					
17. There is no internet connection in the school.					
18. There is lack of technical assistance					
19. There is over-enrolment of students in our School					
20. There is lack of support from the school authorities in purchasing instructional technology					
21. There is rapid technological changes in our School					

22.). In your opinion, what are some of the challenges facing you as a teacher in the the use of instructional technology?

i) _____

ii) _____

iii) _____

iv). _____

v)._____

23.). Suggest ways in which the above challenges can be overcome.

i)_____

ii)_____

iii)_____

iv)_____

v) _____

Thank you.

APPENDIX B

Indicate Class: _____

STUDENTS' QUESTIONNAIRE

The following questionnaire seeks to obtain information on the extent to which instructional technology are used in teaching and learning process. Kindly tick [　] your response where appropriate. Information provided will be strictly confidential. You may not sign in your name.

SECTION A: **Biographic data.**

1. Sex:　　Male　[　]　　　Female　　[　]

2.　Age a) 14-18 years [　] b) 19-23 years [　] c) 24 – 28 years [　]　 d) Don't Know

　[　]

SECTION B:　**Availability and use of instructional technology.**

3. a) We are issued with all the textbooks for the subjects we do?

　　Yes　[　]　　　　　　　No　[　]

b)Give reasons for your answer in 3a) above

　　　　　　　(i)　_____

　　　　　　　(ii)_____

4.　How do you acquire the text books? Tick all choices that apply

      i.   Parents buy   [ ]

      ii. Given by the school   [ ]

      iii. Donations from well wishers [ ]

      iv. From Siblings   [ ]

      v. Any other (Specify) _____

5. Are the textbooks adequate/ enough for the subjects you do?

     (i) Yes [ ] (ii) No [ ]

a). If yes, how adequate

     i)   _____

     ii)   _____

     iii)   _____

b). If no, why do you think so?

     i) _____

     ii) _____

     iii)_____

6. Apart from textbooks, which other instructional technology do you use for Learning Process?

		Yes	No
iv)	Maps and diagrams	[ ]	[ ]
v)	Globe	[ ]	[ ]
vi)	Charts	[ ]	[ ]
vii)	Magazines	[ ]	[ ]
viii)	Journals	[ ]	[ ]
ix)	Radio Lessons	[ ]	[ ]
x)	Television	[ ]	[ ]
xi)	Video Recordings	[ ]	[ ]
xii)	Computer	[ ]	[ ]

     Any Other (Specify) _____

7. a) Are you by the school to be computer literate?

     Yes [ ]   No [ ]

b. If your answer is yes in (7a) above, state by ticking appropriate areas where you use your computer skills to enhance learning.

    i. Browsing the internet   [ ]

    ii Exchanging ideas through e-mail   [ ]

    iii. Typing assignments   [ ]

    Any other (specify)_____

c) If your answer in (7a) above is No, State by ticking the appropriate reason why you don't use

	Yes	No
i. Limited time	[ ]	[ ]
ii. Computers not enough	[ ]	[ ]
iii. School Administration doesn't allow	[ ]	[ ]
iv. No internet connection in the school	[ ]	[ ]

    Any other (Specify i)   _____

                   ii)   _____

                   iii)   _____

8.   Are students sometimes asked by teachers to assist in preparing some instructional technology?   Yes [ ]   No [ ]

b). If the answer is yes, in (8a) above, indicate by ticking ( ) where appropriate the type of Instructional technology they help in preparation.

    i.   Charts   [ ]

    ii.   Maps   [ ]

    iii.   Models   [ ]

    iv.   Diorama   [ ]

    v.   Video show   [ ]

    vi.   Power point presentation   [ ]

    Any other (Specify)_____

c) If your answer is no in (8a) give reasons why

i). _____

ii) _____

iii) _____

iv) _____

v) _____

SECTION C

Respond to the following statements to the best of your knowledge by ticking in the appropriate box using the following keys: Strongly Agree (SD), Agree (A),Undecided (UD),Disagree (D) and Strongly Disagree (SD).

STATEMENT	SA	A	UD	D	SD
9). There are inadequate textbooks for the subjects taught					
10). There is lack of variety for textbooks in the school library					
11). Some students are unwilling to use textbooks for fear of loosing them					
12). I enjoy a lesson where a teacher uses a computer/point in teaching.					
13). I very much understand the content taught with the use of charts and maps aids.					
14).. I enjoy listening to radio / television lessons					
15). Television/videos are exciting and interesting to acquire and use.					
16). I like power point than books.					
17). I am good at using a computer to type my work					
18). I like browsing the internet to learn and get more information					
19). I know how to make computer programs and how to use Power Point					

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20). There is not enough time to use the computer					
21). There is unreliable power supply in the school					
22). We do not have enough time for using the resources					
23). We are not allowed to access school computers at our free time.					
24). Teachers are unwilling to use some resources, e.g. computers, charts, maps, Journals and PowerPoint.					
25). The school lacks technicians to assist with electronics resources.					
26). The Lab Technicians are incompetent with the modern technology.					

27). In your opinion, what are some of the challenges facing you as a student when teachers use instructional technology to teach?

i). _____

ii). _____

iii). _____

iv). _____

v). _____

28) .Suggest possible ways of overcoming the challenges you are facing.

i). _____

ii). _____

iii). _____

iv). _____

v). _____

Thank you

APPENDIX C

HEAD OF DEPARTMENTS' QUESTIONNAIRE

Introduction

Welcome and thank you for sparing time to fill this questionnaire. I am a master student at Kenyatta University. The purpose of this questionnaire is to find out the challenges faced by teachers and students in your department in the use of instructional technology (resources) in teaching and learning process. The questionnaire is divided into three sections. Please complete each section as instructed. All information provided will be highly confidential.

1. **SECTION A Biographical data**

a) Sex: Male [ ]   Female [ ]

b) Age: 20-30 years [ ] 31 – 40 years [ ] 41 – 50 years [ ] over 50 years [ ]

c) What is your highest academic qualification?

   Diploma [ ] Degree [ ] Masters [ ] Phd [ ]

   other_____

   d) Which two subjects do you teach (i) _____ ii)_____

   e) For how long have you been a Head of Department?

      i.   1 - 2 years   [ ]

      ii.   3 - 5 years   [ ]

      iii. 6 - 10 years   [ ]

      iv.   11 – 15 years   [ ]

      v.   16 – 20 years   [ ]

      vi.   2 years and above   [ ]

   f) Who appointed you as the Head of Department?

      TSC [ ] Principal [ ] Other specify _____

   g) Did you undergo an interview before the appointment

      Yes [ ]   No [ ]

   h) Have you undergone any training / in-service course for heads of department?

      Yes [ ]   No [ ]

2. **SECTION B Availability and use of instructional Technology**.

   (i) Which of the following instructional technologies exist in your department? Please

Tick all that apply.

a) Text books   [   ]

b) Television   [   ]

c) Radios   [   ]

d) Video recorder   [   ]

e) Computer   [   ]

f) LCD   [   ]

g) Other (Specific)_____

ii)   Do the teachers in your department use any of the above instructional technologies in teaching   learning   process?

     Yes   [   ]   No   [   ]

(iii)   Others (specify)

     If no to (ii) above why? Reason_____

3a.   In your opinion, how often do the teachers use these resources / equipment

     i) Very regularly [   ]. ii) Regularly [   ] iii) Sparingly [   ] iv) Rarely [   ]

     iv) Not at all [   ]

3b. what are the reasons for your response on 3a) above:-

         (i)   _____

         (ii)   _____

         (iii)   _____

         (iv)   _____

         (v)   _____

4) How are the above instructional Technologies in Q2 (i) acquired?

                              Yes   No

a) Teachers buy   [   ]   [   ] others (specify) -----------

b) Teachers improvise   [   ]   [   ] others,

     (specify)_____

c) Parents buy   [   ]   [   ] others,

   (specify)_____

d) Students Prepare   [   ]   [   ] others,

   (specify)_____

e) Donations from well wishers   [   ]   [   ] others,

   (specify)_____

5. Which categories of instructional technology are most commonly acquired

   used by teachers in your department?

   (i) Printed   [   ]

   (ii) Non Printed Materials [   ]

   Specify_____

   (i)   Other (Specify)_____

C. **Challenges faced by teachers when using instructional technology**

   (Resources).

   Indicate your answer by using the following key: Strongly Agree (SA), Agree

   (A),

   Undecided (UD), Disagree (D) strongly Disagree (SD).

STATEMENT	SA	A	UD	D	SD
1). There are sufficient textbooks for students					
2). There are adequate reference texts books					
3). There is adequate time for resource improvisation					
4). Teachers lack interest in the use of some					

resources.					
5). There is non-existence of some resources					
6). There is luck of support from the administration on the use Of resources / equipment.					
7). There is lack of knowledge in the use of all resources.					
8). There is technical assistance in the use of some resources.					
9). There is are over enrolment in the classrooms					
10). There is unreliable power supply to enable use of resources.					
11). There is rapid technological changes.					
12). There are insufficient number of computers					
14). There is internet connection in the school.					

15. In your opinion, what the challenges facing teachers are in the use of instructional technology_____

16. Suggest the possible ways of overcoming the challenges you are facing._____

Thank you

APPENDIX D

PRINCIPALS INTERVIEW SCHEDULE

The purpose of this interview is to find out challenges teachers and students are facing in the suse of instructional Technology (Resources/equipments). All information provided will be highly confidential.

1. Sex: Male   [   ]   Female   [   ]

2. Age: a)   19 - 23 years s[   ] b) 24 - 28 years [ ] c) 29 - 33 years[ ] d) Over 33 years[ ]

3. What are the administrative challenges you are experiencing in your school as regards the use of instructional technologies?

 i. _____

 i._____

iii._____

iv._____

v._____

4a). Does your school have enough instructional technologies? And If yes, which kind?

 _____

b. If No, which ones do you think you are missing for your school?

_____

5). Who provides these instructional technology?

i. _____

ii._____

iii_____

iv._____

v. _____

6. How well is the school equipped with instructional technology for use in teaching and learning? _____

7. To what extent are your teachers trained to use some of the instructional technologies?

_____

8. What are your views on the use of instructional technology for classroom

teaching and learning of

students?_____

9. Given the current state of the use of instructional technology in schools, what are some of the challenges hindering its widespread use?

i._____

ii._____

iii._____

iv. _____

v. _____

b)   How have you tried to overcome some of these challenges affecting your school?

_____

10a). How do your teachers improvise instructional technologies for teaching?

b).In which subjects do they usually improvise

usee?_____

c). How do the teachers involve students when they are improvising the use of instructional technology? i._____

ii._____iii_____

_____

iv._____

v._____

11). In your opinion what can you comment on challenges facing a) teachers, b) students in thes use   of   instructional   technology   in   teaching   and   learning process?S_____

12). How can school teachers and students overcome the current challenges facing the use of technology in schools?

i._____

ii._____iii_____

_____

iv._____

v._____

Thank you

APPENDIX E

OBSERVATION   SCHEDULE

	Instructional Technologies	Adequate	Inadequate	Comments
A.	**PRINTED RESOURCES**			
	1. Pure Sciences			
	2. Social Sciences			
	3. Applied Sciences			
B.	**AUDIO-VISUAL RESOURCES**			
	1. Overhead Projector			
	2. L.C.D			

	3. Videos			
	4. Television			
	5. Filmstrips			
	6. Slides			
	7. Computer			
C.	**OTHERS**			s
	1. Chalkboard			
	2. Wall maps			
	3. Charts			
	4. Globes			
	5. Models			
	6. Lab equipment			
	7. White boards			

APPENDIX F

LETTER OF INTRODUCTION

ALICE OMARIBA

KENYATTA UNIVERSITY

DEPARTMENT OF EDUCATIONAL COMMUNICATION & TECHNOLOGY

P.O. BOX 43844 - NAIROBI

THRO'

THE COUNTY EDUCATION OFFICER

KISII COUNTY

P.O. BOX 590 - KISII.

Dear Sir/Madam,**:**

THE USE OF INSTRUCTIONAL TECHNOLOGIES IN TEACHING & LEARNING PROCESSES IN SECONDARY SCHOOLS IN KISII COUNTY.

I am a postgraduate student of Kenyatta University pursuing a Master of Education degree in Educational Communication & Technology Department [comtech]. I am conducting a study on the above stated topic in Kisii County, Nyanza Province – Kenya.

I hereby kindly request you to fill the questionnaire items as honestly as possible and to the best of your knowledge. The responses shall be absolutely confidential and anonymous given no name shall be required from the respondents.

Thank in you advance

Your sincerely

Alice Omariba