IMPACT OF ICT INTEGRATION IN TEACHING AND LEARNING IN SECONDARY SCHOOLS IN KENYENYA SUB-COUNTY, KISII COUNTY, KENYA.

BY

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DECLARATION

This is my original project and it has never presented for approval to any higher learning institution. I declare.

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This research project has been submitted for examination with my approval as university supervisor.

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DEDICATION

I dedicate this work to my daughter Mevian Nyanchama, in who have found strength to solder on; I also dedicate this study to my dear wife Annah Nyabisi and my loving mother Norah Oichoe.

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This work has been successful due to the assistance and cooperation of so many personalities.

I take this opportunity to thank you God for helping me to this far and guiding me through divine intervention. May His name be glorified forever. Special thanks go to my supervisor Dr. Anne Aseeyfor her support, guidance and important ideas which have made this research report have the value it is worth.

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ABBREVIATIONS AND ACRONYMS

KICD:	Kenya institute of curriculum development.
MOE:	Education ministry
ICT:	Information Communication and Technology
IPR:	Intellectual Property Rights
ADSI:	African Digital School Initiative

ABSTRACT

The introduction the ICT Incorporation in education process has been implemented in some schools in Kenya and particularly in Kenyenya Sub County, Kisii County. The study will investigate effect of ICT incorporation on students learning, particularly looking at the accessibility, availability and user skills in Kenyenya Sub County schools. This study has been prompted due to poor performance in national exams and yet ICT incorporation is in place. The study will use questionnaires to collect data from the respondents. The students were able to do assignments on their own using internet-based programmers' in conducting studies. The researcher advocated for the school administration to improve ICT infrastructure so that the students could access them with easy and more often. This could lead them to develop practical hands on skills that could help them solve basic problems even with themselves. The researcher also recommended that the parents also provide these ICT facilities at their homes such that the learners could continue using them at home too in terms of study and other activities.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The use of technology has been tested and applied in most areas of activities in the entire universe. In education sector, the use of Integration of ICT has significantly improved learning in schools and this has resulted to better results.

There has been great improvement in education, high levels of academic have been felt all over where technology has been applied. Education is easily accessed to majority of the citizens through internet platforms. Due to this, high education standards have been yielded. Teachers and students are able to access curriculum content through online platforms such as online study and online resource centers that enable them share education information.

The use of technology not only has more advantages, it also has come with its disadvantages and challenges that has affected it negatively. Technology has not been fully utilized due to financial constrains in some countries. Countries like Kenya whose economy is at developing stage are unable to fully realize the use of ICT in education sector. Other factors also have contributed to poor utilization of ICT such as electricity supply to schools.

Education sectors is considered to be the major pillar for the country to realize it vision 2030 and a stable economy. ICT incorporation in education refers to use of technology and technological resources in equipping students with skills and knowledge with easiness. Some of the ICT resources include use of electronic machines such as computers, projectors, online based resources to equip learners with skills and

knowledge. For quality and more outcome to be realized, there is need for the governments to invest in building ICT infrastructure and also help in training of teachers. The skilled trained teachers will easily use technology in passing content to the learners.

There is urgent need to equip teachers with technological skills on how they would develop ICT integrated programs and lessons that they will be using in teaching. The government through the ministry of education, science and technology department should seek funds to support the ICT projects in schools. There should be also political goodwill from leaders in promoting and supporting ICT infrastructures in the country. The communities should also be involved in coming up with village technological centers that will enable the learners to acquire these skills with easiness and access to the majority and not relying only with school resources. This will ensure that the learners no only access these resources in schools, but also from homes.

The teachers should be also be informed on the advantages of using technology in schools. They should not be fearing on the use of technology in schools. Most of the teachers are not technologically educated and hence they tend to move away from using technology. Some of them think that technology will simply replace them, something which is not true. There is needy for the government to conduct teacher trainings on Matters of ICT and equip them with the skills. The ICT training should be in training curriculum of teachers.

The teachers should be at the fore front in pushing for use of ICT in schools. This will even make their teaching job more easy, more enjoyable and it will increase interest among the students.

The teachers will have more access to teaching resources that are put in a centralized resource center. They will be able to share with other teachers where there is difficult and get instant feedback. The schools should develop their policies and visions that will guide them in implementing technology in education successfully. The schools should consider employing technicians in schools that should help in managing ICT infrastructures in schools.

Education and teaching using technology need to be revisited for proper incorporation of ICT in education. The misuse of technology in teaching would result to negative influence and this will derail the aims of using ICT in education. Technology in education has been linked to students yielding good results in their academics.

The students interest towards using ICT in education is very high and this has positively impacted them to go for better results as they use ICT in learning. The students developed confidence in using ICT in learning, they are able to share with their fellow students within and out of school compound in conducting their personal studies. They are able to share resources which are centrally located. They are also able to share with teachers and the teachers help in giving instant replies that has helped them greatly. The students are using all available recourses such as online materials, using internet in doing research and this has greatly made them independent. Technology in education has positively impacted learning and studies in schools and this has resulted to better results.

The researches and studies that have been done before shows that technology has influenced learners highly and better results has been recorded. Also the learners have

acquired skills that they are using in the day to day activities in their lives. They are able to apply the gained skills in solving problems in the communities they come from.

The third world counties are facing serious challenges in implementing use of technology in education. Our country has put in place technology education policies that allows incorporation of ICT in educationand if fully commited to ensure that there is successful use of ICT education in schools. (Kenya. Ministry of Education, Science & Technology, issuing body, 2005). They government has disttributed laptops to schools through its laptop projetc to pupils and is being involed in power connections to all schools so that these ICT resources can easily be utilized across the entire nation.

The main aim of this research was to determine the impact of ICT education among the learners and the teachers. This study sought to seek if the availability, accessibility and user skills had any impact in students performance in trheir results. Also teachers compitency in using ICT was checked

The poor perfomance in national exams let to intoduction of using technology education in schools in keny. (Mbugua et al., 2012). This research sought the impact of availability ,accessibility and user skills on ICT resources in education in Kenyenya sub county.

1.2 Statement of the Problem

This research investigated the reason of poor results in public secondary schools in Kenya while technology education was deployed. A school was picked randomly from kenyenya sub county. The students and teachers were issued with questionnaires, which were later collected for analysis to investigate the impact of ICT integration.

1.3 Aim/Purpose

This research was carried out purposely to investigate impact of accessibility, availability and User Skills in technology education incorporation in education sector.

1.4Objectives of the Study

The specific Objectives are:

1) To determine the influence of availability of ICT incorporation resources on students in public secondary schools in Kenya
2) To investigate the effect of User skills on ICT integration resources on students in public secondary schools in Kenya
3) To determine the accessibility of ICT integration resources to students in public secondary schools in Kenya.

1.5Research Questions.

1) How has availability of ICT incorporation resources affected students' performance in public secondary schools in Kenya?
2) How have User skills on ICT incorporation resources affect students' results?
3) How has the accessibility of ICT incorporation resources affected students' results?

1.6Research Hypothesis

The accessibility, availability and User Skills of ICT integration have significant variation on the performance of students.

1.7The Significance of the Study

One of the beneficiaries of the findings of this study is the ministry of education. This study would enable education offers to develop policies that will guide the ICT education.

All secondary schools will greatly benefit from the outcomes of this research. The school administration will be able to develop its policies and improve best practices that will result to high results in their schools.

1.8 Limitations of the Study.

Due to time constrains, the study will focus on 3 factors influencing performance on public secondary schools within Kenyenya Sub County in the presence of ICT integration. The factors are: accessibility, availability and User skills of ICT incorporation resources.

1.9 Delimitations of the Study

This investigation targeted students that use technology education at Kenyenya regional area.

1.10 Assumptions of the Study

The assumptions include that all respondents picked will participate, answer the questions correctly and return the questionnaires in time.

1.11 Definitions of terms

Computer literacy it's the ability to use technology in day to day activities

ICT it's the use of technology in managing and solving problems with easiness.

Integrating ICT Use of technology successfully in human related activities.

MOE Education ministry

1.12 Organization of the Study

The study was grouped in 5 chapters, chapter one contains the study of the background, statement of problem, aim of study, limitations, assumptions and definition of terms. Chapter two will contain review of literature. The third chapter will contain research methodology that will comprise research design, population target, procedure of sampling, tools of data collection, reliability and validity, steps for data collection and analytical of data techniques. Chapter four will have data analysis and interpretation.

CHAPTER TWO: REVIEW OF LITERATURE

2.1 Introduction

The goal of conducting literature review is to identify the challenge that is being investigated, that is, investigating the challenge related to ICT incorporation in learning process. The review is also expected to aid in the identification of the challenges that are facing integrated ICT on the in the field and practice. This review was steered by the research Hypothesis, statement of the problem, and the study objective. This literature assists the research in the scrutinizing following perspectives: the general literature of ICT and education, pedagogy, and ICT incorporation in education and its positive results that will provide feedback.

2.2.1 ICT and Education

The Kenyan education and science ministry its primary responsibility of adjudicating the implementation of ICT-integrated learning in the education sector. All educational centers, teachers, learners and the entire communities must be furnished and stocked with the appropriate ICT facilities, skills and policy frameworks to help the nation succeed in implementing ICT-based learning.

The learning process should be transmuted to embrace the new teaching methods supported by the advanced technologies of the 21st century. The mission of the Ministry of Education is to further the effective ICT application in education with the aim of significantly boosting the processes of accessing, learning and managing the service delivery of educational programs. The primary aim is to effectively incorporate technology education.. It follows that there is an urgent necessity of consolidating the

documents and merging them single policy document for a seamless implementation. The fundamental aim is to incorporate technology in educational studies and administering.

The investigators have a universal perception that application of integrated ICT in education significant is expected to stimulate the mind of the learners to enable them think critically to answer their daily life challenges. They can apply the various competences learned to address the challenging issues related to their lives. Students develops innovative skills, thus able to outlive their challenges relating to technology, including economic challenges. Technology can build human capital which will support in life. Proper development incorporating ICT dramatically is within school's responsible administration.

2.2.3 ICT Integration in Teaching and Learning

The application of technology education has made learning more learners –centered. This has increased student's teacher corporation their instructional techniques. The use of ICT has motivated both the teachers and learners in education more than the lecturing method. This study, therefore, alludes that the technology education can improve standards of student's excellence.

2.2.4 Teaching and Performance

The achievement of national examinations is outstandingly dismal. This performance of national exams is a reflection of the poor quality of students who go through the system. It is necessary that the learning method is reexamined to ascertain that there is an active learning in secondary schools. The Kenyan system of education is more exam-oriented

and students go through the system primarily for the purpose of passing exams. The students are coached on how to answer questions, at the expense of mastering the content. The application of ICT is expected to aid the learners be independent. It will also prepare them for quality studies, including improving their capacity to carry out research and analysis. These learners will ultimately acquire the essential skills solving real-life challenges. The schools which promoted the use of ICT in learning produced learners who scored above average in the national exams. The learners also appeared more confident than those who have not interacted with the technologies.

Inadequate technology tools was discovered to be one of the common problem in using ICT education. There is need for the institutions to recruit technical experts that will help in managing these technological tools. The teachers should also be retrained on the use of technology in teaching. This will make them competent in training students also. This study also implies that there is need for the government to come up with online platforms for all secondary schools' teachers and students to help in the sharing of resources.

2.3 Conceptual Framework

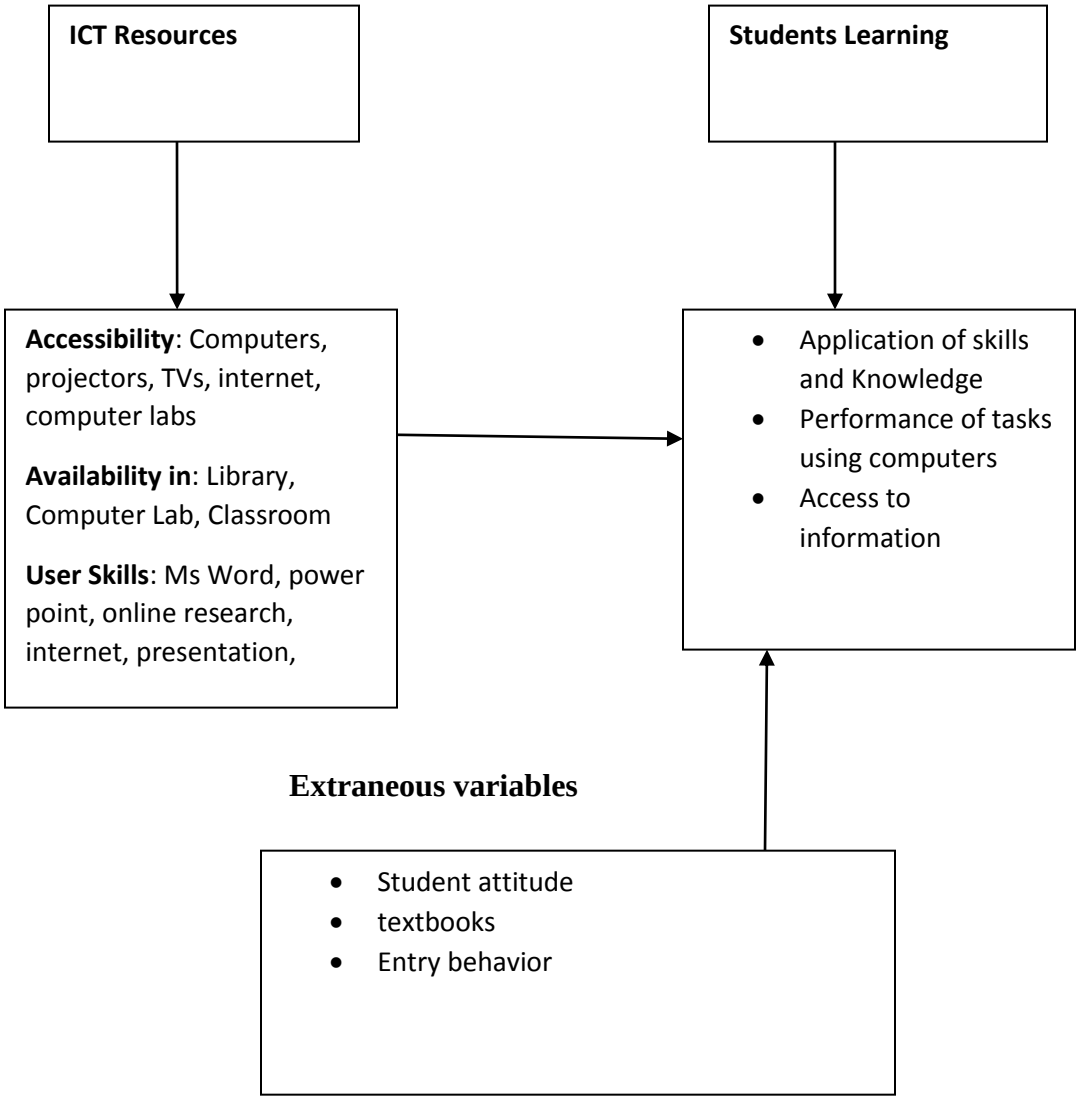

Fig1. Conceptual frame work showing the relation of ICT integration student's studies

This integration technology in education to learners and teachers gives a platform for interactions that provide instant feedback to both students and teachers. The use of multimedia applications in learning such as drills, animations, geometry and graphical applications provides practical experience and exposes them to things which they could not have seen without ICT incorporation. These make them more eager to learn and develop greater interest. Due to these developed interests, students make attempts to do follow ups that in the long run affects their academic performance positively. Then the students will apply the gained skills and knowledge in other aspects.

2.4 Summary of the Literature

The three factors were used to determine influence of ICT incorporation in education. It investigated the advantages of technology education to education fraternity including the government. The review also revealed technology in education made studies enjoyable. The research will seek to identify problems that hinder technology integration. This research will investigate best practices in incorporation of technology in education. This research intends to solve the challenges with a case study of schools in kenyenya and will be used for whole Kenya.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter will deal on descriptive research method. It will include population target, techniques of sampling, tools for data collection, quality of data control, procedurals, sample size and analyzing

3.2. Research Design

This research applied cross-sectional design. This involves studying specific population at specific time. Primary data was collected through questionnaires

3.3 Target Population

This research was conducted to high school learners in to determine impact of technology education incorporation. Kenyenya Sub County has 40 secondary public schools and a random school, High school of 600 students,30 teachers and 4 administrators totaling to 634which has integrated ICT in learning was selected. All the students in the selected school were eligible to participate, boys and girls included.

A desired sample size was calculated from a population of 634, Nassiuma (2000) formula was used since it is more precise than other formulas. The computation was done; `

$$n = \frac{N\,(cv^2)}{Cv^2 + (N-1)\,e^2}$$

Where ***n***= sample size

N = population (634)

Cv= coefficient of variation (take 0.6)

e= tolerance of desired level of confidence (take 0.05) at 95% confidence level

3.4Sample Technique

The study used stratification, and purposeful sampling techniques. The sampling was done for obtaining sample that reflected entire area of study. The teachers, students and school administrators were the possible respondents that represented whole population

3.5 Data Collection Method.

The primary data was obtained by administering of questions, observation and interviewing,

3.5.1 Questionnaires

The Questionnaires were framed in relation to specific areas of interest. Open and closed questions were used. The open-ended questions gave extra information regards to the closed questions that helped in collecting complete data. The questionnaires were used since its fast to get information; it's clear and saves on time.

3.5.2 Interview Schedule

An interview schedule shows items on the questionnaire It will enable the researcher to collect in-depth information and also counter check the information obtained through the questionnaires (Kathuri,1993).

3.5.3 Observation guide

Observation helped the researcher to identify meaningful information which could not get from the respondents.

3.6 Data quality control

Date quality was controlled using validity and reliability

3.7 Procedure for Data collection

The investigator requested permission from Kenyenya sub county education offices through the help of the supervisor from Graduate school of University of Nairobi. The researcher visited the field and created rapport with the respondents. The researcher administered the questions himself to the respondents in 1hour session. While the respondents filled the questions, the researcher collected Data through observation. The teachers and administrators' questionnaires were also administered at the same time. Once the respondents completed filling the questions and they were taken for studies.

3.8 Data Analysis

Analysis of Data was both qualitative and quantitative research tools. The results were analysed using tables. The information brought concrete evidence that was tested against Hypothesis with the use of Pearson correlation techniques.

3.9 Ethical considerations

The researcher sought permission from Kenyenya Sub county education offices before starting collecting data in the field. The researcher familiarised himself to the respondents and briefed the respondents about the aims of the research while on the field. The respondents who had consents were only allowed to participate in the research. The researcher assured confidentiality where necessary

CHAPTER FOUR: PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

4.0 Introduction

The research was conducted to examine impact of ICT incorporation in learning process in Kenyenya Sub County, Kisii County, Kenya.

The following independent variables were used: availability, accessibility and user skills

In this investigation, 207 learners and 20 teachers were sampled thus a total of 227 questionnaires were issued. A total number of 149 (70%) fully completed were returned of which 135 (65%) and 14 (64%) were filled by students and teachers respectively. The response rate was 65 % as shown below in table 4.1

Table 4.1 Questionnaire return rate

Respondent group	Number issued out	Number returned	Percentage
Students	207	135	65%
Teachers	20	14	64%
Total	227	149	65%

The information obtained was analysed using tables, percentages and graphs. Since the response rate was above 50% of the targeted population, it was accepted as it reflected representation of the entire population.

4.1 Demographic characteristics

The demographic characteristic represents distribution of respondent's categories according to age, sex, form level, designation and the duration of service in school.

Table 4.2 Distribution of respondents in relation to Age, sex, form level

	Attributes	Category	Count	Percentage
	Gender	Male	75	55.5%
		Female	60	45.5%
Total			135	100%
	Age	<13 years	60	44.44%
		14-16 yeas	35	25.92%
		17-18 years	40	29.62%
			135	**100%**

Total				
	Form level	Form one	50	37.03%
		Form two	30	22.22%
		Form three	40	29.62%
		Form four	15	11.11%
Total			**135**	**100%**

From the table 4.2, the number of males participated in the study was at 55% compared to that of female at 45%. This translates that the enrolment of males is higher compared to that of females in that area of study.

From table 4.2, the study also refilled that the highest number of students that took part of the study were below age of 13years at 44.44%. The young age students reflected that they were more interested to ICT incorporation study and were freely to give feedback.

In relation to the form level of the students, morestudents in form one at (37.03%) participated in the survey. The reason for this was that computer studies in form one was compulsory, hence they were more interested in the survey.

The researcher investigated the year of service and the subjects the teachers in the respective departments taught in the school. The table 4.3 below shows the respondent's views.

Table 4.3 Respondent's views on duration of service and subject department they are

		Count	Percentage
Designation	Sciences	7	50%
	Technical	3	21.42%
	Languages	4	28.57%
Total		14	100%
Period worked at the institution	Below 2 years	4	28.57%
	2-5 years	8	57.14%
	>5 years	2	14.28%
Total		14	100%

From table 4.3, the number of teachers in sciences stood at 50%. This was due to the fact that the school taught students in three sciences and hence required more teachers. At technical department, the teachers were at 21% translating that this department had least teachers due to technical subjects were optional. Students could select among some subjects and leave others, hence low number of teachers. Language department has 28%

Also from table 4.3, the number of teachers who had served between 2 and 5 years stood at 57%. This showed that the school had more experienced teachers. Teachers below 2years were few at 28%. The old teachers who were experts with more experience stood at 14%.

4.2 Description of respondents on independent variables

This section represents the respondent's feedback on the items related to the objectives of the study. The responded were required to tick or check their reactions on a likert scale.

4.2.1 Respondents opinion on availability of ICT resources

Responses on some tools rate and are indicated on table 4.4 shows their reaction.

Table 4.4

ICT Resources	Status	Frequency	Percentage (%)
Computerslab	Not sure	49	32.88
	Fairly available	60	40.26
	Available	60	40.26
Total		149	100
Projector	Not sure	70	46.97
	Fairly available	49	32.33
	Available	30	20.13
Total	149	100	
Computers /PC in classroom	Not sure	80	53.69
	Fairly available	39	26.17
	Available	30	20.13
Total		149	100
Internet & Email	Not sure	90	60.40
	Fairly available	39	26.17
	Available	20	13.42
Total		149	100

From table 4.4, it was established that ICT resources are available in the computer lab at 40.26 %. The projectors were not well available since the number of respondents who were not sure if they use projector stood at 46.97 %. It was also noted that computers were not fully used in the classroom room. This is because the number of respondents who were not sure if they use computers in classroom was highest with 53.69%. Either the availability of internet and Email also was established not being available. 13.42 % of the respondents acknowledged availability of internet and email use.

4.2.2 Respondents opinion on Adequacy of ICT Resources

One of the major factors that affect ICT integration in teaching and learning process is the availability of ICT resources. And if the availability of resources is not adequate enough for students and teaching, ICT integration in teaching would not be realized. The table 4.5 gives the reaction of adequacy of ICT resources by the respondents.

Table 4.5 Distribution of respondents on adequacy of ICT Resources

ICT Resources	Status	Frequency	Percentage (%)
Computers /lab	Inadequate	40	26.84
	Fairly adequate	79	53.02
	Adequate	30	20.13
Total		149	100
Projector	Inadequate	79	53.02
	Fairly adequate	50	33.55
	Adequate	20	13.42
Total		149	100
Computers /PC in classroom	Inadequate	90	60.40
	Fairly adequate	29	19.46
	Adequate	30	20.13
Total		149	100
Internet & Email	Inadequate	89	59.73
	Fairly adequate	40	26.84
	Adequate	20	13.42
Total		149	100

From table 4.5, inadequacy of computer resources in the computer lab affected the students learning using computers in the lab. The adequacy of ICT resources in the computer lab was 20.13%. Thenumber of projectors also was inadequate since majority of the respondents indicated its level at 53.02 %.

Inadequate of computers in classroom was also a factor that affected ICT integration in teaching process. The response rate was at 60.40 % for inadequacy of computers in classroom. This affected the learning using ICT incorporation and hence poor results.

Also it was established that few students accessed use of internet. This implied that majority of respondents could not access learning materials that are online. At 13.42 % response rate for adequacy of using internet and email didn't allow more respondents to access online materials, hence a factor that affected ICT incorporation.

4.2.3 Respondents opinion on the accessibility of ICT resources.

The respondents were asked on how often they access ICT resources in various locations within the school compound and their response is as shown in the table 4.6 below.

Table 4.6 Distribution of respondent's opinion on Accessibility of ICT Resources

ICT resource Locations	Response	Frequency	Percentage (%)
Library	Never at all	20	13.42
	Not sure	19	12.75
	Sometimes	60	40.26
	Always	50	33.55
		149	100
Computer lab	Never at all	0	0
	Not sure	49	32.88
	Sometimes	20	13.42
	Always	80	53.69
		149	100
Classroom	Never at all	49	32.88
	Not sure	35	23.48
	Sometimes	40	26.84
	Always	25	16.77
		149	100

Table 4.6shows that the school computer lab and library were the most places for the students to access ICT resources for learning and general use notably at 40.26% and 53.69% respectively. The researcher also noted that the accessibility of ICT resources in computer lab was high, indicating that all the time respondents visited the computer lab, they could access ICT resources.

From the table 4.6, 0% of the respondents indicated that never at all missed ICT resources. The school principle affirmed this by commenting that the computer lab was well equipped and all students who used computer lab ICT resources were accommodated.

Either from the table 4.6, 32.88% of respondents indicated that classrooms lacked the ICT resources. This directly affected the learning process since some of the softcopy recourses were not accessible by students in class.

Results from table 4.6 indicated that 26.84% of the respondents sometimes accessed ICT resources in classroom.16.77% of respondents claimed that they always accessed ICT resources in the classroom. Either 23.48 % claimed that they were not sure if they accessed ICT resources in the classroom. Besides that, the researcher observed that the classrooms lacked internet connections.

4.2.4 User skills of ICT resources in the learning process.

The respondents were requested to rate their knowledge and skills on various ICT tools. The table 4.7 below shows their reaction.

Table 4.7 distribution of respondent's skills and knowledge on various ICT tools

ICT Tools	Level of skills	Frequency	Percentage (%)
Word processing	Very poor	5	3.35
	Poor	30	20.13
	Fair	44	29.53
	Good	50	33.55

	Very good	20	13.42
Total		149	100
Projectors	Very poor	10	6.7
	Poor	20	13.42
	Fair	34	22.81
	Good	50	33.55
	Very good	35	23.48
Total		149	100
Internet and email	Very poor	15	10.01
	Poor	40	26.84
	Fair	20	13.42
	Good	60	40.26
	Very good	14	9.39
Total		149	100
Spreadsheet	Very poor	30	20.13
	Poor	25	16.77
	Fair	39	26.17
	Good	40	26.84
	Very good	15	10.06
Total		149	100
Presentation	Very poor	28	18.79
	Poor	2	1.3
	Fair	34	22.81
	Good	40	26.84
	Very good	45	30.20
Total		149	100
Online study	Very poor	24	16.10
	Poor	25	16.77
	Fair	45	30.20
	Good	20	13.42
	Very good	35	23.48
Total		149	100

Results from table 4.7 shows that the majority of respondents were able to use word processing by scoring good of 33.55%. . In the same vein, 13.42 % of the respondents claimed that they were very good in using word processing. While 3.35% of the respondents rated their skills of using word processing as very poor. 20% of the respondents claimed that they had poor skills of using word processing. The researcher

found that the student's capability to use word processing was relatively good especially in presenting the classwork which indicates that ICT incorporation can influence learning process.

Table 4.7, showed that 33.55% of respondents were good to use projectors in learning while 23.48% of respondents were very good in using projectors. While 6.5% of respondents had very poor skills on using projectors. The researcher interacted with students and some students refilled to him that projectors in school were used in rare occasions.

The findings of table 4.7 above tabulated that 40.26 % of the respondents had good skills of using internet and email in doing their research studies. The results show that 10.01 % had very poor skills on using internet and email, a case that could affect their private studies using online materials. The research refilled that the students had good skills to conduct their studies using internet and email that gave them advantage of accessing many materials and hence improved their studies positively.

The results on table 4.7 above shows 10.06 % of the respondents had very good skills in using spreadsheets. The results further show that 26.17 % of the respondents had fair skills on using spreadsheet while the students with very poor skills of using spreadsheets stood at 20.13%. The high number of students who were not able to use spreadsheets indicated that they could not analyse their work well, something that could affect their performance positively. The results also reveals that the students are not well equipped in using spreadsheets. Besides the discussions with students, they refilled they are not often trained on how to use spreadsheets.

The results from table 4.7 shows that 30.20% of the respondents had very good skills in using presentation skills. This was good sign as students were able to organize their work while they are learning. The research indicates that the students are able to use applications such as power point to come up with slides which they later use in presenting their work. The study also shows that 1.3 % of the respondents had poor skills in using presentation in learning process. This means the performance of the students could improve and good results yielded.

The results from table 4.7 show that only 23.48 % of the respondents had very good skills regarding to online studies. About 13.42 % had good skills using online instructions in their studies while the majority of the respondents (30.20%) had fair skills in using online instructions in the learning process. 16.10 % of the respondents rated their skills as very poor and 16.77% rated their skills of using online instruction as poor. The findings shows that the students are not well equipped with online platforms in conducting studies unlike using blackboards and white boards in classroom to share learning materials. While the researcher discussing with students, they refilled that they don't have online network systems where they could access academic resources such as e-learning

4.2.4.1 Factors that affect student's use of ICT tools

Interviewees opinion on factors that affect student's use of ICT tools and the table 4.8 below shows their views.

Table 4.8 Respondents opinion on factors affects student's use of ICT tools

Opinion	Frequency	Percentage (%)
Limited ICT Resources	49	32.88
Inadequate internet connection	30	20.13
Few teachers have experience in using ICT resources	70	46.97

From table 4.8, the responses show that 32.88% of the respondents indicate that they had view limited access to ICT resources. This was evident when students accessed computer lab at different times for them to use the limited ICT resources. Hence their use of ICT resources was greatly affected. Computer student ratio was too high and it was observed that most computers were fault. The head of technical department raised issue of having inadequate computer labs in the school.

From table 4.8, 20.13% of the respondents claimed that there was inadequate internet connection. This implied that some of the students could not be able to use internet in conducting their studies online, thus had poor skills on using internet in studying and looking academic materials online.

About 46.97 % of the respondents claimed that there were inadequate teachers who had experience in using ICT resources in teaching students. This effect students on using ICT resources and hence poor performance because there no enough teachers who used ICT in teaching process

4.2.4.2 How often students perform various tasks using computers/ICT resources

Interviewees gave their opinion on how often students use ICT resources

to perform various tasks and the table 4.9 below tabulates their views.

Table 4.9 Respondents opinion on how often they use ICT resources

Learning activity	Times	Frequency	Percentage (%)
Completing assignments	Never	20	13.42
	Once a month	25	16.77
	Once a week	64	42.95
	Daily	40	26.84
Total		149	100
Looking information	Never	10	6.7
	Once a month	70	46.97
	Once a week	35	23.48
	Daily	34	22.81
Total		149	100
Playing games	Never	5	3.35
	Once a month	24	16.10
	Once a week	40	26.84
	Daily	80	53.69
Total		149	100

From table 4.9 majorities of the respondents (42.95%) use ICT resources in completing their assignments once a week. The reason could be limited access to ICT resources such as computers. While 26.84% of the respondents complete their assignments using ICT resources daily, an encouraging factor towards improving performance in teaching process

From table 4.9 above indicates 46.97% use ICT resources in looking information once a month. This could affect the performance of students since they do not conduct their private studies using the ICT resources. 6.7 % of the respondents claimed that have never used ICT resources for looking information and 22.81% used ICT resources daily looking information. The students should be encouraged to look study materials using ICT resources for them to improve their academic performance.

From table 4.9, it was noted that majority of the students (53.69%) used ICT resources playing games. This trend was worrying and affected academic standards of students negatively. The students in state of using the available resources for academic studies, they started playing games. This affected the performance levels of the students. While 3.35% of respondents claimed that they have never used ICT resources playing games. The students were should encouraged to use the resources meaningfully for them to improve in their academic standards.

CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This research outcomes highlighted in above chapter show how the respondents answered the questions. This chapter involves introduction, discussions, conclusions and recommendations for improving ICT incorporation education in Kenya.

5.1 Discussions

The objectives of the study are discussed below.

5.1.1 Discussion on the effect of availability of ICT integration resources in teaching process.

The research showed various technological tools in school was below the required. About 32.88% were not sure if the ICT resources were available in the computer lab, 53.69 % were not sure if the projectors were available in school and 60.40 % of the respondents were not sure if the internet and Email were available in the school. For better results to be yielded and proper incorporation of ICT in learning process to be achieved, technology tools and resources should be available so that meaningful benefits can be realized. Also, the education using ICT incorporation does not depend on teacher quality since the students can also access learning materials by themselves. Riel (1998) stressed that ICT integration can improve students' performance through learners acquiring information for learning purposes. Jonassen (1996) explains that when ICT incorporationhas been implemented for students to use. For example word processing , presentations and calculator programs doing assignments. The practices have proofed that

indeed they improve mental growth. The study showed using of ICT incorporation has a positive effect on students learning and hence improving their performance.

5.1.2 Discussion on effect of accessibility of ICT incorporation resources in teaching and learning process.

Technology in education integration is mostly affected by accessing of technology tools. resources. This research shows limited ICT resources, scheduled time for attending computer labs and inadequate internet connectivity, the accessibility of these resources is also limited to students.

Students from various forms are supposed to follow the scheduled timetable so that they cannot disadvantage other students from accessing the resources in the designated places. Students are encouraged not to be idle in computer labs and instate give way for their fellow students to use the resources too.

The study shows that students hardly accessed ICT resources in classrooms. It was eminent that classrooms didn't have computers; neither were they connected with internet. Through observation of the researcher and the majority of respondents claimed they could not access the resources in classroom. The research reveals that the computer lab and the library were the most places where they could access the resources

UNESCO (2000) indicates that smooth ICT education incorporation improves greatly with easy access to ICT incorporation tools and resources.

5.1.3 Discussion of user skills effects on ICT integration in teaching and learning process.

According UNESCO (2000), the safe way of bringing laptops to schools is training learners how to use spreadsheets, internet and email and graphic tools. The skills acquired by students are later used in their lives productively. The study has shown that 33.55% of the respondents have good skills on using word processing and 13.42% shows they are very good in using word processing. While 3.35 % and 20.13 % of the respondents have very poor and poor skills on using word processing. This shows that averagely students are able to use word processing.

The study also shows that 33.55% and 23.48 % have skills in using projectors while learning. Either 6.7 % of the respondents that they don't have skills in using projectors while they are studying

The study revealed limited access to ICT facilities remained a major challenge in the process of ICT integration in learning process. The scheduled of students accessing computer labs at different times shows that the resources were not enough for all students and thus the school should work towards increasing student computer ratio. This improvement ration will enable student's access computer resources with ease and thus improving ICT integration that would help produce better results.

5.2 Conclusion

The discussions above led to the conclusions below.

1) Technology facilities in the school are not properly equipped and unevenly located. Technology tools such as computers and projectors are fairly available.

The school accepts there is need to improve its ICT infrastructure for them to realize better results.

2) The access of ICT resources within the school was not well attended. The serious challenge that the school faces is the limited ICT resources compared to the number of students in the school. Though the school has base to support more access to ICT facilities
3) The teachers should also be trained on how to use ICT incorporation in teaching students. This was evident from the study that few teachers had knowledge on how to integrate ICT in teaching.
4) To some extent, the students should encourage to use ICT resources in learning and not using them in other activities such as playing of games.

5.3 Recommendations

The outcomes of the research can help schools implement the use of technology in education and the following recommendations are advised.

1) The schools should support technological activities such as building ICT infrastructures such as computer labs, purchase of computers, projectors and other computer electronic devises for more practise and utilization to enable students get practical skills on hand.
2) The school should consider connecting all places within its compound so that students would easily access the online study materials. This could enable them conduct their studies from any location.
3) The school should invest in training of teachers and learners on ICT education. The training should not be limited to word processing, but on more other

programs to improve and allow smooth incorporation of ICT. Also, the skills acquired from the trainings would of helpful to student's future live after school.

4) The school should come up with a policy that would regulate the use of available ICT resources. Students should be barred from other materials that are not promoting academic.

5.4 Further research areas

ICT incorporation remains the major avenue that should be used to improve the learning process in Kenya. It has been proven from the study that ICT can greatly influence the results positively and thus the researcher recommends further studies to the following areas of interest.

1) The reason for poor performance yet ICT is in use in learning.
2) Teachers and students'attitude towards technology in education.
3) Curriculum training of teachers

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APPENDIX A:QUESTIONNAIRE

QUESTIONNAIRE ON EFFECTS OF ICT INTEGRATION IN TEACHING AND LEARNING PROCESS. A CASE OF KENYENYA SUB COUNTY,KISII COUNTY, KENYA

STUDENT QUESTIONNAIRE

Dear Student,

You have been randomly selected as a respondent in the above titled survey which will be undertaken as part of an educational research in partial fulfillment of Post graduate diploma in education of University of Nairobi. Your cooperation in filling this questionnaire will ensure success of the study. Please feel free to give your views on the items given by answering all the questions and indicate your choice putting a tick in the checkbox or Fill in the gaps by giving information in relation to particular question. The responses will be for academic purposes only and will be treated with utmost confidentiality.

SECTION A

Background information of the respondent

Please provide information about yourself by ticking the appropriate boxes

1. Your Age …….
2. Your
   Male ☐

   Female ☐

3. Form level
   a) Form One ☐
   b) Form Two ☐
   c) Form Three ☐
   d) Form Four ☐

Independent Variable

Availability of ICT resources

4. How do you agree or disagree on the availability of the following ICT resources in your school.

	Not available	Fairly available	Available
Computer lab			
Projector			
Computers /PC in classroom			
Internet & E-mail			
Other (specify)			

5. In your opinion, do you think that these resources are adequately available?

   Please rate adequacy of the following ICT resources in your school.

	Not available	Fairly available	Available
Computer lab			
Projector			
Computers /PC in classroom			
Internet & E-mail			
Other (specify)			

Accessibility to ICT resources

6. At the school, how often do you access ICT resources in the following locations?

	Never at all	Not sure	Sometimes	Always
Library				
Computer lab				
Class rooms				
Other (specify)				

7. In your own opinion, what do you regard as the biggest challenge affecting accessibility of ICT your school?.....

.....

User Skills of ICT resources

8. How do you equate your knowledge and skills to use the following ICT tools?

	Very poor	Poor	Fair	Good	Very good
Word processing					
Projectors					
Internet and E-mail					
Presentation					
Spreadsheet					
Online study					
Other (specify)					

9. What factors may affect use of these ICT tools?.....
.....
.....
.....

Dependent variable: Students learning

10. How do you agree with the following statements about ICT

	Strongly Disagree	Disagree	Don't know	Agree	Strongly agree
Academic performance					
I use computer to complete my assignments					
I learn on my own using computers					
Acquisition of knowledge and skills					
ICT made me develop interest in the learning					
Access of information					
I use the internet to look for information					
I use internet to share with others					

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APPENDIX A

QUESTIONNAIRE ON EFFECTS OF TECHNOLOGY EDUCATION. A CASE OF KENYENYA SUB COUNTY, KISII COUNTY, KENYA.

TEACHER QUESTIONNAIRE

As interviewee, you are chosen through random selection to take part in this study that is part of my academic research in completing my educational studies in post graduate diploma in the University of Nairobi. I kindly request your involvement in answering the following questions and write the answer in the box by putting a mark. also answer the questions in the spaces provided. Your answers will be used in educational field and the details will remain confidential.

SECTION A

Background information of the respondent

Kindly give details of yourself in places given.

Write down the subjects you teach ……

1. The period you have taught this school?

☐ 2years and below s ☐ -5 years ☐ yond 5 years

Availability of ICT resources

3. Give your opinion on agreeing or disagreeing on the availability of the following ICT tools in your school?

	Not available	Fairly available	Available
Computer lab			
Projector			
laptops			
Online			
Other (specify)			

4. How do you think about the resources? are adequately enough for the students?

Kindly give opinion about the following ICT resources in your school.

	Not available	Fairly available	Available

Computer lab			
Projector			
Laptops			
Online internet			
Other (specify)			

Accesaccessibility of ICT resources

5. Which places that contain more ICT resources in the school for students use?

	Never at all	Not sure	Sometimes	Always
Library				
Computer laboratory				
Class rooms				
Other (specify)				

6. State some of the common challenges that affects students from accessing ICT resources in school

……

……

……

……

User skills of ICT resources

7. Kindly give opinion on your student's ability using the following

	Very poor	Poor	Fair	Good	Very good
Word processing					
Projectors					
Internet and E-mail					
Presentation					
Spreadsheet					
Online study					
Other (specify)					

8. What are some problems that your students encounter as they use ICT resources mentioned above? Why may the students encounter problems in using some of

……
……
……

Dependent variable: Students learning

9. React to the following statements below.

	Strongly	Disagree	Don't know	Agree	Strongly

	Disagree				agree
Academic performance					
Computers help students to finish their homework					
Students use ICT to learn on themselves					
Acquisition of knowledge and skills					
Students have developed interest in learning while using ICT.					
Access of information					
Online information has helped learners to search for information.					
The internet has helped students in sharing.					

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APPENDIX C

INTERVIEW GUIDE FOR SCHOOL ADMINISTRATORS

The interviewing guidance involves impact of incorporating technology in education in secondary schools in Kenya.

Particulars	Responses
Sex	
Age	
Designation	
Department	

1. Comment on technology infrastructure in this school
2. Are these ICT infrastructures enough to the students?
3. Mention some trainings you over to your students.
4. State the ICT vision towards implementing technology in teaching.

Last page.