BASELINE SURVEY REPORT FOR TEACHER EDUCATION AND PROFESSIONAL DEVELOPMENT

NEEDS ASSESSMENT FOR ICT INFRASTRUCTURE AND TRAINING FOR PRIMARY TEACHERS TRAINING COLLEGES IN KENYA

REPORT

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PREPARED FOR:

ACADEMY FOR EDUCATIONAL DEVELOPMENT

EXECUTIVE BASELINE SUMMARY

The major challenges facing education systems in the information age include issues of how to prepare for and capitalize on the technological revolution and how to integrate computer technology into the curriculum. Kenya, as a developing country is at the formative stages of ICT development and usage perhaps compared to developed countries like Britain. However this development seems to be uneven depending on various factors at play including differences in resources between individuals, institutions and even communities. The development of ICTs in colleges is also largely unequal with some PTTCs having up to 3 computer labs and over 70 computers and others having less than 20 computers with roughly the same number of students.

This report synthesises the findings from a survey that was commissioned by academy for educational development, an international implementing agency (AED) funded by USAID in support of Kenya education support programme (KESSP)
This survey intends to establish ICT infrastructure, access and capacity in primary teachers training colleges in Kenya.

The report makes recommendations for developing a technology-training program based on the needs assessment. Underlying these issues is the necessity for enough ICT infrastructure and technical support in order to effectively integrate information technology into teacher education. Additional recommendations intended to provide guidance for the successful implementation of this program component are offered.

Key Findings

1. Access to computers for students is poor. PTTCs enrol 600 to as many as 1000 students with 20 – 70 teaching staff. In most cases, the number of functioning computers is around 20. Access to computers for tutors and some members of the college administration is equally poor. Only one PTTC (Mosoriot TTC) has a dedicated computer lab for use by tutors, the rest of the PTTCs have computer lab(s) meant for teaching students computer studies.
2. Many of the PTTCs have already designated secure computer labs
3. Most of the PTTCs do not have a maintenance plan for the ICT equipment in their possession.
4. Many of the PTTCs rely on government grants and donations for ICTs

5. The condition of the computers in the colleges does not measure up to basic standards. Many of the computers were purchased or donated by different organizations and have inadequate primary memory (RAM) Processors and Software. Though PTTCs do not require the latest ICT equipment, they must be of a basic level so as to run key software. Some machines viewed were Pentium I and IIs with low storage space and low primary memory capacity.
6. The Teacher Service Commission (TSC) has posted at least two ICT technicians to each PTTC. Many of these ICT technicians are the ones teaching the ICT curriculum. The problem is that although they have computer knowledge, they are not qualified tutors and have no background in pedagogy. Some of the ICT tutors are seconded from other subject areas, e.g. the science tutor at Bondo PTTC is acting as the ICT instructor, performing these tasks outside of his regular job description.
7. Most of the PTTCs are not networked and do not have Internet connectivity but are willing to be networked.
8. Up to 74% of the college administrators have never used the Internet to do research, locate or download professional resources.
9. Provision and use of other ICT equipment like digital cameras, web cams, and interactive whiteboards does not exit.
10. In house technical support was provided in all colleges by technicians employed by the colleges.
11. The perennial problem of digital divide was evident in different levels of practice and use of technology within departments, one lecturer to another, and from college to college.
12. Most lecturers and administrators are interested to in upgrading their computer skills. A large percentage desire to be trained in basic computer literacy and Microsoft Office packages.
13. Most colleges have ICT improvement plans and are interested to build and enhance their ICT capacities through initiatives like training of tutors in ICTs and acquisition of more ICT equipment especially computers
14. Only about 14% of the lecturers in the PTTCs are well versed in most aspects of ICT usage.
15. All the colleges surveyed are using proprietary software; none is taking advantage of the open source software like Linux or open office which do not require payment of licence fees
16. Up to 74% of college tutors have never attended a course on the use of ICT as a tool of pedagogy/instruction. Among those who have been able to attend

such training, only 8% have put the ideas learnt into practical use. This is explained by the fact that as currently structured the curriculum does not actively encourage the use of ICT for instruction

CHAPTER 1: INTRODUCTION

Focus of the study

There is growing evidence that teacher education and professional development in Africa presents one of the greatest challenges to both governments and teacher training institutions. Some of the challenges relate to: the growing gap between the demand and supply of tutors especially in science and mathematics; the increasing demand for better quality teachers and teacher educators; the need for social and professional regulation in relation to quality assurance; the challenges of cross border education; advances in ICTs and the resultant need for leveraging modern ICTs in the training of teachers; pressure for national competitiveness in a global knowledge-based economy against an existing reservoir of untrained and under trained teachers in many African countries; and, the inability of the traditional residential university model of teacher education and training to adequately meet either current or projected demand for teacher education.

In Sub-Saharan Africa particularly, two problems of teacher supply that threaten the attainment of global and national education targets are noticeable. First is the shortage of teachers occasioned by increasing numbers of pupil enrolments and the negative impact of the HIV/AIDS pandemic on the teaching profession in particular. Second is the fact that even where there are enough teachers many of them are untrained or under-trained, and the quality of training is often itself inadequate. Recognizing the potential and increasing role of ICTs in addressing some of the above challenges, in particular enhancing the quality of and access to quality education, the Ministry of Education has initiated a nation-wide TEPD which focuses on the use of ICTs both in and across the curriculum.

Information and communication technologies (ICT) are widely believed to be important potential levers to introduce and sustain and facilitate curriculum implementation process and reform efforts. Like other training and educational institutes in Kenya, primary teachers colleges in Kenya have taken several initiatives to include ICTs in educational reforms. To this end, PPTC are using ICTs to help the country meet the education related millennium development goals. Primary teachers colleges are exit point of primary schools teachers charged with providing basic education to millions of young Kenyans.

The Kenyan Government has identified the professional development of teachers as a critical part of re-establishing the country's human capital and economy. In 2005 the Ministry of Education published the Kenya Education Sector Support Program document in which teacher education and professional development was identified as key strategic issues.
The provision and use of ICT in education and training has been has been a key priority in primary teachers colleges in the past five years; however, the progress has been slow and uneven. There are considerable differences of e-maturity among the primary teachers colleges.

During the year 2007, the United States Agency for International Development (USAID) entered into a cooperative agreement (No: 623-A-00-07-00031-00) with the Academy for Educational Development (AED) to support the Kenya Ministry of Education (MOE), Teacher Education and Professional Development (TEPD) Program. The main goal of the program is to improve the quality of pre-service teacher education training at all the 20 public and 14 private Primary Teachers Training Colleges (PTTCs). AED is implementing the program with and through MOE and in partnership with international and local NGOs to implement various components of TEPD.
AED commissioned this survey as part of its teacher development programme in Kenya in November 2007. Primary teachers colleges are exit point of teacher trainees who upon graduation are deployed to teach in primary schools in Kenya.
This report contains the findings of a survey of information and communication technology (ICT) provision, capacities and usage in primary teachers colleges in Kenya as at the end of 2007

The aim of the survey was to establish the key aspects of ICT infrastructure, capacity and usage by college administration and lectures. The key deliverables of the survey included:

- Inventory of computer hardware and software, printers, webcams, video cameras, etc. in all 20 colleges
- Inventory the accessibility and use of Internet at each of the colleges
- Assessment of the use of ICT equipment in the colleges, especially by Lecturers. What are their skills? How do they use ICT?

- Identifying Lecturers who actively use ICT in their teaching to be potential mentors
- Identifying source of college funding to purchase needed ICT equipment (Ministry, donors, etc)
- Identifying ICT gaps. (What is needed at each college?)

The information gathered would help in conceptualizing, planning, designing, development and implementation of this program component.

Study Approach/ Methodology

This survey used a mixed approach that involves both qualitative and quantitative techniques of data collection. The key deliverables of the study was;

- To establish an inventory of computer hardware and software, printers, web cams, video cameras and any other ICT equipment.
- An inventory for the accessibility and use of the Internet.
- To assess the use of ICT equipment in the colleges, specifically lectures skills level.
- Identify lectures that actively use ICT in their teaching to be further developed to be mentors.
- Identify the sources of college funding for ICT projects.
- To establish the ICT needs of each primary teachers college.
- The needs assessment report sought to conduct a gap analysis with clear indication of the critical guidelines on the way forward for building the capacity of lectures at PTTCs to be use ICT to help improve their teaching.

Sources of data

This survey obtained data from secondary as well as primary sources. Data was generated from a cross-section head of departments, IT tutors, deputy principals and principals of primary teachers colleges

Sampling

The study was conducted in 20 public primary teachers colleges and 2 private primary teachers colleges. The baseline survey involved all the colleges in order to address specific ICT needs for each college.
Primary teachers colleges are evenly distributed in the seven provinces. To this end, the sampling gives regional overview of ICT infrastructure and capacity in primary teachers colleges in Kenya.

Sample distribution

Table 1: primary teachers colleges sampled

No	Region	College	Head of departments	Lecturers /Tutors	No. Of ICT tutors	Total
1	Central and Eastern	Egoji	7	10	1	18
2		Kamwenja	7	10	1	18
3		St. Marks Kigari	7	10	1	18
4		Murang'a	7	10	1	18
5		Machakos	7	10	1	18
6		Thogoto	7	10	1	18
7		Meru TTC	7	10	1	18
8	North Eastern	Garissa TTC	7	10	1	18
9	Coast	Shanzu TTC	7	10	1	18
10	Nyanza and Western	Asumbi	7	10	1	18
11		Bondo	7	10	1	18
12		Iregi	7	10	1	18
13		Kaimosi	7	10	1	18
14		Migori	7	10	1	18
15		St.Paul Nyabururu	7	10	1	18
16		Kamagambo TTC	7	10	1	18
17	Rift Valley	Mosoriot TTC	7	10	1	18
18		Tambach TTC	7	10	1	18
19		Moi Baringo TTC	7	10	1	18
20		Narok TTC	7	10	1	18
21		Kericho TTC	7	10	1	18

Data collection tools

Structured questionnaires and observation checklist were used as data collection instruments
The tools were jointly developed and validated by CFSK and AED team

Questionnaire details

Different questionnaires were used for each category of respondent
Both closed ended and open- ended items were used
Informal discussion and observation checklist were used to triangulate the data collected from the other sources

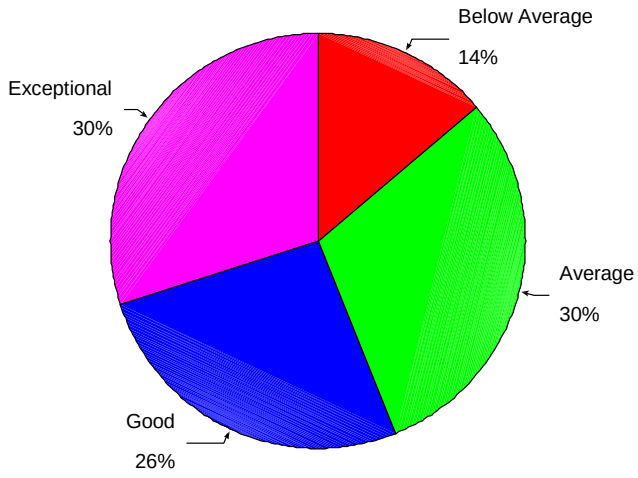
Training was conducted for the research team in the basic concepts and practices of base line survey, an orientation to data collection and the survey tools. Survey instruments were developed and used to generate data from the different respondents. The instruments included

CHAPTER 2: FINDINGS

PART I: Findings from Head of Departments/Principals/Deputy Principals Responses

A.) Basic ICT/Computer skills:

1.1 Ability to start up and shut down a computer system and connect peripherals.



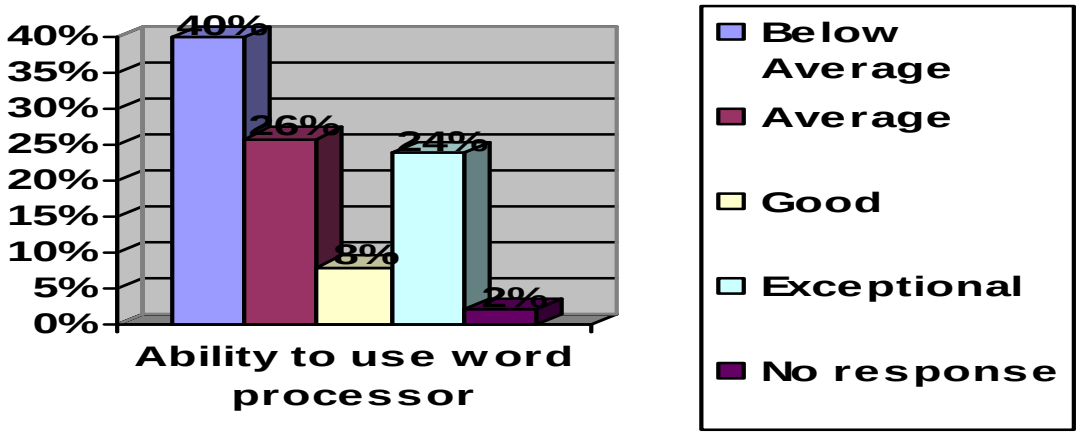
56% of HODs rated their abilities to start up or shut down a computer system as either good or exceptional. A sizable number of the HODs 1**4%** however, lack basic skills of starting the computer. During the informal discussion, it also emerged that majority of the lectures could not connect computer peripherals.

A similar percentage of lecturers/tutors indicated that they are not able to switch a computer on or off **14%**; the 16% who failed to respond also fall in this category as

lack of response to this question implies that the respondent was unfamiliar with the issue at hand.

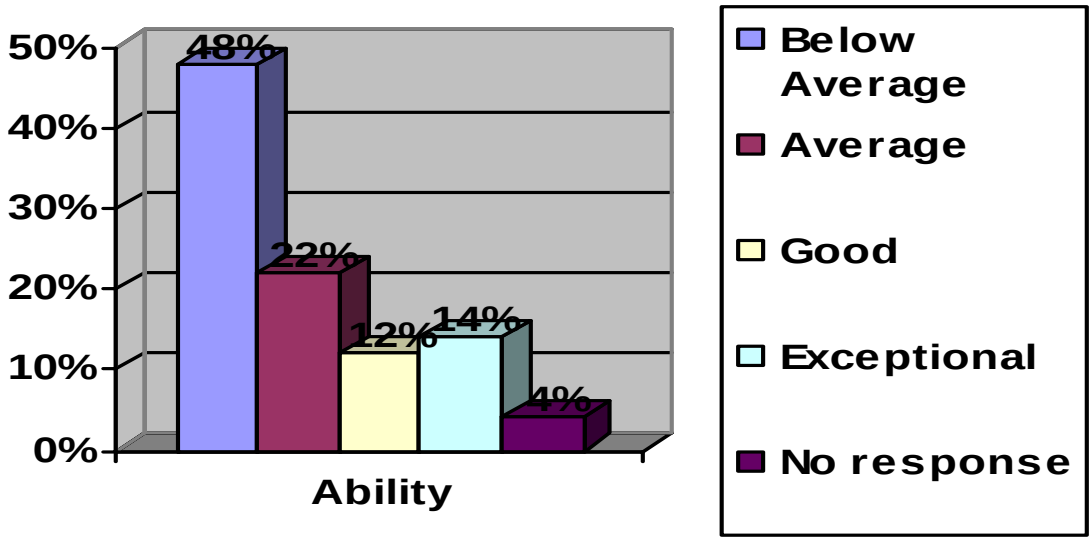
2.1. Ability to use word processor to develop written professional work (memos, worksheets, etc)

0	Ability to use word processor	Percentage of respondents
1	Below Average	40%
2	Average	26%
3	Good	8%
4	Exceptional	24%
5	No response	2%



When asked whether they could use word processor to develop teaching and learning materials, **40%** of the lectures were rated below average. This indicates that lectures experience challenges when preparing professional documents. The study established that lecturers use traditional methods of preparing schemes of work, lesson plans, memos etc to do the work. The use of computers is limited to few lecturers, in this regard; lecturers waste a lot of time in preparation of lessons thus affecting their efficiency.

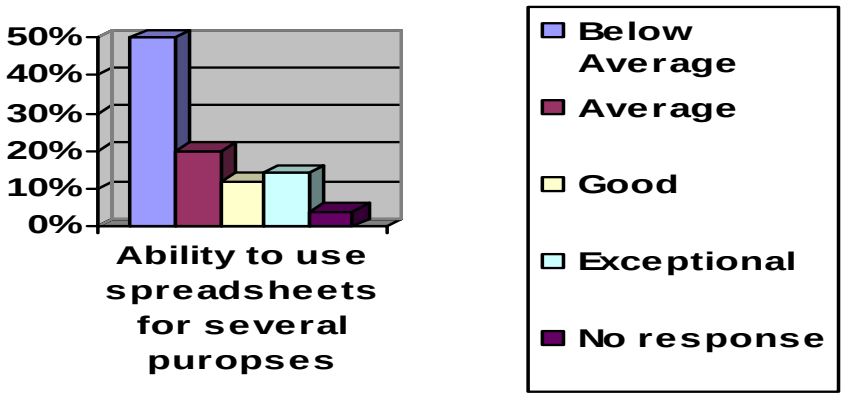
3.1 Ability to use power point to create presentations, add text, graphics, video, audio or hyperlinks to presentations.



When asked if they could use power point to create presentation 48% were rated as below average. This indicates that about half of lectures in primary teachers colleges are not able use power point presentation in teaching which is more interactive. To this end, the study revealed that the traditional teacher centred methodologies are still being used. The study established that even when the lectures had power point presentation skills, the usage of the skills in teaching and learning process was limited.

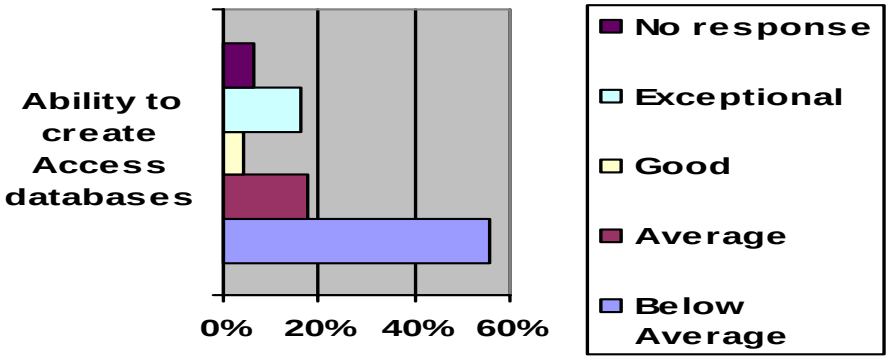
The charts below show that 50% of lectures cannot use a spreadsheet to make basic calculation. Consequently, tutors use manual methods to enter the marks and calculation for students' marks and report forms. In this regard, lecturers experience tremendous challenges in developing student's reports and keeping performance database.

4.1 Ability to use a spreadsheet for several purposes e.g. make calculations, use basic functions e.g. sum or average.



The charts above show that 50% of lectures cannot use a spreadsheet to make basic calculations. Consequently, tutors use manual methods to enter the marks and calculation for students' marks and report forms. In this regard, lecturers experience tremendous challenges in developing student's reports and keeping performance database.

5.1 Ability to create Access databases (able to create forms, tables, generate queries and reports).



The above chart shows that 56% of the lectures in primary teachers colleges are rated below average in ability to send and receive e-mail. This indicates that majority of lecturers do not send mails and can not access information easily thus hampering communication process within and outside colleges

6.1 Ability to send and receive email and send and receive email attachments (files)

0	Ability to send and receive email	Percentage of respondents
1	Below Average	44%
2	Average	22%
3	Good	14%
4	Exceptional	16%
5	No response	4%
6	Total	100%

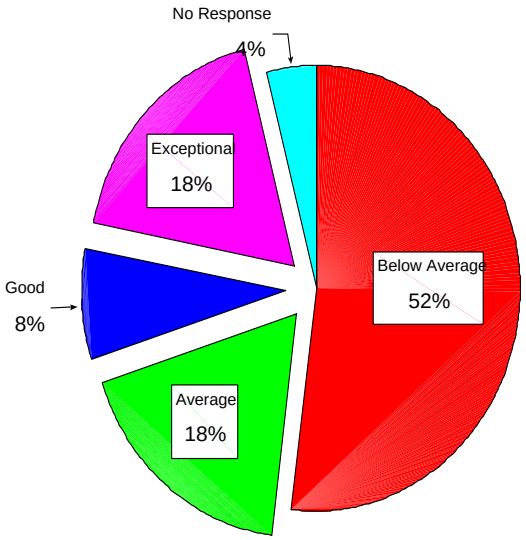
The respondents were asked whether they could send and receive email attachment. The table above shows that 44% of the respondents could not send and receive emails. One respondent said 'I do not need to have ability/ skills to send and receive email because there is no connectivity'. This indicates that although some respondents may have the ability and skills to use email, the challenge of infrastructure and access is the main underlying contradiction.

The percentage of respondents who gave no response did not understand the term email attachment. During the informal discussion one respondent remarked 'the computer language is hard and not for people who are about to retire, explain to me what it means'

7.1. Ability to make use of search engines e.g. Google to find online information resources.

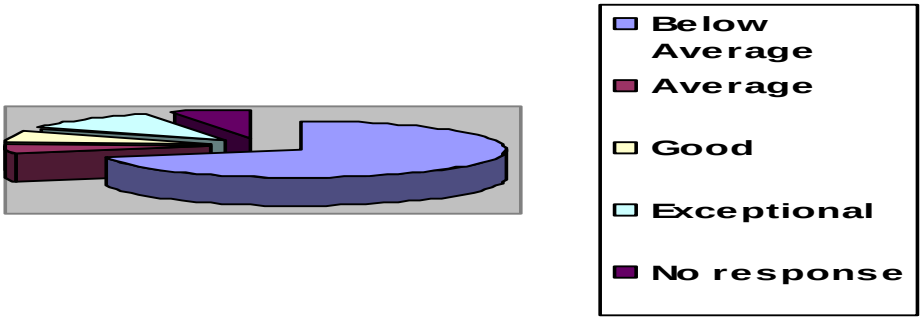
Although one of the primary duties of lectures is to conduct research, the chart below shows that 52% of lecturer's rates below average on abilities to make use of search engines to carry out research. This indicates that a sizable number of the head of

departments and lecturers are not able to generate and access new knowledge. Consequently, lecturers depend on old notes and textbooks for teaching. This undermines not only the quality but also the relevance of content delivered to students. The gaps also affect negatively the pedagogical skills of the lecturers.



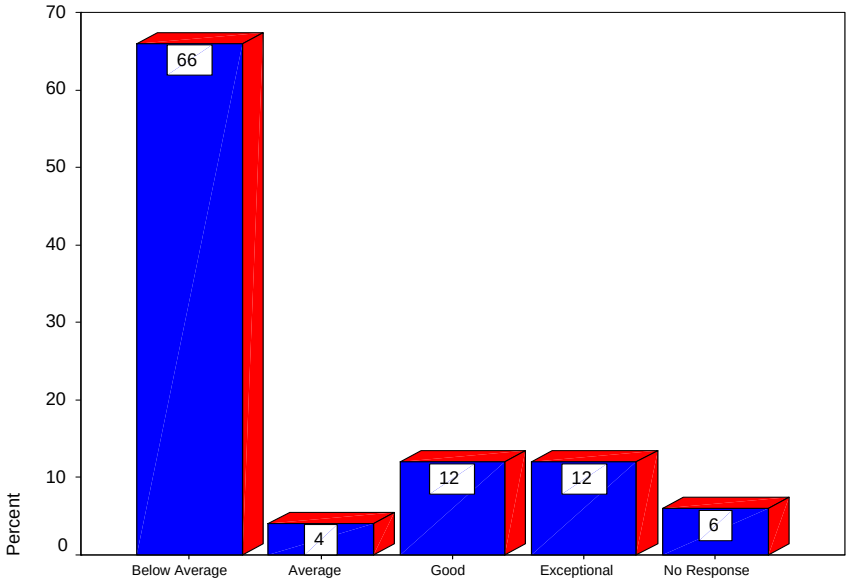
7.2 Ability to use advanced searching features (e.g. Boolean, operators such as ''and'' or ''not'').

0	Ability	Percentage
1	Below Average	70%
2	Average	6%
3	Good	6%
4	Exceptional	12%
5	No response	6%
6	Total	100%



Lecturers were asked whether they could use advanced searching features and digital cameras to generate information, 70% of the lecturers were rated as below average. IT teachers who seemed to have advanced qualifications in information and communication technologies possess the only exception where such skills exist. Majority of the lectures seems to have scanty knowledge of such features or equipments.

7.3 Ability to use devices such as digital cameras and scanners to capture, save, and manipulate digital images.



66% of college administrators and heads of departments rated their ability to use digital cameras and scanners as below average. Only 24% rated themselves as either good or exceptional.

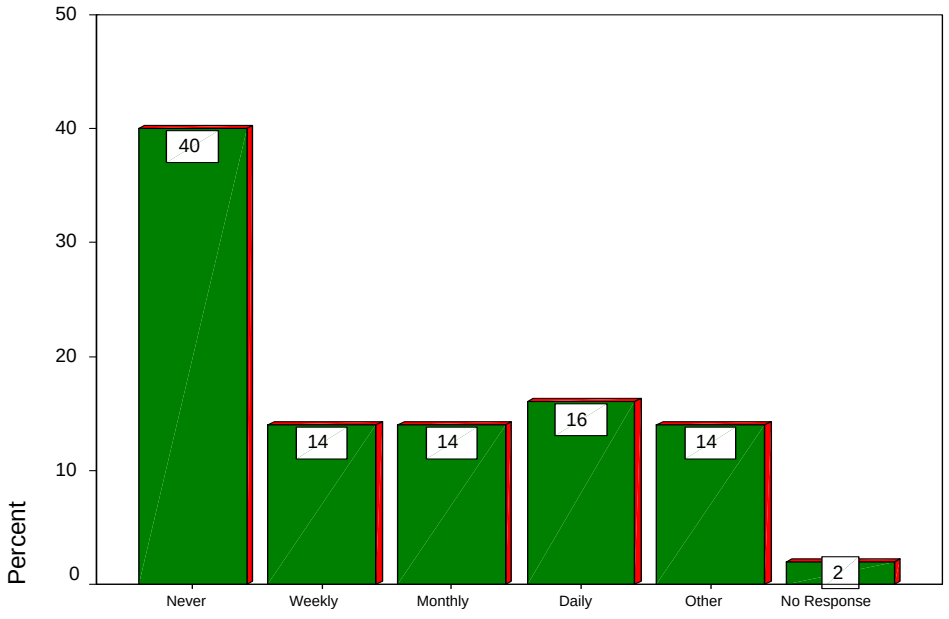
8.0 Ability to operate and connect peripheral devices such as printers and projectors.

0	Ability	Percentage of respondents
1	Below Average	46%
2	Average	22%
3	Good	8%
4	Exceptional	14%
5	No response	10%

Only 22% of heads of departments and administrators are good or exceptional in their ability to operate and connect peripheral devices like printers and projectors. A whooping 46% are rated below average.

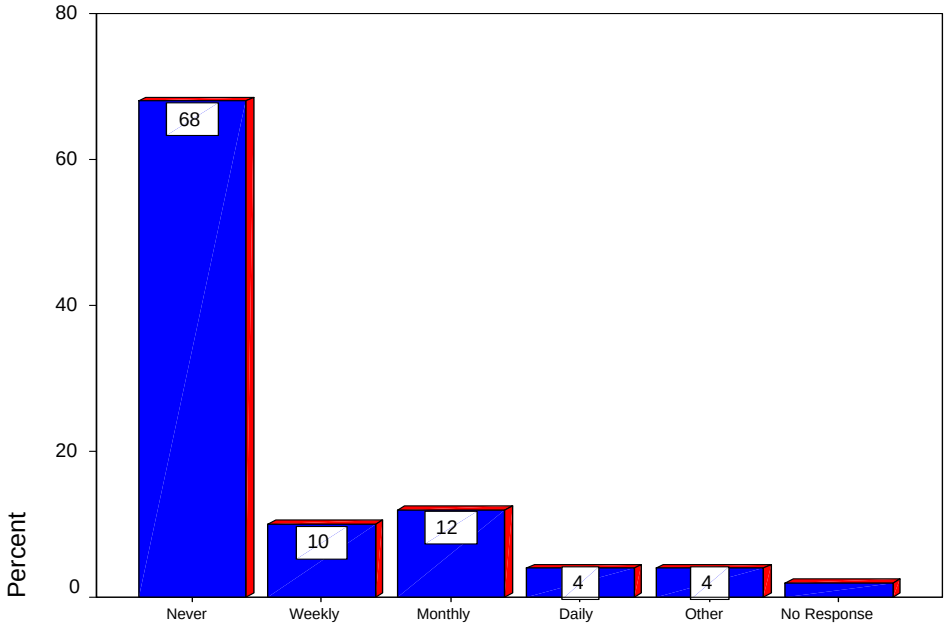
B.) ICT TECHNOLOGY USAGE

2.0. Use word processing to create or plan classroom activities.



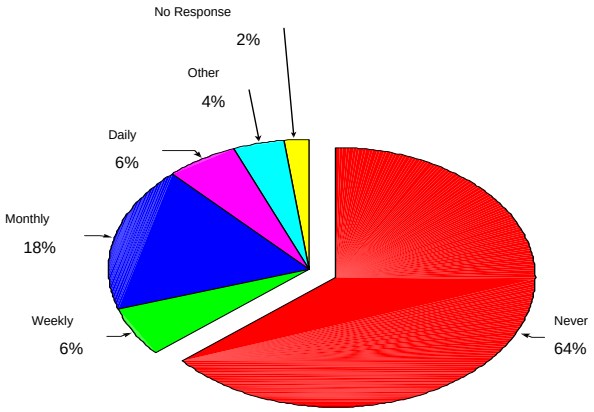
40% of lecturers of HODs and administrators have never used a word processor to create or plan classroom activities. Only 16% use a word processor daily

2.1. Use presentation software to organize or present curriculum information



When the lecturers were asked how frequently they used presentation software to organize or present curriculum information, 40% said they have never used such software, only 4% of HODs use presentation software daily to organize or present curriculum information and 10% use it weekly.

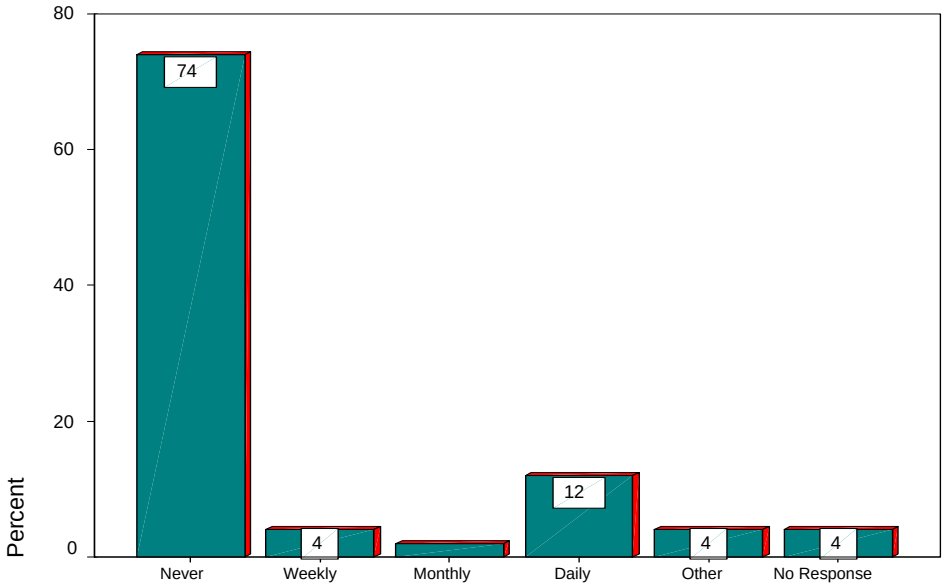
3.1. Use the Internet to locate and or to download professional resources e.g. lesson plans, curriculum ideas etc



68% of HODs said they have never used Internet to locate or download professional resources. This indicates that majority of head of departments and lecturers in primary teachers colleges lack practical basic computer application skills. It also indicates that such facilities as Internet are largely unavailable in the colleges.

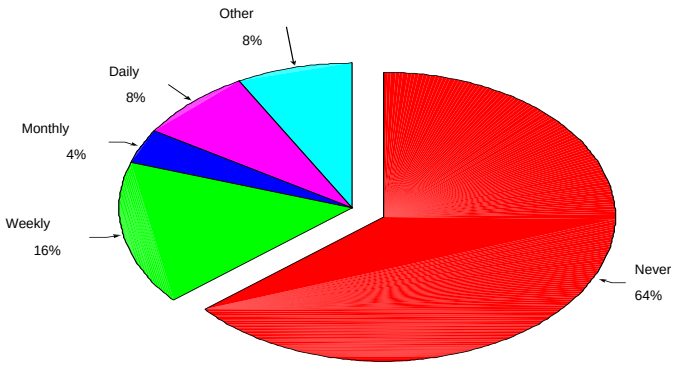
The study established even where computers available and accessible within the college, lecturers are reluctant to use them. A small number14% of lectures, however, use ICTs in implementation of the curriculum. This number is not evenly distributed and seemed to be higher where the college had organized for in-house training for lecturers.

4.1. Usage of technology (E-mail) to communicate with other lecturers and students about college events, activities or assignments



74% of HODs have never used Email to communicate with other lecturers and students about college events, activities or assignments against a total of 18% who either use email weekly or daily.

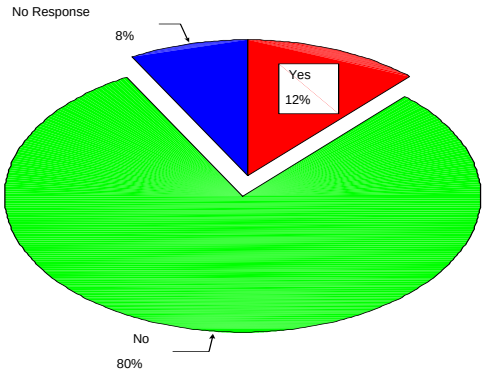
5.1. ICT integration in teaching and learning



Majority of the lecturers 64% has never integrated ICT in the teaching and learning process. This is expected because with inadequate basic computer application skills, lecturers lack the capacity and the skills for more advanced technological skills required in ICT integration. In this regard, ICT integration is yet to be done and long way to come. The study established that, even where the lecturers said they integrated ICT in teaching, the modalities, scope and quality of integration remain unclear and vague. It was revealed that the lecturers have never been trained on ICT integration skills

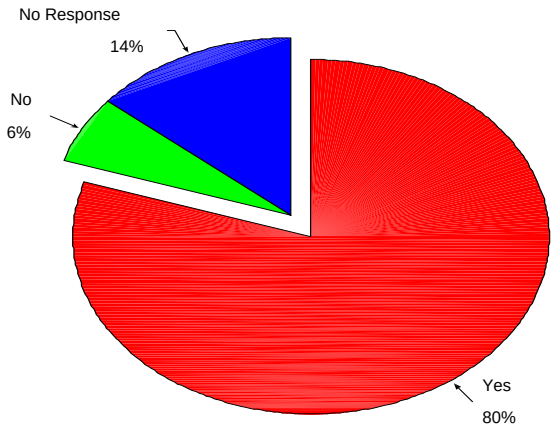
C.) CONNECTIVITY

1. Networking of the college computer Laboratories



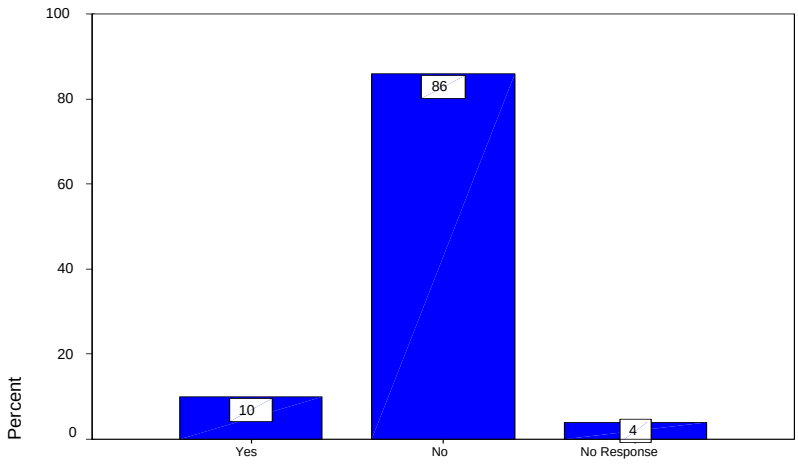
The chart above shows that 80% of computer labs are not networked. This indicates that colleges cannot get maximum benefits from information and communication technologies. Without networks, computers are reduced to stand alones that defeats the overall objective of sharing and accessing information. It was established that most principals are not aware of tremendous benefits derived from connectivity. However, it was revealed that all the colleges wanted to be networked.

2. Colleges interested in having their computer labs networked.



80% of HODs indicated that they are interested to have their computers networked to facilitate the sharing of their ICT resources, 14% failed to respond indicating lack of understanding of the concept of networking and its advantages.

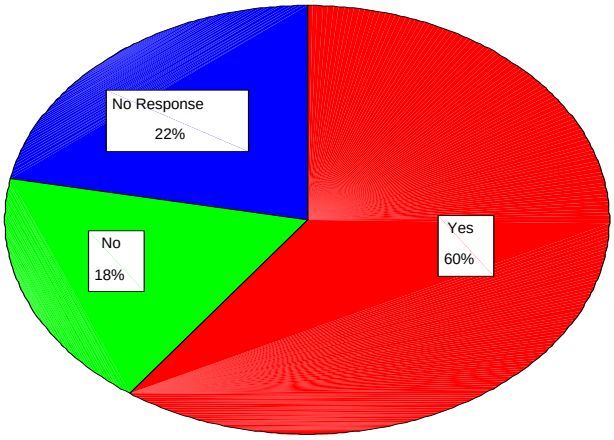
3. If the colleges have Internet services within the school.



Majority of the colleges **86%** do not have access to Internet services. This means that lecturers cannot share and access information as they need. Lecturers who need Internet services have to go to cyber café that are quite distance and expensive. Where there are Internet services, the board of governors or charity organization or individuals have funded the project. All the colleges are willing to have Internet; however, the distance and financial logistics make it difficult.

D) Other Issues.

1.0) If the college has an ICT technology improvement plan.



60% of colleges have ICT technology improvement plans, only 18% of the colleges admitted to not having any plans at all. The rest 22% were guarded in their responses, as they did not indicate whether they have or don't have such plans. This might also indicate that these colleges have not placed ICT as a collar pillar in Education or that they undertake ICT development in the college in an ad hoc basis.

Some of the technology improvement plans the various PTTCs have include the following:

- Purchase more computers to cater for the big number of students

- Have the computer lab networked and get more suitable computer laboratories
- Have internet connectivity in the offices
- Have the tutors intensively trained in ICTs
- Expand the ICT capacity generally and ensure all tutors and students are computer literate
- Upgrade the existing ICT equipment
- Increase the number of computers and computer personnel
- Integrate the local community in the colleges ICT program
- Increase the level of ICT usage in the colleges
- Ensure all HODs are given computers for use in their offices
- Get ICT lecturers from the Teachers Service Commission (TSC)

2.0) Who funded the purchase of computers and other ICT equipment for the College?

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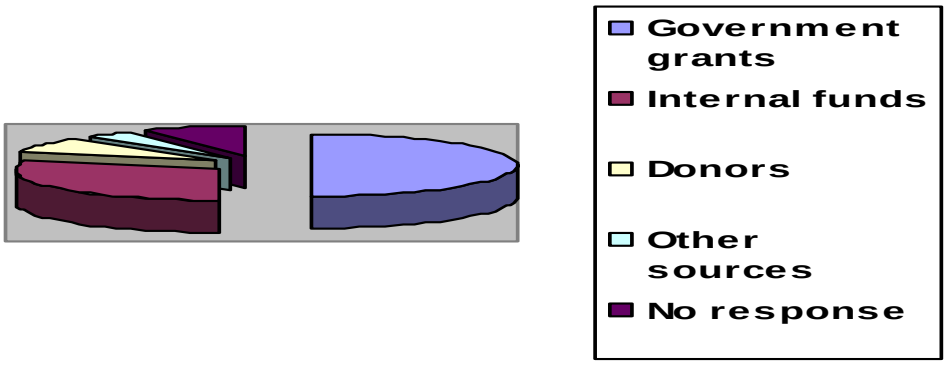
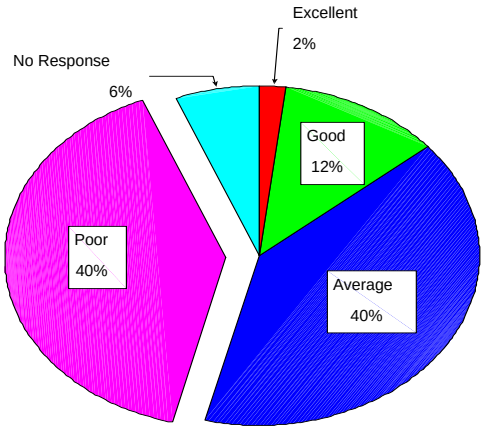
0	Funding sources	Percentage
1	Government grants	50%%
2	Internally generated funds	30%%
3	Donors	8%
4	Other sources	4%
5	No response	8%



Primary teachers colleges have received the highest funding 50% to purchase computers from the government. Other key source of funds is internal sources and

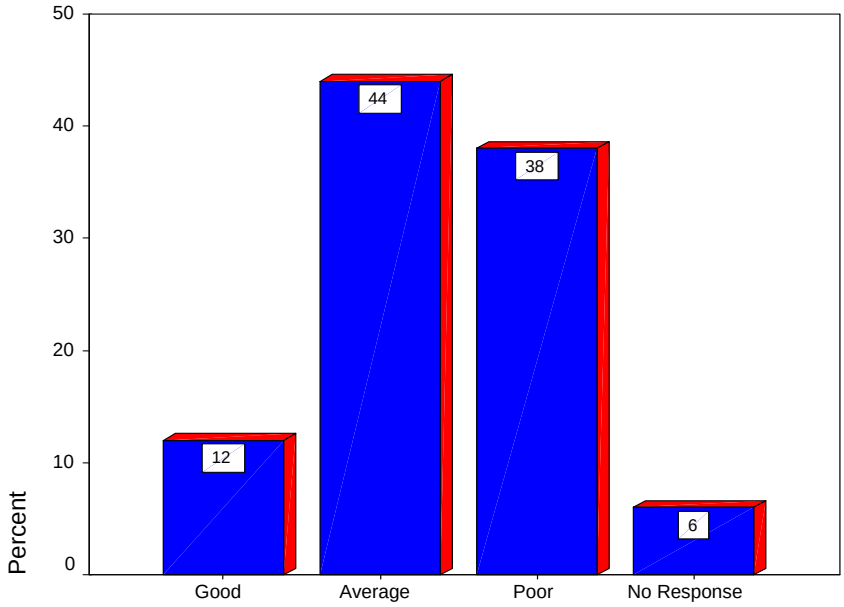
donors. The principals interviewed, revealed that the ministry of education had released funds to equip all primary teachers colleges with computers. It was however revealed that the funds were not adequate to sufficiently provide adequate ICT infrastructure in colleges

3.0) How the colleges rate their computer/student ratio



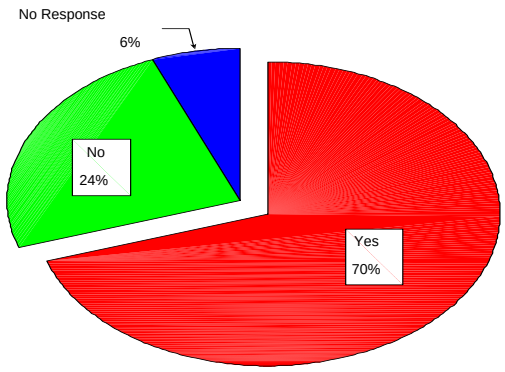
When asked to rate student/ computer ratio, 40 % rated the ratio as poor. This indicates that primary teachers colleges have significant numbers of computers, though the ratio differs from college to college.

4.0 How the colleges rate their teachers/student ratio



Only 12% of HODs rated their teacher to student ratio as good.44% gave a rating of average and 38% rated the ratio as poor.

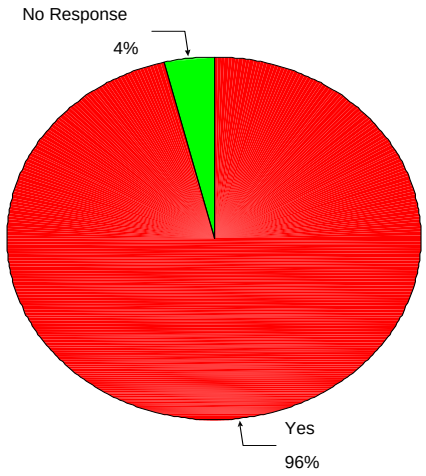
5.0. Previous training in ICT



The respondents had gone some ICT training in the past. The study established that most training were organized internally and sponsored by college boards of governors. Civil organizations and private companies in corroboration with the ministry of education took part in the training.

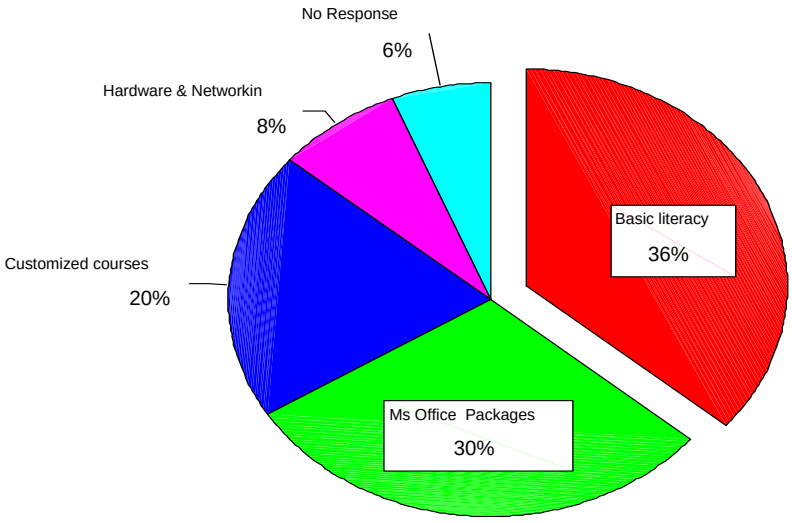
The proportion of those who rated the training as average stood at 44%, however, 38% of trainees rated it as poor, a 12% said the training was good.

6.0. College Administrators interested in further ICT training



96% of all the college Administrators who were involved in the study expressed willingness to receive computer training, the rest **4%** did not indicate whether they were interested in attending ICT training or not. This overwhelming response in favour of training is in itself an indication of the low hands on ICT skills that most of the lecturers have.

6.1. Courses college administrators are interested in.



36% of college administrators indicated that they are interested in attending a training course in basic literacy, 30% are interested in Ms Office packages while 20% are interested in customized courses that are tailored towards equipping them with skills on how to integrate ICT in teaching and learning and in conducting research.

7.0. Computer maintenance programs

When asked whether their colleges have computer maintenance programs, most college administrators responded in the negative. The colleges that lack such programs depend on the ICT tutor, technicians employed by the colleges, private companies and freelance technicians in commercial practise.

7.1. The cost of computer maintenance per year.

It was established that all colleges that have computers do incur costs for computer maintenance. These costs include the fees paid to Freelance Computer Technicians, private companies or salaries and allowance paid to Technicians employed by the

colleges. The figures given range from as high as **KES250, 000** p.a. to as low as **KES100, 000**.The maintenance cost per machines as indicated by the respondents ranges between a high of **KES7,000** and a low of **KES1,000**.However the average figure given by **80%** of the colleges is **KES5,000 per** machine per year.

PART II: Findings from Tutors/ICT Lecturer Responses

1.0. INTRODUCTION:

The survey sought to establish staff ICT skills and implications for staff when integrating Information and Learning Technologies into the teaching at the 20 Teacher Training Colleges in Kenya. The survey was to provide the means for the collection of relevant data required for the TEPD project. The total number of responses from the target sample size was 99.

There were two main areas the survey questionnaire was designed to address:

1. General ICT Knowledge and Skills – being the perceived knowledge and skills in using computers and their applications:

a. Computer management
b. Computing hardware and environment
c. Word Processing
d. Spreadsheets
e. Databases
f. Presentation
g. Using the Internet
h. E-mail
i. College intranet (if any)

2. ICT Curriculum Planning and Delivery – looking at how the lecturers felt they were integrating ICT into their teaching and administration:

- Teaching and Delivery
- Lesson Planning
- Assessing and Evaluating
- Personal, Professional use of ICT

It was felt also useful to have a section enquiring about relevant computing-related qualifications. This gave a good insight into the range and level of existing ICT qualified staff and whether these people showed a higher level of skill and expertise when using computing applications or when applying ICT to their teaching and learning environment.

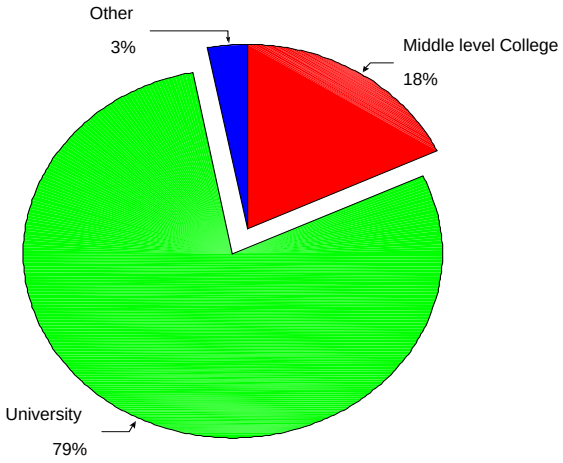
An area was included to allow for general comments from staff. This ensured that where the lecturers felt that they had more to contribute then they could do so. The analysis of these comments proved quite enlightening with some useful suggestions being put forward.

2.0. THE FINDINGS

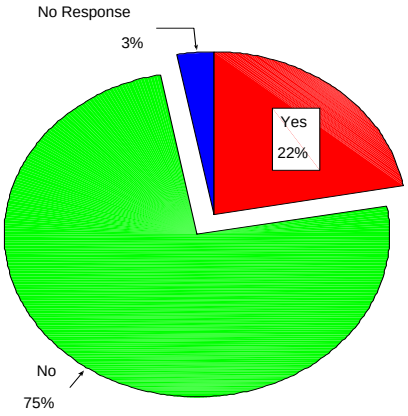
2.1 PROFESSIONAL DETAILS

In order to get a more realistic picture of tutor's qualifications we looked at tutors' education and experience. The study revealed as follows:

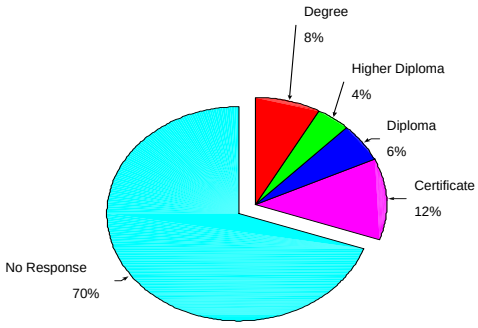
Q1 What Higher Educational Institution did you graduate from?



Q2. Do you have a University, Institute or College Diploma in Information and Communication Technology?



If yes, which qualification?

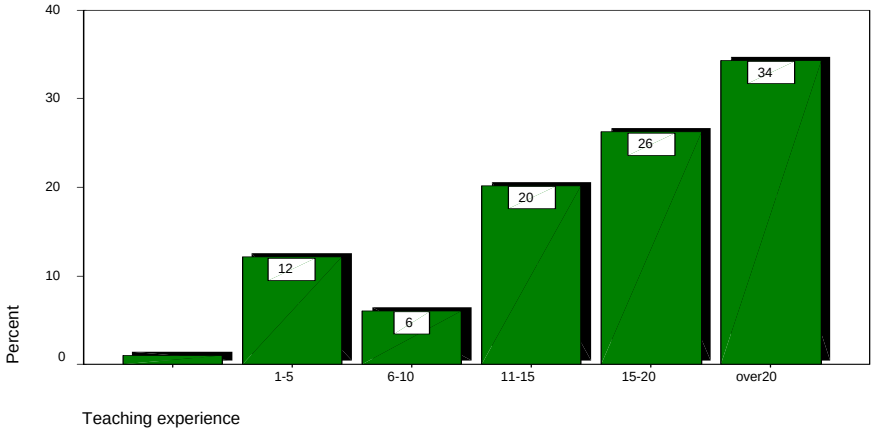


According to the data obtained the majority of tutors, over 79% graduated from the university and over 18% have a college diploma. The rest of the tutors graduated from different Higher Educational Institutions. Though this is satisfactory in administrative terms, it does not mean that all the tutors are as professionally and pedagogically experienced as they might be.
In regard to the actual ICT qualification, the survey revealed that most of the lecturers, 70%, do not have any ICT qualification, with only 8% having a degree, 10% with diplomas and the rest certification.

It should be noted here that, a lack of response or 'no answer' indicates the answer is actually NO. Therefore in the following questionnaires we have taken 'no' to be the answer from respondents who did not respond

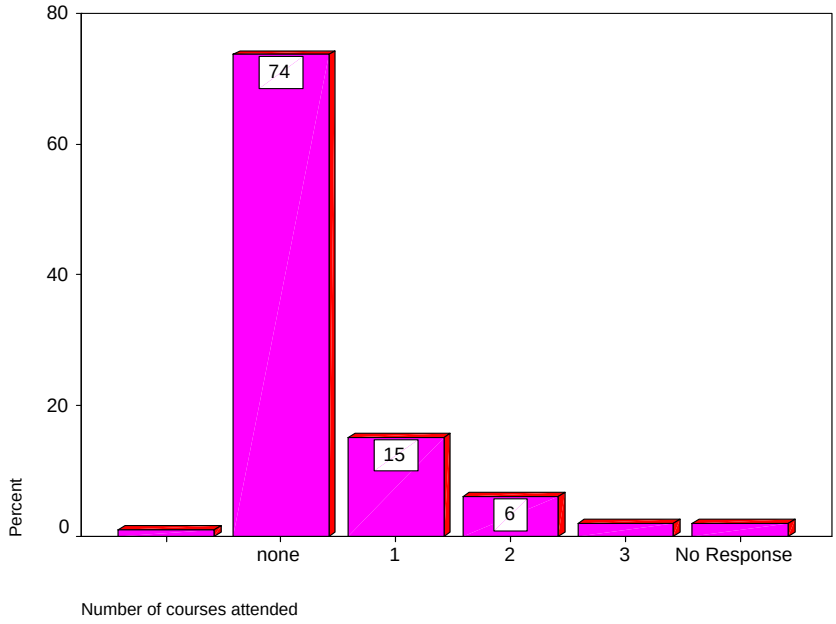
The years of teaching experience reported in the teacher's survey is as follows:

Q3. How many years of teaching experience do you have?



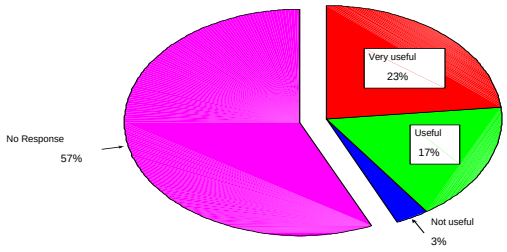
The majority of tutors, 34%, have over 20, 46% have 11-20 while 6% have 6–10 years of teaching experience. The other significant finding is that 12% have 1–5 years of teaching experience.

Q4. How many Teacher-training courses on the use of ICTs in teaching have you had since graduation?



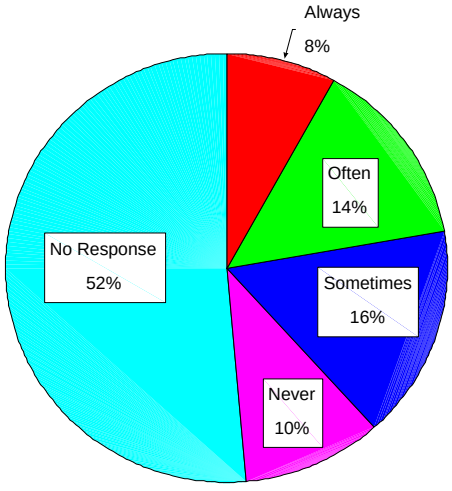
The study established that most of the lecturers have never attended any teacher-training course on the use of ICT in teaching. Only 15% of the respondents had attended at least one course. For those who attended such trainings, they had graduated from one-week training at KTTC or KIE

Q5 How useful do you think the courses you attended are in helping you teach more effectively.



From the responses obtained, 40% felt that the courses were useful while about 60% felt that the training was not useful. A further probe as to why the training was not useful revealed that lack of resources such as computers and inadequate training hindered them from practicing the skills learnt.

Q6. Are you able to put into practice the new ideas and methods acquired from trainings attended. If never, why?

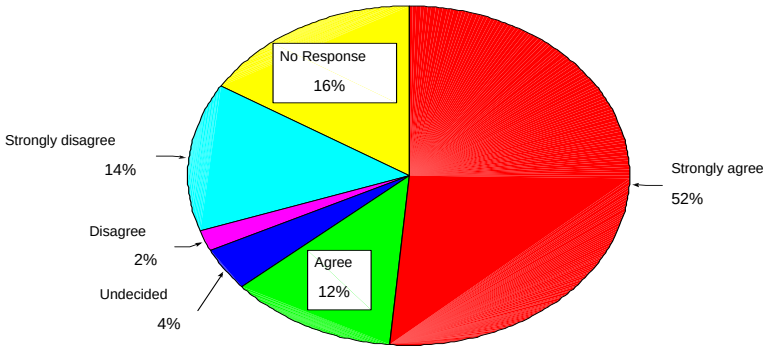


Majority of the respondents never put into practice the new ideas and methods acquired. Only 8% always put into practice the new ideas and methods learnt. 14% often put into practice while 16% sometimes put the ideas and methods into practice. A further probe into the reason why the respondent didn't put into practice the new ideas and methods revealed that lack of resources was a hindrance. Limited number of computers and lack of Internet connectivity were cited as examples of the hindrances.

2.2 ICT SKILLS AND COMPETENCIES

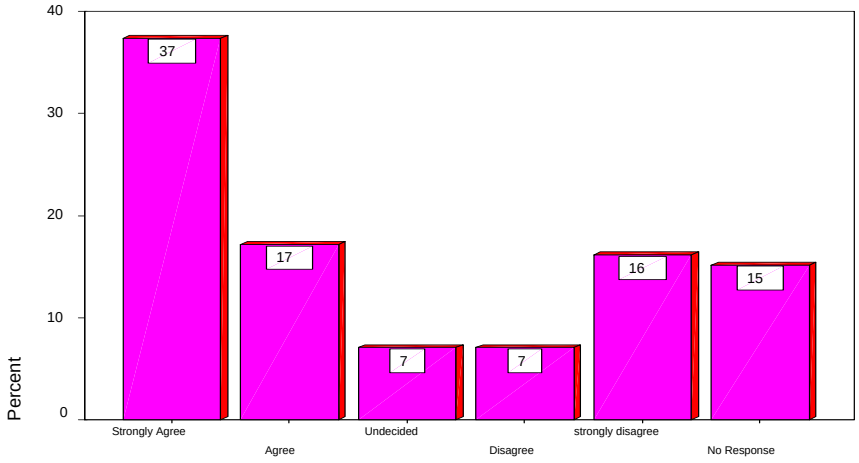
A range of questions were asked about ICT related skills that the lecturers have. These questions were meant to probe for general ICT Knowledge and Skills – being the perceived knowledge and skills in using computers and their applications: Computer management, Computing hardware and environment, Word Processing, Spreadsheets, Databases, Presentation, Using the Internet and E-mail. The tutors/lecturers were asked to use the following ratings: Strongly Agree, Agree, Undecided, Disagree and strongly disagree where strongly agree signifies exceptional competencies and skills, Strongly Disagree signifies below average, while undecided signifies that the respondents are not sure of their competencies. The following were the responses to the questions.

2.2.1. Ability to switch a computer on and off



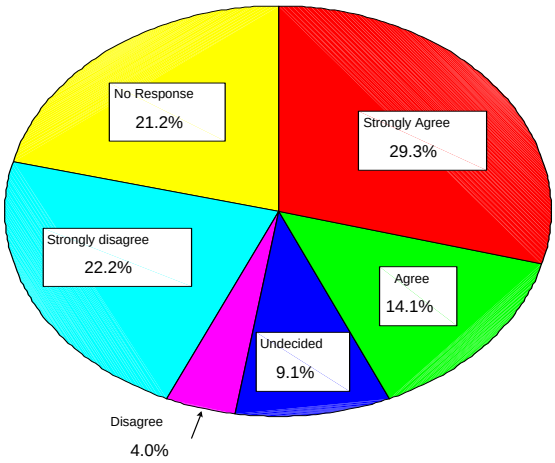
A large percentage of tutors can switch a computer on and off. Only 14% of the indicated that they are able to switch a computer on or off, the 16% who failed to respond also fall in this category as lack of response to this question implies that the respondent was unfamiliar with the issue at hand.

2.2.2 Ability to run computer programs e.g. Word, Excel and Access



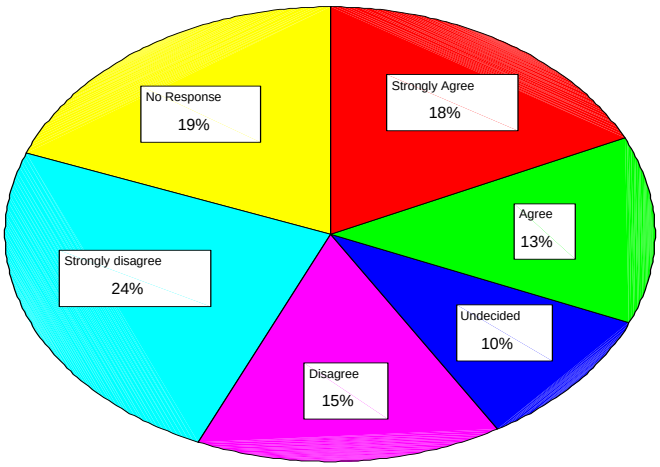
The study showed that 37% of tutors have excellent abilities in starting and running programs like Excel and Access. However it should be noted that the ability to run this programs is not equivalent to the proficiency to use them efficiently for all intended purposes. The study further shows that more than half the tutors cannot run the Access and excel applications.

2.2.3. Ability to save organizes work and creates folders



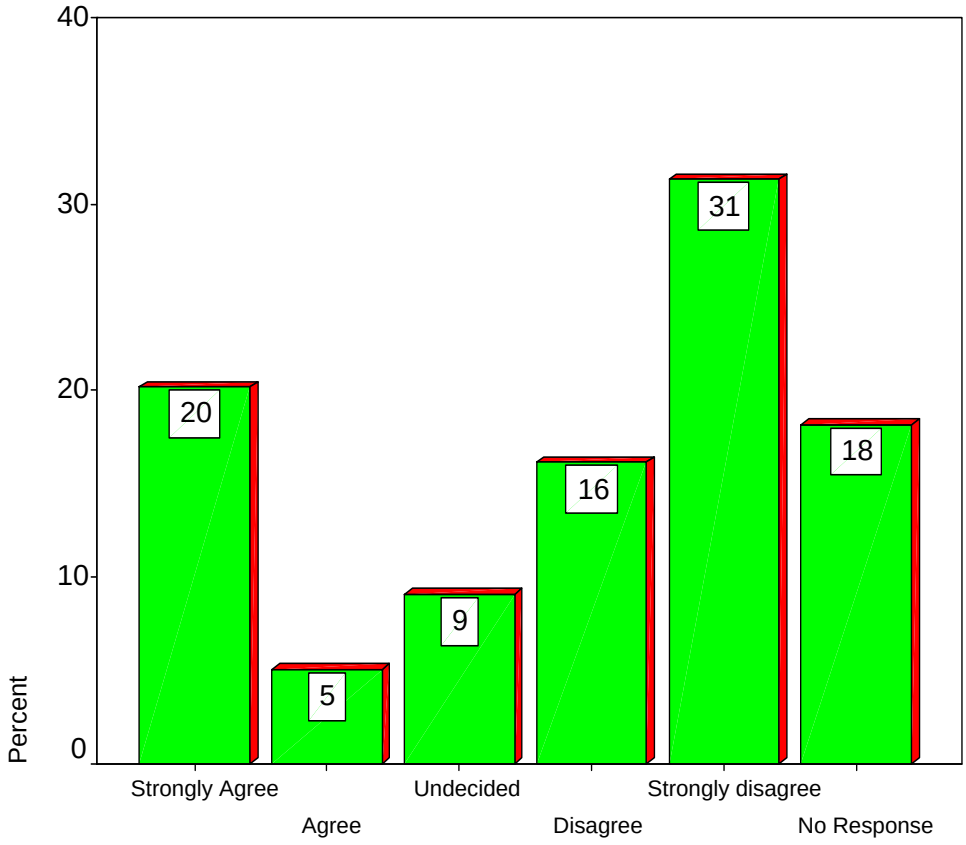
From the chart above it is clear that only 43.4% of lecturers agree or strongly agree that they are able to create folders, save and organize work using folders. This shows that a significant majority do not posses this basic skill. It should be noted that in most trainings, creating and organizing work in folders is taught in a preliminary course usually referred to us "Introduction to computers or basic literacy course"

2.2.4. Ability to manipulate data e.g. by Inserting graphics, editing, importing, changing format



This study reveals that only 31% of lecturers strongly agree or agree that they are able to manipulate data by inserting graphics, editing, importing or changing format. A large percentage of the lecturers cannot perform this basic computing function.

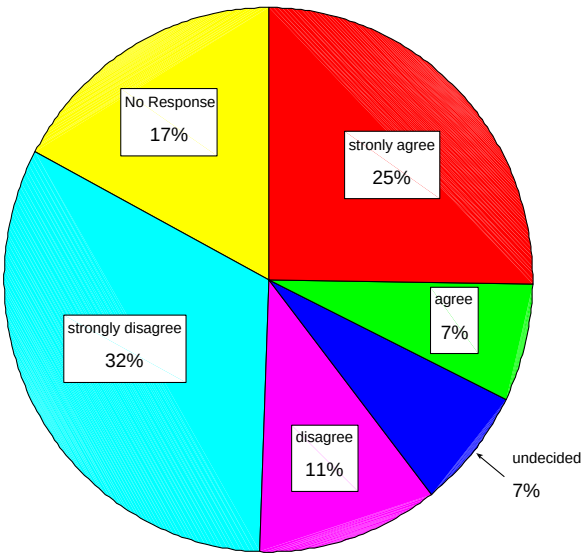
2.2.5. Ability to mail merge



Ability to mail merge

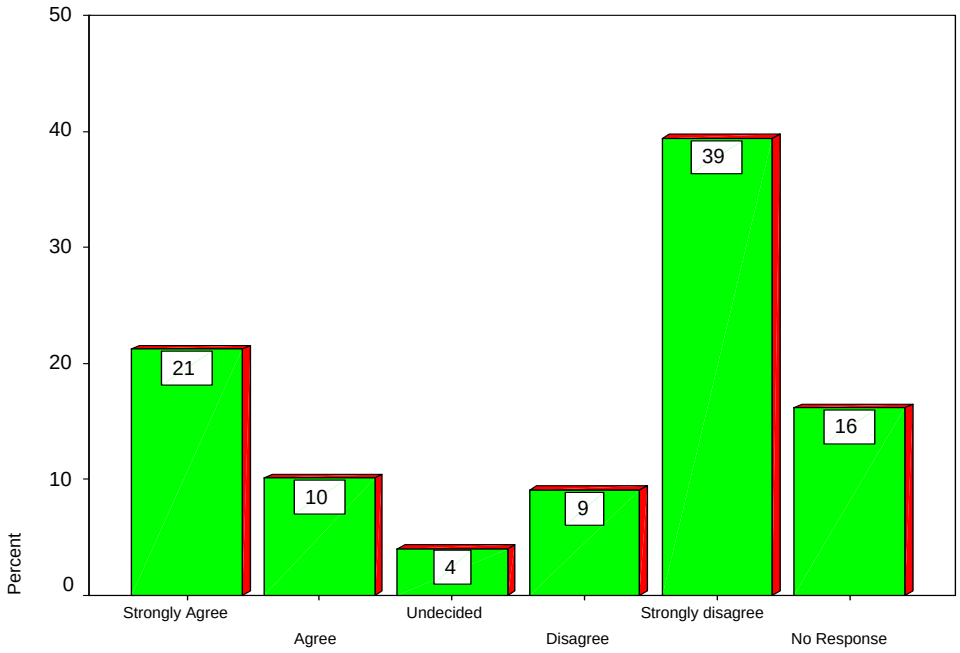
From the chart above it is evident that only 25% of the lecturers strongly agree or just agree that they are able to mail merge.9% are not sure while a whooping majority do not posses this skill.

2.2.6. Ability to search and retrieve information from the Internet



A sum total 32% of the lecturers strongly agrees or agrees that they are able to search and retrieve information from the internet. Just like in other bench marks, it is only a minority who possess this ability.

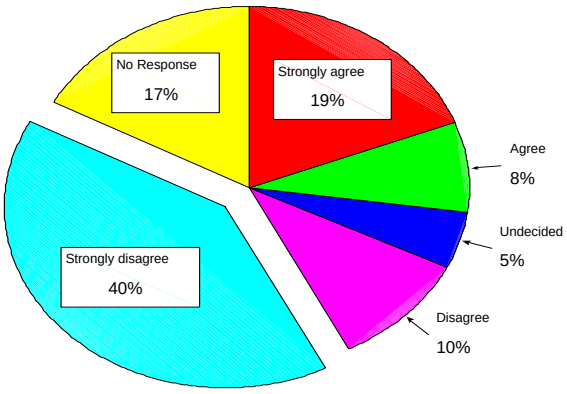
2.2.7 Ability to search for information from the Internet



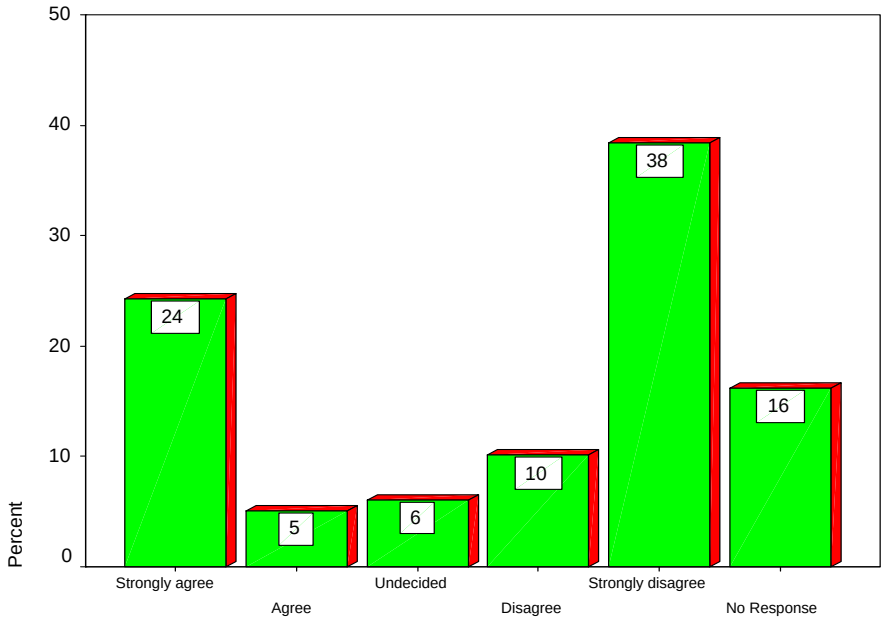
31% of lecturers either strongly agree or simply agree that they are able to search for information on the internet. This shows that a large majority of tutors do not have the skills to take advantage of enormous potential of the internet as a source of information.

2.2.8. Ability to upload and download files from the World Wide Web

27% of lectures strongly agrees or agrees that they are able to upload and download files from the World Wide Web as shown in the chart below. This is against 31% who have the ability to search for information from the Internet. This shows that uploading and downloading information is a bit more complicated than simply searching for information on the Internet.

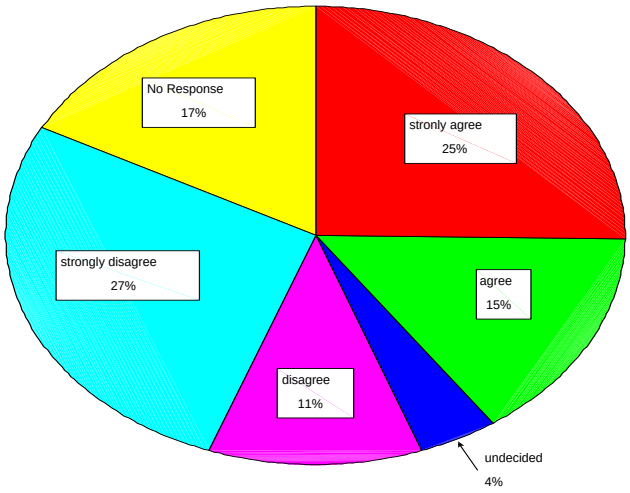


2.2.9. Ability to manipulate a database (e.g. enters records, sort, find, query, analyze and generate reports)



24% of Lecturers are supremely confident of their abilities to manipulate a database and a further 5% somewhat agree that they can manipulate databases e.g. by entering records, sorting, querying and generating reports. A great majority however cannot perform these functions yet databases are very critical tools of collecting, storing and manipulating student records.

2.2.10 Ability to print documents



25% and 15% of lecturers strongly agree or agree respectively that they are able to print documents compared to 25% and 11% who strongly disagree or agree respectively. This bench mark unlike most others has almost equal representation in the upper categories of those who are able and those in the lower category who are not able to print documents at all.

The questionnaire also probed on how the lecturers use the modern technical equipment. The key responses were as follows:

A) Computers

- For storage and preparation of diverse data,
- To conduct practical lessons,

- As a teaching aid
- Retrieve typed work
- Draw charts
- Prepare training materials and generate examination results and transcripts
- Storage of data
- Teaching basic skills in computer applications
- Prepare and store schemes of work
- Preparation of class lists and timetables
- Preparation of teaching notes
- Storage of student marks and scores
- Research
- Preparation of handouts
- For teaching technical drawing

B) Video camera:

- For taking video shots during microteaching
- To shoot class sessions
- Record lessons during teaching practice

C) Television

- For general entertainment for the student population and staff

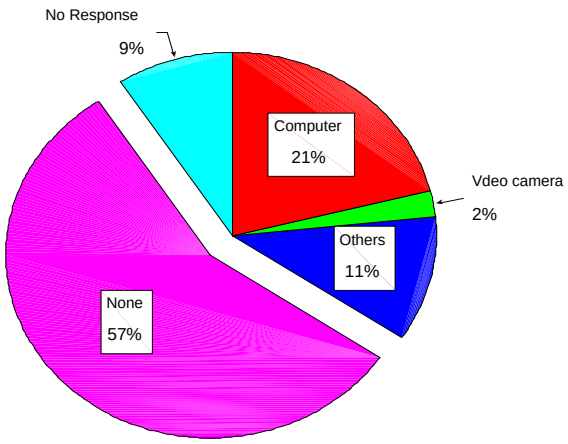
D) Scanners

- For scanning paper documents for conversion to soft copy.

E) LCD projector

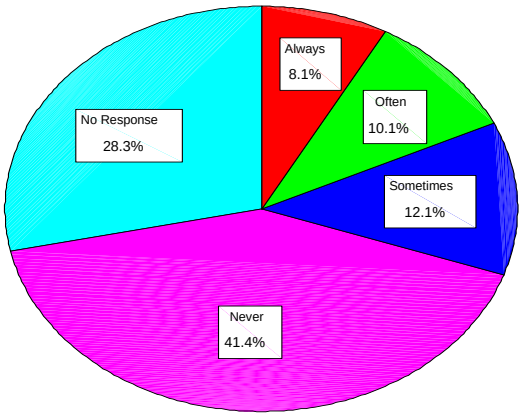
Used for presentations

Q7. Which Technical equipment do you use during your teacher training?



Data from the Questionnaires for lecturers indicates that on the whole curriculum, teaching is carried out with basic technical equipment such as visual aids and the chalk, whereas more expensive technical equipment e.g. video and computers, LCD projector are rarely used.

Q8. How often do you use the above technical equipment?



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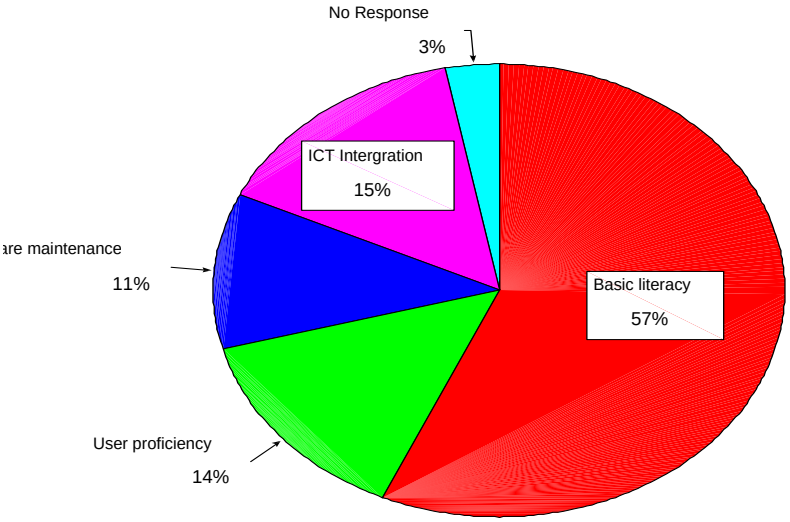
From the responses obtained, it was noted that majority of the lecturers rarely use these technical equipment. It's only about 30 % uses the equipment. It was noted that the ICT tutors are the ones who use these equipment, which is mainly to deliver the ICT curriculum that was recently introduced to Teacher Training Colleges.

Q9. What Training of Trainers courses would like to attend?



Basic Literacy course was identified as the course of choice by majority of the respondents. 15% of the respondents opted for ICT Integration in Teaching & Learning course while 14% chose User Proficiency Course. 11% of the respondents opted for Hardware, Maintenance and Support course.

PART III: ICT Inventory In all The Colleges/Summary

1. MURANGA TEACHERS COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	33PCs	25 Computers are PIVs while 8 are PIIIs
2	computer lab	1	The lab is U-shaped
3	Whiteboard	1	
4	Internet connectivity	**Nil**	No internet connectivity
5	Networking	1	There is an intranet in the college but no Internet connectivity
6	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is hampered by low literacy skills among most tutors and lack of enough equipment

2. KAMAGAMBO ADVENTIST TEACHERS COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	45	All Computers were working
2	Printers	5	Working
3	Software	Available	Windows XP operating system, Office 2000&2003 are used and AVG ant-virus software
4	Computer laboratories	2	
5	Internet connectivity	Nil	No internet connectivity
6	Networking	Nil	Computers are not networked
7	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is hampered by low literacy skills among

			most tutors and lack of enough equipment

3. EREGI TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	70	40 of the computers are clones while 30 are branded machines
2	Printers	2	1 printer was working-Laser jet
3	Software	Available	XP,Office2000,2003 and Office
4	Computer laboratories	1	The lab is U-shaped
5	Internet connectivity	Nil	No connectivity
6	Uninterruptible power supply(UPS)/Surge protectors	70	All working
7	Whiteboard	1	-
8	LCD projector	1	-
9	Photocopier	1	For use in the library
10	Networking	Nil	Computers are not networked
11	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is hampered by low literacy skills among most tutors and lack of dedicated PCs for lecturers

4. KAIMOSI TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	62 PCs	All working
2	Printers	1	Operational
3	Software	Available	Windows 2000 for PIIIs and WinXP for PIVs,Office2000 and AVG ant-virus
4	Computer laboratories	1	The lab is not U-shaped

5	Internet connectivity	Nil	Not available
6	Uninterruptible power supply(UPS)/Surge protectors	Available	Available for a few machines
7	Whiteboard	1	-
8	Scanners	1	Was working
9	Networking	Nil	Computers are not networked
10	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is minimal and is limited to computer studies as a subject.

NB:

- Kaimosi TTC intends to get its lab networked subject to availability of funds
- The college needs more computers for their 2nd lab
- Some of the machines they have received are from CFSK

5. MIGORI TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	30	21 machines are in proper working condition while 9 are non-functional
2	Printers	Nil	Not available
3	Software	Available	WinXP,Win98,Millenium and Office XP
4	Computer laboratories	1	Not U-shaped
5	Internet connectivity	Nil	No connectivity and machines are not networked
6	Uninterruptible power supply(UPS)/Surge protectors	Available	The UPS are adequate
7	Networking	Nil	Computers are not networked

8	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is hampered by low literacy skills among most tutors and lack of enough equipment

NB:

- The college has access to alternative power source; it has a stand by generator in case of power failure.
- The college needs a network for their lab, more computers and an LCD projector

6. ST.PAULS NYABURURU TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	17	3 computers were not working while 14 were
2	Printers	1	Working-Inkjet HP
3	Software	Available	Win98,Win2000,Win2003 server, WinXP, OfficeXP and Office97
4	Computer laboratories	1	U-shaped
5	Internet connectivity	Nil	Not available
6	Uninterruptible power supply(UPS)/Surge protectors	Available	14 UPS are in working condition
7	Networking	Nil	Computers are not networked
8	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is hampered by low literacy skills among most tutors and lack of enough equipment

NB:

- The college has a generator in spite of being connected to the national grid

- The college requires networking to ensure resource sharing
- The college also needs more computers to ensure effective training
- The college also needs additional printers, scanners and an LCD projector

7. ASUMBI TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	25 PCs	All working
2	Printers	1	In working condition
3	Software	Available	WinXP, Office 2003 and MacAfee ant-virus
4	Computer laboratories	1	U-shaped
5	Internet connectivity	Nil	Not available
6	Uninterruptible power supply(UPS)/Surge protectors	Available	The UPS are sufficient for all the machines available
7	Scanner	1	In working condition
8	Video camera	1	In working condition
9	Television set	2	In working condition
10	LCD projector	1	Working
11	Dolphin Pen	Available	Used for ICT based training of learners with disabilities
12	Networking	Nil	Computers are not networked
13	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is hampered by low literacy skills among most tutors and lack of enough equipment

NB:

- The college has 10 computers donated by Sight Savers for dedicated use of learners with disabilities

8. BONDO TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	20 PCs	All working
2	Printers	2	Working
3	Software	Available	Winserver2003,winXP,OfficeXP and McAfee Enterprise Edition 8.0
4	Computer laboratories	1	The lab is organized in a U-shape
5	Internet connectivity	Nil	Not available
6	Uninterruptible power supply(UPS)/Surge protectors	40	There are enough surge protectors for all the machines
7	Computer network(LAN)	Available	20 PCs are connected in a local area network(LAN)
8	Switches	1	24-port switch
9	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is hampered by low literacy skills among most tutors and lack of enough equipment

NB:

- The college has a stand by generator as an alternative source of power
- The college plans to purchase more computers for its second lab and network it.
- The college also needs a server for networking purposes.(Server based network)

9. KERICHO TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	40 PCs	36 working (PIs and PIIs)
2	Printers	2	Working
3	Software	Available	WinXP, Win98, Win95, Office2000, 97 and office2003 and AVG ant-

			virus
4	Computer laboratories	1	The lab is U-shaped
5	Internet connectivity	Nil	Not available
6	Uninterruptible power supply(UPS)/Surge protectors	Nil	Not available
7	Networking	Nil	Computers are not networked
9	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is hampered by low literacy skills among most tutors and lack of enough equipment

10. NAROK TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	40	All working
2	Printers	1	In working condition
3	Software		
4	Computer laboratories	1	The lab is not U-shaped
5	Internet connectivity	Available	Connectivity is available
6	White Board	1	Used in the Computer lab
8	Computer networking (LAN)	1 LAN	The computer lab is networked
9	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is still low in many subjects other than computer studies.

11. MOSORIOT TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	40PCs	7 of the Computers are PIVs,9 are PIIIs and the rest24 are PIIs and PIs
2	Printers	4	All the 4 printers are in good working condition
3	Software	Available	Win98, Win2000 and

			WinXP, Office2000 and PageMaker
4	Computer laboratories	1	The computer lab is well secured but it is not arranged in a U-shape
5	Internet connectivity	Nil	No internet connectivity
6	White Board	1	For use in the Computer lab
7	Uninterruptible power supply (UPS)/Surge protectors	40	The UPS are sufficient for all the machines
8	Dolphin Pen	Available	Used for ICT based training for learners with disabilities e.g. the blind
9	Scanner	1	The scanner is in a working condition
10	Projector	1	
11	Video camera	1	For teaching practice
12	Computer networking(LAN)	Nil	The computers are yet to be networked
13	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is still low in many subjects other than computer studies.

12. TAMBACH TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	43 PCs	The college has a mixture of PIs and PIVs.
2	Printers	2	All the 2 printers are in good working condition
3	Software	Available	The Pentium IVs have been installed with WinXP and Office2000
4	Computer laboratories	1	The computer lab is well secured with burglar proof doors but it lacks a suitable arrangement for teaching

			and learning
5	Internet connectivity	Nil	No internet connectivity
6	Uninterruptible power supply (UPS)/Surge protectors	Available	Sufficient for all the machines
7	Scanners	2	
8	Projectors	1	
9	Joysticks	1	
10	Computer networking(LAN)	Nil	The Computer lab is not yet networked
11	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is still low in many subjects other than computer studies.

NB:

- The college has entered into a computer maintenance program with a private company
- The college also needs more computers to ensure the student computer ratio is more appropriate for effective learning

13. MOI BARINGO TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	40 PCs	All the machines are PIVs, 3ghz, 256MB and 40-80GB hard disk
2	Printers	2	The 2 printers are all installed in the computer lab
3	Software	Available	WinXP professional Edition, Win2000 and Office2003
	Ant-virus	Available	

4	Computer laboratories	1	The Computer lab is E-shaped
5	Uninterruptible power supply(UPS)/Surge protectors	Available	The UPS are adequate for all machines
6	Scanners	2	In working condition
7	Projectors	Nil	In working condition
8	Joysticks	Nil	In working condition
9	Internet connectivity	Nil	No internet connectivity
10	Computer networking (LAN)	Nil	Computers are yet to be networked
11	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is still low in many subjects other than computer studies.

NB

- The college has a desire to acquire more computers

14. SHANZU TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	30	The computer systems comprise of PentiumIIIs and PentiumIVs.
2	Printers	2	The printers are in good working order
3	Software	Available	The Operating system in use is WinXP while the applications include Office2000 and office2003. The AVG ant-virus program is also used.
4	Computer laboratories	2	The labs are properly maintained and secured

5	Internet connectivity	Nil	Not available
6	Computer networking (LAN)	Nil	The computer lab is not networked
7	Uninterruptible power supply (UPS)/Surge protectors	Available	There are adequate surge protectors for all the machines
8	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is still low in many subjects other than computer studies.

15. THOGOTO TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	61 computers	20 of the machines are PIIIs, the rest are PIVs.
2	Printers	4	
3	Software	Available	The O/s in use is WinXP but the PIIIs use Win98.Office2003, kaspersky, MacAfee and Node32 are the applications software in use.
4	Computer laboratories	2	Two classrooms have been converted into computer labs.
5	Internet connectivity	Telkom wireless	One machine is connected with Telkom wireless for internet connectivity
6	Computer networking (LAN)	Nil	All the machines in the college are stand alones
7	ICT usage and integration in the curriculum	Low.	The low integration is explained by the low ICT skills among lecturers

16. MERU TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	60 computers	All the 60 computers are Pentium IVs.
2	Printers	1	
3	Software	Available	WinXp and Office2003
4	Computer laboratories	Available	
5	Internet connectivity	Nil	No internet connectivity is available
6	Computer networking (LAN)	Nil	Machines are used as standalones
7	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is hampered by low literacy skills among most tutors and lack of enough equipment

17. KIGARI TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	83 computers	40 of the machines are PIIIs and the rest 43 are PIVs. The college intend to add 40 more computers for phase 3 of their computerization program
2	Printers	7 printers	
3	Software	Available	An assortments of s/ws are in use including WinXP, Vista, Office2003/2000,Mcfee and Norton
4	Computer laboratories	3 computer labs	-
5	Internet connectivity	Nil	Internet connectivity is not available

6	Computer networking (LAN)	Nil	None
7	Projectors	1	The college has one overhead projector. It also has 6 Television sets and audio equipment.
8	ICT usage and integration in the curriculum	Low	ICT integration in the curriculum is still low in many subjects other than computer studies.

18. EGOJI TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	40	10 computers are PIIIs, the rest 30 are PIVs. Some of the machines were not in working condition.
2	Printers	6 printers and 3 scanners	
3	Software	Available	Win XP and Office2000
4	Computer laboratories	3 computer laboratories	
5	Internet connectivity	Available	The college accesses internet through Safaricom wireless
6	Computer networking (LAN)	Nil	Computers operate as stand alones
7	ICT usage and integration in the curriculum	Low	There is yet to be any meaningful ICT integration in teaching and learning

N/B: The College has 1,300 students and only 40 computers. A ratio of 1 computer to 33 students

19. MACHAKOS TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	34	20 computers are PIVs while the rest are PIIIs
2	Printers	1	
3	Software	Available	WinXP, Office2003 and Office2003
4	Computer laboratories	2	
5	Internet connectivity	Nil	No internet connectivity
6	Computer networking (LAN)	Nil	No networking
7	ICT usage and integration in the curriculum	Nil	There is virtually no integration of ICTs in teaching and learning except in the subject of computer studies

20. KAMWENJA TEACHERS TRAINING COLLEGE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	40 computers	25 of the computers are PIVs and the rest 15 are PIIIs.
2	Printers	1	
3	Software	Available	WinXP, Ms Office2003, Kaspersky and AVG
4	Computer laboratories	2	
5	Internet connectivity	Available	20 computers are connected to the internet
6	Computer networking (LAN)	Available	The computers in the lab are connected in a LAN
7	ICT usage and integration in the curriculum	Limited	The use of ICT as a tool of learning and instruction is minimal

21. GARISSA TEACHERS TRAINING COLLEE

NO	ICT EQUIPMENT	QUANTITY	DETAILS
1	Computer systems	10	The 10 machines are a mixture of PIIs and PIIIs.
2	Printers	2	
3	Software	Available	The software in use includes WinXP, Windows 2000,OfficeXP and Office2003
4	Computer laboratories	Nil	
5	Internet connectivity	Nil	No internet connectivity is available
6	Computer networking (LAN)	Nil	
7	ICT usage and integration in the curriculum	Low	

The college has a student population of 700 against a total number of 10 computers band hence a computer student ratio of 1:70.

COMMON ICT EQUIPMENT FOUND IN ALL COLLEGES

1. Computers: All colleges have computers ranging between 17 and 70
2. Scanners: Between 1 and 2
3. Printers: Between 1 and 4

DEDUCTIONS FROM THE INVENTORY

- 100% of colleges have computers whose number range between 17 and 70 machines.
- 100% of PTTCs have computer laboratories that are fairly well secured from vandalism and theft. This shows that computers are a highly valued possession considering the level of physical security measures in place

- 90% of all PTTCs in Kenya do not have access to Internet connectivity. Most colleges cited the high cost of connectivity as the major hindrance
- 100% of all PTTCs have between 1 and 4 printers. The favourite location of these printers is in the computer lab. This seems to indicate that the computer lab is the ICT hub or centre of most colleges where the greatest percentage of ICT resources are based
- Networking: Over 85% of PTTCs are yet to network their computer labs. Only 15% of the PTTCs have a Local Area Network.
- 100% of the PTTCs are using proprietary software from Microsoft Corporation. No even a single college is taking advantage of the Open source software like Linux or Open Office
- Windows XP seems to be the most popular Operating system, where it was found in all the PTTCs visited. However most of the PTTCs have multiple operating systems namely Win98 and Win2000.These older versions of windows are installed in PIs, PIIs and PIIIs.

CHAPTER 3: CONCLUSIONS AND RECOMMENDATIONS

From our questionnaires and observations a number of points can be made. Firstly and most importantly it can be said that the majority of lecturers in Kenyan Teacher training colleges are notionally qualified and experienced. Regarding experience, the majority of tutors are also very experienced with over 80% of them having 10–20 years of teaching experience.

Most colleges have computers but are not adequate for classroom practice as identified by the poor computer student ratio. There is therefore a need for more computers to ensure effective teaching and learning.

Networking and Internet Connectivity is lacking in almost all the colleges. There is a need to have the computer labs networked and Internet access availed in order to accrue the benefits of ICT in Education.

Training of Lecturers on proficiency and ICT integration in Teaching and learning is also needed. This is witnessed in the responses made by the lecturers.

Information and communication technologies (ICTs) have the potential to enhance access, quality, and effectiveness in education in general and to enable the development of more and better teachers in Kenya. As computer hardware becomes available to an increasing number of colleges, more attention needs to be given to the capacity building of the key transformers in this process, namely, tutors.

RECOMMENDATIONS

1. **Training / sensitization of Principals for administrative support**

Principals and the key education stakeholders should be sensitized on the need to provide and allocate enough resources for the acquisition and deployment of appropriate ICT equipment in the colleges. They should also be trained on how to effectively use ICTs as tools of teaching and administration

2. **In-service training (capacity building) of lecturers of various subjects in integrating ICTs in teaching and learning**

Computer literacy skills, which include introduction to computers, keyboarding, word processing, spreadsheets, file management, email and Internet use should be taught to lecturers and school administrators. They should also be trained on how to use ICTs as tools for pedagogy that facilitate teaching and learning. These will equip tutors to sufficiently integrate ICTs in the curriculum and inject efficiency in the teaching and learning processes.

3. ICT Infrastructure

Investment into equipping and upgrading the computer labs and building ICT capacity at the Teacher Training Colleges is an obvious intervention with high returns. The PTTCs should aim to acquire computers at reasonable costs and continue restocking beyond just computer laboratories. The PTTCs should also aim to have networked computers (An ICT infrastructure can be established such as Local Area Networks, College-wide backbone connecting LANs and Multi-college backbone connecting LANs to cater for all the teacher training colleges) for lecturers at a ratio of 1 computer for each lecturer and networked computer labs for students with a ratio of 1 computer for every 2 students. This is based on the equipment model adopted by CFSK, which has proved workable. PTTCs should have at least 2 computer labs with 20 – 25 computers for a training session involving between 40-50 trainees.

The need for the establishment of a Computer Network in the Teacher Training Colleges cannot not be over emphasized as this would provide for the "ICT" needs to both Staff and Students involved in the teaching and learning process.

Students from the colleges would find it useful and interesting to use ICT as a tool of learning. In this way they can be able to undertake research through the Internet on all their areas of study, get connected to other higher learning Educational Institution all over the world in exchange of information relating to their individual field of study. There is a lot of relevant educational content in the World Wide Web, which can be accessed cost effectively by Students and Staff if the right infrastructure is in place.

4. Maintenance and support

Continued technical support and preventive maintenance of the resource centres / computer laboratories and end user training on preventive maintenance should be provided. Technical support may be provided by equipment vendors or outsourced

from legitimate organizations providing such support services. It should not be the work of the ICT tutor to maintain computers and other technical equipment as it is less effective and it also diverts the attention of the tutor from his core mandate.

5. The curriculum development centre (KIE) should design learning materials that are integrated with ICTs to compliment traditional methods of content delivery. KIE should also intensify the move towards development of ICT enhanced local content in the various subject fields. KIE should work closely with other local content developers in order to leverage on the expertise they already have.
6. The MoE should explore cheap options for connectivity to schools to enable schools share information/educational materials on the Internet. The MoE should explore partnerships with ISPs and other players in the sector that are keen on facilitating or providing connectivity to colleges.
7. The MoE should seek essential strategies for sustaining the use of ICTs in educational delivery. The ministry should aggressively seek ICT solutions that cover ICT infrastructure, content development, ICT training and connectivity by involving various players with a track record in building ICT infrastructure in educational institutions.

REFERENCES:

1. Ministry of Education Science and Technology, Kenya, 2003. Report of the Sector Review and Development. Proceedings of the Technical Working Group, Ministry of Education Science and Technology, September 2003.

2. Nzomo, J.,Kariuki, M., Guantai, L. (2001). The quality of education: some Policy suggestions based on a survey of schools. Paris: International Institute for Education Planning.

APPENDIX

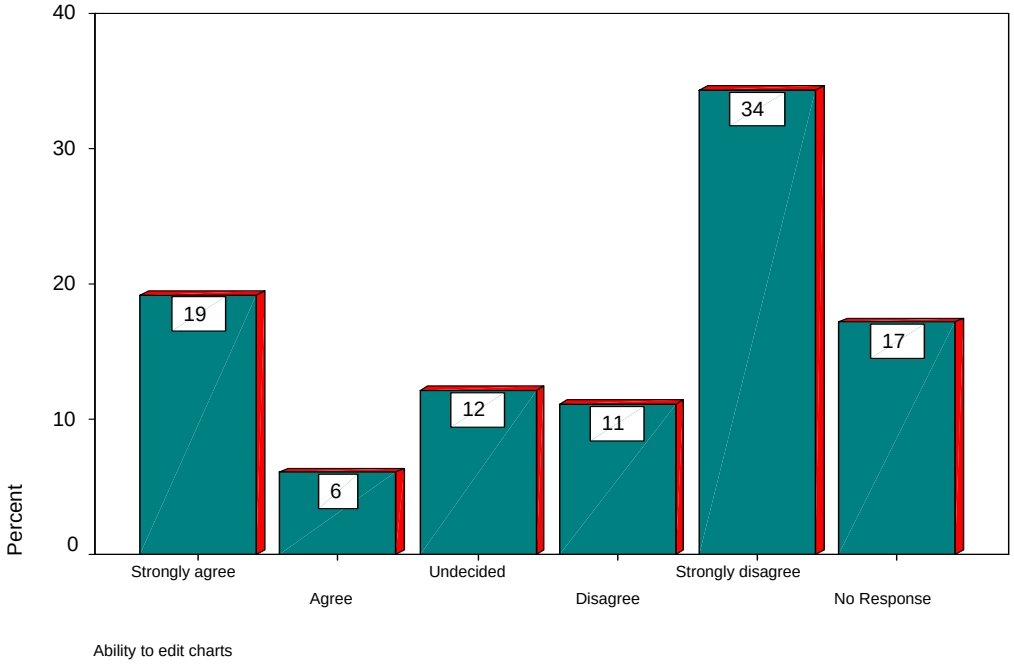
Appendix1: More feedback from ICT tutors

Appendix2: Tools used for the study

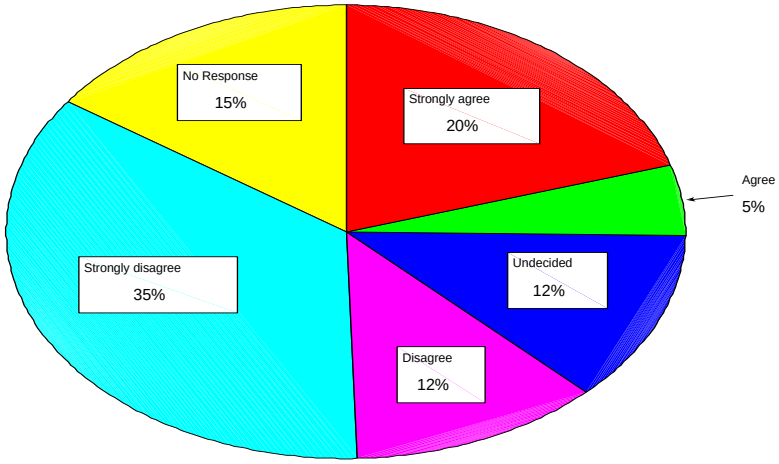
1. Observation guide
2. Lecturer's questionnaire
3. Principals and HODs Questionnaire

Appendix1: More feedback from ICT tutors

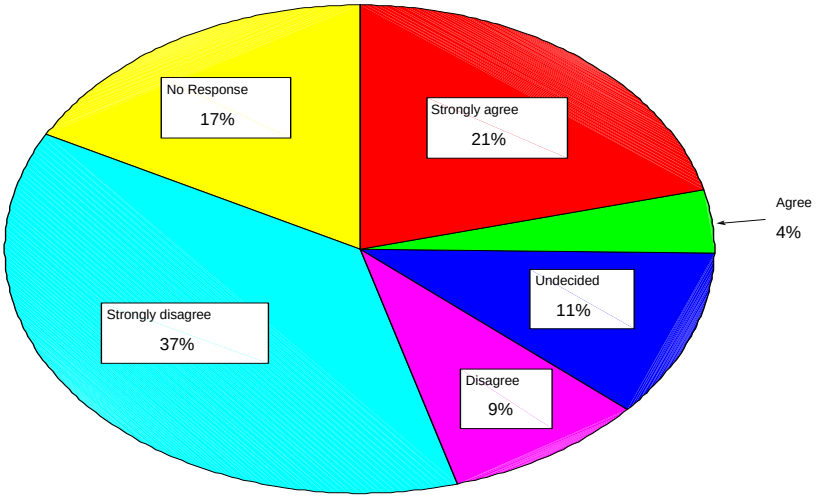
1. Ability to create and edit charts



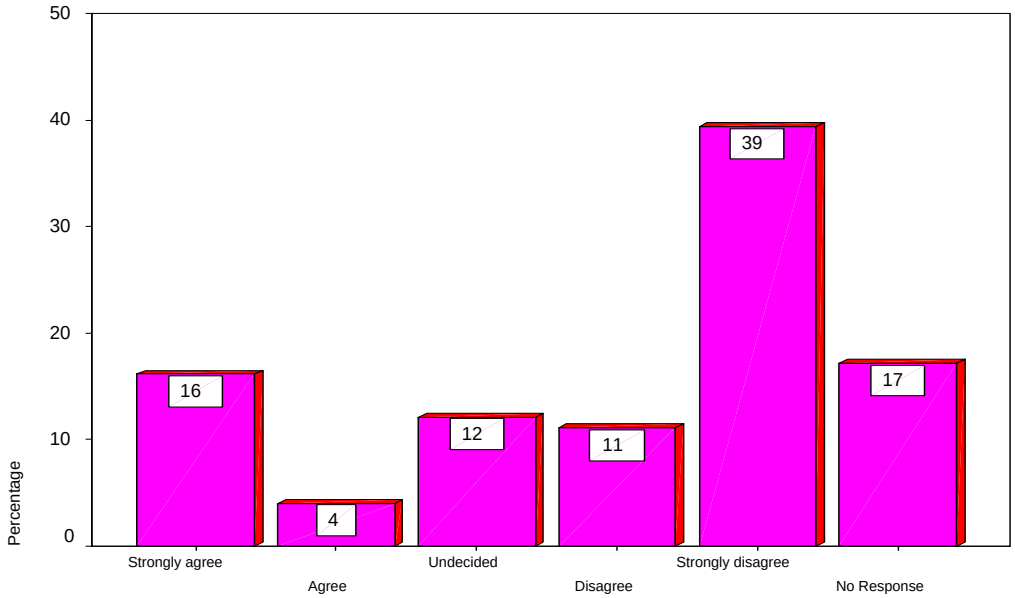
2. Ability to perform arithmetic calculations using spreadsheets



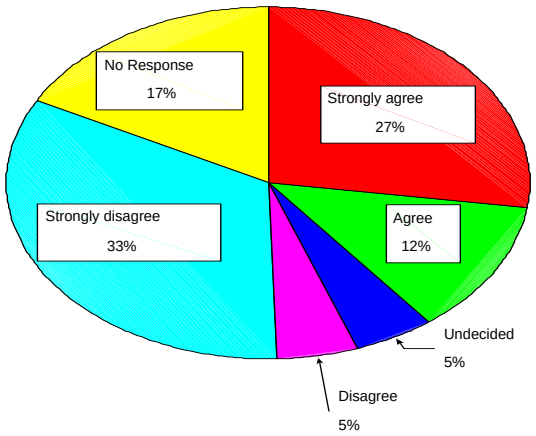
3. Ability to create PowerPoint presentations



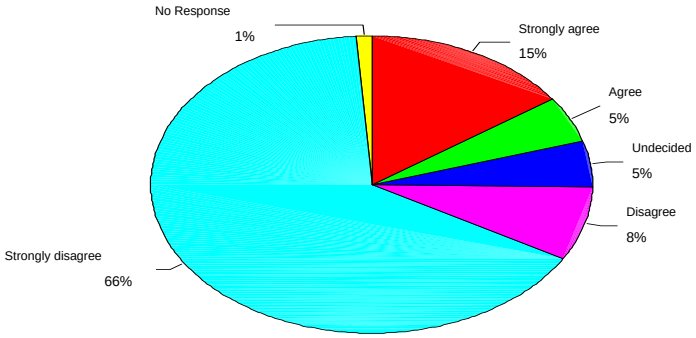
4. Ability to run a presentation using a projector



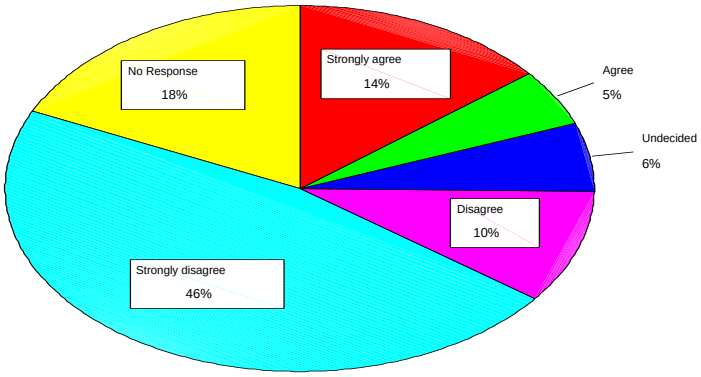
5. Ability to identify computer components (e.g. memory, monitor, processor)



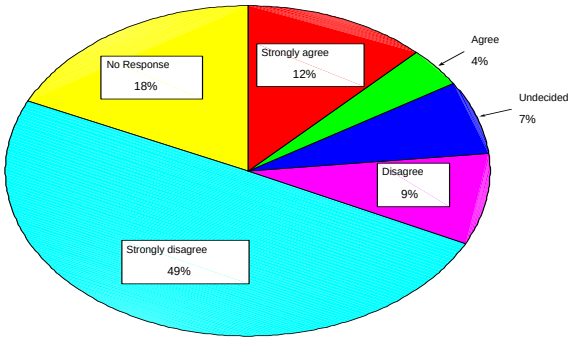
6. Ability to install and configure computer software



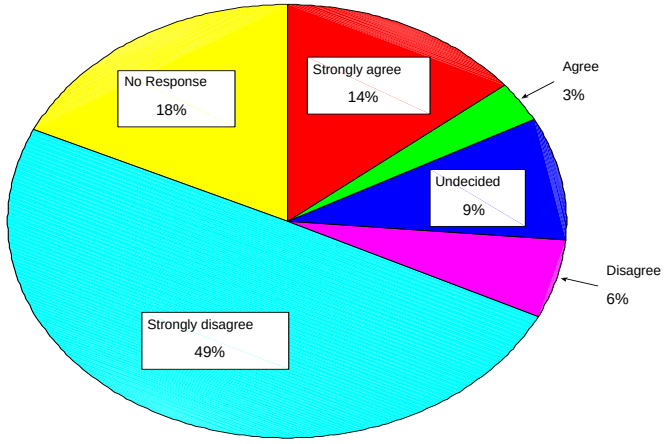
7. Ability to configure computer hardware components



8. Ability to troubleshoot computer problems



9. Ability to perform basic system upgrades (e.g. memory upgrade, Hard disk, ant virus)



Appendix2: Sample tools used for the study

1. Observation guide

Computers for Schools Kenya
Propelling Kenya into the digital age

OBSERVATION GUIDE

Serial No: CFSK/TEPD/01/07

INTRODUCTION

Computers for Schools Kenya (CFSK) is conducting a survey which is aimed at building capacity of Primary Teacher Training Colleges (PTTCs) and Teacher Advisory Centres (TACs) to effectively manage and use ICT in the pre-service and in-service training. This is part of the Ministry of Education, Kenya Education Sector Support Programme (KESSP) that aims to improve the quality of teacher education. This training is being supported by the United States of American International Agency (USAID) and implemented by the Academy for Educational Development (AED). We will greatly appreciate your honest answers and rely on your cooperation. Please be assured that all responses to this questionnaire are anonymous and confidential. Most questions need a tick in the box beside the answer that is best for you. The observer should complete the questionnaire for the observations carried out. Thank you very much.

Part 1: CONTEXT

College Name_____

Observer

_____

Date of observation

_____

Part 2: PHYSICAL INFRASTRUCTURE OF THE COMPUTER LAB

	Inventory	**Available (√) or (x)**	**Quantity**	**Remarks/comments**
1	Computer tables			
2	Chairs			
3	Burglar proof doors			
4	Burglar proof doors			
5	Power protection (UPS/Surge protectors etc)			
6	Curtains			
7	U shaped lab set up			
8	Sufficient power sockets			
9	Electric Power/Alternative sources of power			
10	Curtains			
11	PVC carpet/tiled carpet			
12	Alarm system			
13	White board			
	Others			
a.				
b.				

c.				
d.				

Part 3: HARDWARE DETAILS

	Inventory	**Available (√) or (x)**	**Quantity**	**Comments/Remarks**
1	Computer systems			
2	Printers			
3	Scanners			
4	Web cams			
5	Video camera			
6	TVs			
	Others			
a.				
b.				
c.				
d.				
e.				

Part 4: SOFTWARE DETAILS

	Inventory	**Available (√) or (x)**	**Comments/Remarks**
1	Windows		

	Operating system		
2	Microsoft office package		
3	Antivirus		
	Others		
a.			
b.			
c.			
d.			
e.			

Part 5: NETWORK AND INTERNET CONNECTIVITY

	Inventory	**Available (√) or (x)**	**Comments/Remarks**
1	Computer Network		
2	Internet access		
3	Network Server		
4	Switches		
5	Network Cables		
6			
7			
8			

Please provide any other observation made.

_____

_____

_____

_____

_____

2. Lecturer's questionnaire

Computers for Schools Kenya

Propelling Kenya into the digital age

Questionnaire for Lecturers

Serial No: CFSK/AED/LECT/02/11/07

INTRODUCTION

Computers for Schools Kenya is conducting a survey which is aimed at building capacity of Primary Teacher Training Colleges (PTTCs) and Teacher Advisory Centres (TACs) to effectively manage and use ICT in the pre-service and in-service training. This is part of the Ministry of Education, Kenya Education Sector Support Programme (KESSP) that aims to improve the quality of teacher education. This training is being supported by the United States of American International Agency (USAID) and implemented by the Academy for Educational Development (AED). We will greatly appreciate your honest answers and rely on your cooperation. Thank you very much. Please be assured that all responses to this questionnaire are anonymous and confidential. Most questions need a tick in the box beside the answer that is best for you.

PROFESSIONAL DETAILS

1. **What high Educational Institution did you graduate from?**

College [ ]
University [ ]
Other (Please specify) _____

2. **How many years of teaching experience do you have?**

1-5 [ ] 6-10 [ ]11- 15 [ ] 15-20 [ ] over 20 [ ]

3. **Do you have a university, Institute or College Diploma in Information and Communication Technology?**

Yes [ ] No [ ]

If yes, which qualification?

Degree [ ]
Higher Diploma [ ]
Diploma [ ]
Certificate [ ]

4. **How many teacher-training courses on the use of ICTs in Teaching have you had since graduation?**

a. Teacher Training courses conducted by MOE/KIE INSET Programmes?

None [ ] 1 [ ] 2 [ ] 3 [ ] 4 & above [ ]

b. Teacher Training courses conducted by other bodies?

None [ ] 1 [ ] 2 [ ] 3 [ ] 4 & above [ ]

If any, Please list them below

	Name of the Organization	**Course undertaken**
i.		
ii.		

iii.		
iv.		

5. **How useful do you think the courses you attended are in helping you teach more effectively?**

   a. Very Useful [ ] b. useful [ ] c. not Useful [ ]

6. **Are you able to put into practice the new ideas and methods from the courses?**

   a. Always [ ] b. often [ ] c. Sometimes [ ] d. Never [ ]

   If never, why?

_____
_____
_____
_____
_____

SKILLS AND COMPETENCE DETAILS

7. **In a rating of 1 - 5, how would you rate yourself in regard to the following ICT skills and competencies?**

1. Strongly agree **2.** Agree **3.** Un decided **4**. Disagree **5.** Strongly disagree

	ICT Skills and Competence	**Rating**				
I know how to…		**1**	**2**	**3**	**4**	**5**
1	Switch on and off the computer					
2	Start computer programs (e.g. Ms Word, Excel, Access)					

3	Create folders, organizing work, saving work,					
4	Manipulate data (eg inserting graphics, editing, importing, changing format,)					
5	Mail merge					
6	Send and receive emails					
7	Search for information from the Internet					
8	Upload and Download files from the World Wide Web					
9	Create a database					
	Manipulate a database (eg Enter records, sort, find, Query, analyze and generate reports)					
10	Print documents					
11	Create and edit charts					
12	Interpret information represented in a chart					
13	Perform arithmetic calculations using spreadsheets					
14	Create a PowerPoint presentation					
15	Run a presentation using projector					
	Identify computer components (eg memory, monitor, processor)					
16	Install and configure computer softwares					
17	Configure hardware components					
18	Diagnose computer problems					
19	Troubleshoot computer problems					
20	Perform basic system upgrades (eg Memory upgrade, Hard disk size, Antivirus)					

8. **Do you have any other skills in ICT?**

Yes [ ] No [ ]

If yes, which are these skills?

a.

b.
c.
d.
e.

9. Have you ever attended trainer-training courses?

Yes [ ] No [ ]

If yes, which courses have you taken?

	Organization offering the course	**Course**

TEACHING DETAILS

10. Which college do you represent as a teacher trainer?

College Name:
_____

11. Who are your trainees?

Primary Schoolteachers [ ] Secondary schoolteachers [ ] Other (please Specify)_____

12. What does your training involve?

Theoretical input [ ] Practical workshops [ ]

Classroom observation [ ] Other (Please specify) [ ]_____

13. **Which technical equipment do you use during your teacher training?**

Computer [ ]
Video camera [ ]
TV [ ]
Scanner [ ]
Web cam [ ]
Others (Please specify) [ ]
_____
None [ ]

14. **How do you use the above technical equipment?**

a.
b.
c.
d.
e.
f.

15. **How often do you use the above technical equipment?**

Always [ ]
Often [ ]
Sometimes [ ]
Never [ ]

16. **What Training of Trainers course(s) would you like to attend?**

Basic computer literacy Course [ ]
User proficiency course [ ]
Hardware, maintenance and support course [ ]
ICT integration into Teaching and Learning Course [ ]

Please make any further comments you have in the space below.

_____
_____
_____
_____
_____
_____

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Thank you for your cooperation.

3. Principal's and HOD's questionnaire

Computers for Schools Kenya
Propelling Kenya into the digital age

Serial: CFSK/AED/PRINC/04/11/07

TRAINING AND LEADERSHIP NEEDS ASSESSMENT FOR PRINCIPALS

/D.PRINCIPALS/HEAD OF DEPARTMENTS.

This questionnaire is a collaborative effort of **AED** (Academy for educational Development) and Computer for Schools Kenya (**CFSK**) in line with the Kenya Teacher Education and Professional Development program (**TEPD**) between AED and U.S agency for International Development. The purpose of this survey is to gather credible data on ICT infrastructure, usage and development in Teachers Training Colleges (TTCs) and identify the current ICT skills level of lecturers, deans of curricula, heads of departments, deputy principals and principals in all primary teachers colleges in Kenya. This information will be used to identify existing gaps and help to inform the appropriate interventions to be put in place to address these gaps.

Name of

college_____

Name of respondent_____ _____

Designation_____

A. Basic ICT/Computer skills.

Please fill the table below, rating your level of proficiency/ability in ICTs on a scale of 1-4 as follows: (Provide additional information in the comments/remarks column)

4: Exceptional **3**: Good **2:** Average **1**: Below average

Basic ICT/Computer skills	**1**	**2**	**3**	**4**	**Comment/Remarks**
1.1 Ability to Start up and shut down a computer system and connect peripherals; open and close files; navigate with scroll bars, mouse, and special keys.					
2.1 Ability to use a **word processor** to develop written professional work (e.g., memos, worksheets, and communications with parents). I know how to edit and spell-check documents as needed. I can format documents.					
3.1. Ability to use as **PowerPoint** to create presentations, add text, graphics, video, audio, or hyperlinks to presentations.					
Basic ICT/Computer skills	**1**	**2**	**3**	**4**	**Comment/Remarks**
4.1. Ability to use a **spreadsheet** for several purposes e.g. to make calculations; use basic					

functions (e.g., sum or average). I can use a spreadsheet to make a graph, chart, or table.					
5.1. Ability to **create Access databases**, create forms, tables and generate, queries and reports.					
6.1. Ability to send and receive email, send and receive email attachments (files), send emails to multiple addresses and forward email.					
7.1 Ability to make use of search engines (e.g., Google) to find online information and resources.					
7.2 Ability to use advanced searching features (e.g., Boolean operators such as "and" or "not").					
7.3. Ability to use devices such as digital cameras and scanners to capture, save, and manipulate digital images. I can transfer digital images into a variety of software applications (e.g., word processors, presentation software etc)					
8.0. Ability to operate and connect peripheral devices, such as printers and projectors					

B. ICT technology usage.

Using a scale of 1-4, rate your usage level of computers/ICTs.

1-Never **2**-weekly **3**-Monthly **4**-Daily

ICT Usage	**Never**	**weekly**	**Monthly**	**Daily**	**Other/Give details**
1.1 I use word processing to create or plan classroom activities					
2.1.I use presentation software to organize or present curriculum information					
3.1 I use the Internet to locate and/or download professional resources (e.g., lesson plans, curriculum ideas, etc.)					
4.1 I use technology (i.e., email) to communicate with lecturers, students about, college events and activities, assignments, classroom events, etc.)					
5.1 I have integrated ICTs in teaching and learning					

C. Connectivity

1. Is your college lab networked? (**Yes**) (**No**)

1b.If **No**, are you interested in having the lab networked? (**Yes**) (**No**)

2. Do you have access to Internet services within the school? **(Yes) (No)**

3. If the internet connectivity is available within the college, who else has access to the internet (**World Wide Web**)? Tick as appropriate.

1.Students	**2.**Lecturers	**3.**Head of Departments	**4.**Principal/Deputy principal	**5.**Other(specify)

D. Other Issues

1.0 Do you have an ICT technology improvement plan for your college? (**Yes**) **(No**)

Please give details

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2.0. Who funded the purchase of computers and other ICT equipment for your college?

A. Government grants	**B.**Internally generated funds/ fees/levies	**C.** Donors	**D.** Other(specify

3.0. Do you have a computer maintenance program for all the college computers, and what is the approximate cost of computer maintenance per year?

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4.0 Rate the computer student ratio in your college.

1.Excellent	**2**.Good	**3**.Average	**4**.Poor

5.0 Rate the ICT teachers/ student ratio in your college.

1.Excellent	**2**.Good	**3**.Average	**4**.Poor

6.0. Have you received some computer training before? (**Yes**) (**No**)

7a. Regardless of your previous training, are you interested in further training? (**Yes**) (**No**)

7b. If **yes**, what type of computer training would you desire in spite of the training you have or don't have already? Tick or fill as appropriate.

1.Basic literacy	**2.**Microsoft Office packages	**3.**Customized courses for training& Research	**4.**Computer hardware and Networking
Other courses(specify:			

8. Any other comments.

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Thanks for your time and cooperation.

(USAID/AED/CFSK/TEPD)

United States Agency for International Development/Academy for Education Development/Computer for Schools Kenya/Teacher Education and Professional Development Program