

**A REPORT OF THE FIELD ATTACHMENT AT THE UNIVERSITY OF NAIROBI,
FACULTY OF HEALTH SCIENCES FROM 29TH JUNE TO 29TH SEPTEMBER AND
SUBMITTED TO ZETECH UNIVERSITY, FACULTY OF INFORMATION AND
COMMUNICATION TECHNOLOGY**



BY

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**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF
DIPLOMA IN INFORMATION TECHNOLOGY**

DECLARATION

DECLARATION BY THE STUDENT

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully written this report based on truth and cited all activities and duties that I undertook while on attachment. I therefore declare that this material is original.

NAME: **DANIEL NYONGESA MUKENYA**

Signature.....

Date.....

DECLARATION BY THE SUPERVISOR

This attachment report has been submitted with my approval as the university supervisor.

NAME: **MR. SIMON CHEGE**

Sign.....

Date.....

ABSTRACT

The purpose of this report is to provide the details of the intuition of attachment, a description of all the activities undertaken during the same, the lessons learnt and challenges during the attachment period. The essence of attachment is to put all the theoretical work done in class by a student into practical exercise.

I was therefore attached at the University of Nairobi, Faculty of Health Sciences, in the Information Communication and Technology office as a user support and maintenance attaché. Basically the work there was to reset passwords for staff, non-staff and students, biometrics for 1st year students coming to study in the campus. Responded to any issues arising on hardware and software challenges. As a team we solved the issues accordingly with no hesitance. I however gained skills on software installation, network troubleshooting, printer and scanner troubleshooting, VOIP configuration and etc.

DEDICATION

I wish to dedicate this work to my family for supporting me throughout my study.

ACKNOWLEDGEMENTS

The development of this report took the effort, support and guidance of a number of people whom I wish to thank. I also wish to pay tribute to the management and staff of University of Nairobi, Health Sciences for offering me a chance to be part of them and for their unwavering support. Gratitude to my academic supervisor Mr. Simon Chege for his efforts to assess me and advice on how to improve my skills.

I also thank my family for their support and prayers not only during my attachment period but throughout my course. I cannot end this list without paying tribute to the entire Zetech University Faculty of Information and Communication Technology for their constructive training and the knowledge they have imparted in me throughout the two years training. May God bless you all.

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

The industrial attachment training is an essential component of the curriculum of Zetech University and therefore no graduation without the industrial attachment. The attachment period is usually maximum of twelve weeks, during which the student is expected to acquire additional practical experience to supplement, their course of study in the university. They are also exposed to the real world of work and its challenges which will prepare them towards their future careers.

This report is the outcome of the twelve weeks practical training I had at the University of Nairobi, Faculty of Health Sciences.

1.2 OBJECTIVES

- ✓ Provide a creative and innovative solutions to the Institution
- ✓ Provide quality and sustainable solutions and services to the University
- ✓ Assist students to become competent and reliable users who can use basic knowledge of skills acquired

CHAPTER 2: DESCRIPTION OF THE ESTABLISHMENT OF ATTACHMENT

2.1 LOCATION AND BRIEF HISTORY OF ESTABLISHMENT

FHS is situated at Kenyatta National Hospital Campus. Opposite KMTC and Nairobi Hospital along Ngong road.

The Faculty of Health Sciences (formerly College of Health Sciences) is the leading tertiary healthcare training institution in Kenya and the East Africa region. It was established in 1985 from the then Faculty of Medicine which had been in existence since 3rd July, 1967.

At its inception, the College, now Faculty, had only one School, namely the School of Medicine which was established in 1967 and had three Departments: Dental Sciences, Nursing and Pharmacy. Since then, four other Schools and three Institutes were established. These are: School of Pharmacy (1995), School of Dental Sciences (1995), School of Nursing Sciences (2004), School of Public Health (2010), University of Nairobi Institute of Tropical and Infectious Diseases (UNITID) (2004), KAVI Institute of Clinical Research (2013) and the East African Kidney Institute, (EAKI) (2014).

Following the 2021 University reforms, the schools are now departments.

The mandate of FHS is to train health personnel for the country, the African region and the world. The staff at the Faculty offer specialized services at Kenyatta National Hospital, Mathare Hospital, as well as at the University of Nairobi Dental Hospital. Faculty staff also provide exemplary service to community through outreach programs and medical camps held throughout the Republic of Kenya.

FHS is situated at Kenyatta National Hospital Campus.

The Faculty is committed to training of high caliber healthcare professionals and innovative researchers in emerging health challenges and its professionals are at the forefront of the national health policy formulation.

As a result of this remarkable contribution, more than 50% of healthcare professionals and researchers in the health sciences in Kenya have been trained at the Faculty. This has earned the Faculty a reputation of a leading institution in training of high caliber healthcare professionals in the eastern and central African region.

The academic programs offered at the Faculty are highly competitive in the market and are relevant to the country's health needs. The Faculty offers a wide range of undergraduate and postgraduate degree programs leading to the award of diplomas and degree's at Bachelors, Masters, Doctor of philosophy and Doctor of Medicine.

2.2 OBJECTIVES OF ESTABLISHMENT

- ✚ To Review and implement programs in compliance with the set Policy and regulations.
- ✚ To offer services to customers in compliance with the service delivery charter.
- ✚ To ensure utilization of resources in compliance with the budgetary levels.
- ✚ To support the University increase the employee satisfaction index by 1% annually.
- ✚ To support the University increase the customer satisfaction index by 1% annually.
- ✚ To increase number of publications in referred journals by at least 130 annually.
- ✚ To support the University be among the top 5 in Africa and top 500 in the international ranking of colleges and Universities by 2018.
- ✚ To enter and operationalize at least three MoU's with collaborators and 2 partnerships with industry every year.
- ✚ To grow Research grants and Non-academic revenue by 10% annually.
- ✚ To promote environmental sustainability by annually engaging in at least one relevant activity.

2.3 ORGANIZATIONAL STRUCTURE

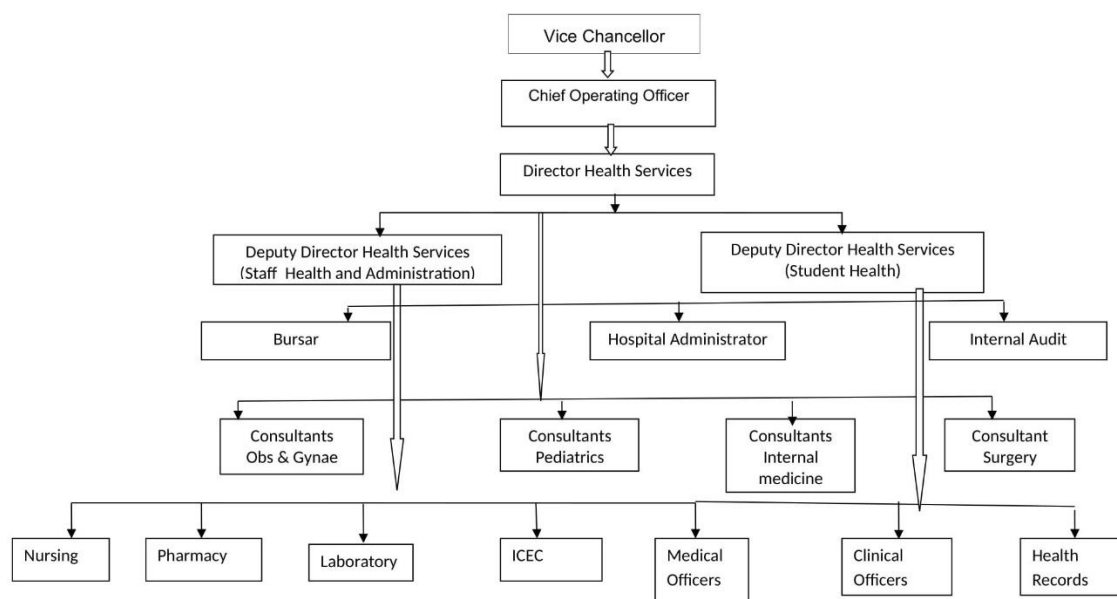


Fig 1.1 Organogram

2.4 VARIOUS DEPARTMENTS

2.4.1 Department of Dental Sciences

The School of Dental Sciences (SDS) is one of the five schools that constitute the College of Health Sciences (CHS). The School started from a humble beginning in 1974 as the Department of Dental Surgery, in the then Faculty of Medicine. The Department of Surgery was upgraded in 1995 to create the Faculty of Dental Sciences, Which became a School in 2005, with four Departments namely Oral/Maxillofacial Surgery, Oral Medicine/Pathology and Oral/Maxillofacial Radiology; Conservative and Prosthetic Dentistry; Pediatric Dentistry and Orthodontics; and, Periodontology/Community & Preventive Dentistry.

2.4.2 Department of Pharmacy

The Department is charged with the mandate of providing holistic training and producing high caliber Pharmaceutical health care personnel, conducting research and being at the forefront of Pharmaceutical health care delivery. The Department of Pharmacy is the pioneer pharmaceutical training institution in Kenya offering degree courses in pharmacy at both undergraduate and postgraduate levels. The student population comprises Kenyan nationals and foreign student constituting 3%. It has a large base of influential alumni. In this respect the School holds a special place nationally and regionally and inevitably its traditions and systems tremendously influence operations of the pharmaceutical education and practice.

The Department has a well-established track record of academic excellence and complement of competent academic staff in all pharmaceuticals disciplines. Critical expertise is available and full recognized and exploited in the provision of vital services to the public and private sector. This is realized through income generating activities, consultancies and community outreach services

In addition, the Department is a key stakeholder and is effectively represented in institutional and national decision making fora and in formulation of policies that influence academic programs, health policy and pharmaceutical care service delivery in public and private sectors. Expertise is available for highly specialized areas such as clinical trials, bioequivalence/bioavailability testing and cross-cutting research and innovation. Research and development with keen interest on natural products is entrenched.

The Department of Pharmacy is a leader in providing solutions to scientific and pharmaceutical problems in society through knowledge skills and management systems that are effective and efficient, based on good practices. Consequently the school continues to be a positive role model for other likeminded Institutions. Through its ever growing networks and linkages and customized services the school is poised to deliver on its mandate nationally and internationally.

2.4.3 Department of Public And Global Health

The School of Public Health, University of Nairobi (SPH) was established in September 2010 and was officially launched by the Vice Chancellor on 22nd February 2011. The forerunner of the School was the Department of Community Health (DCH) which was established in 1967 within then School of Medicine. DCH was a leading public health training center within the region and trained more than 250 public health professionals over the past 25 years in the Master of Public Health (MPH) program and other special courses. However, in order for the DCH to deal more effectively with the emerging public health challenges and the high demand for training on public health issues, there was a need to expand its mandate through the establishment of a School of Public Health. With this development, The School now has more autonomy and can engage in collaboration with other institutions to expand its contribution to public health research, training and community health development.

2.4.4 Department of Nursing Science

This thematic unit came into being in the year 2006 when the school was born out of the former department of Advanced Nursing which had been in existence for 38 years. It is one of the four thematic units that form the School of Nursing Sciences.

The thematic unit currently has a staffing capacity of eight (8) lecturers with diverse areas of qualifications at postgraduate level. Med/Surg thematic unit is responsible for the teaching and supervision of all Med/Surg course units for undergraduate and postgraduate students. It also coordinates teaching of the basic sciences offered by service departments in the College of Health Sciences.

The courses taught in this unit at undergraduate and postgraduate levels include Pediatric Nursing, Medical Surgical Nursing, Critical Care Nursing, Oncology Nursing, Mental Health and Psychiatric Nursing and Advanced Nursing Practice.

2.4.5 Department of Human Anatomy And Physiology

The Department of Human Anatomy of the University of Nairobi offers a robust anatomy education for over 500 undergraduate and postgraduate students pursuing courses in Medicine, Surgery, dentistry, pharmacy and nursing. Through a combination of didactic and hands-on cadaveric dissection, the anatomy student at UON undertakes a comprehensive and integrated course in Gross

Anatomy, Neuroanatomy and Microscopic Anatomy and Developmental anatomy which firms a basis for a medical career. Our faculty are clinician-anatomists, global in their perspectives and offer a platform where anatomy is taught with emphasis on clinical applications in each course. Although dissection remains the main modality of study, the department has embraced IT in the instruction to undergraduate and postgraduate students.

We have the facilities and infrastructure to deliver our courses. The recent addition of the a world class surgical skills laboratory is a key feature of our development and purpose to offer custom made courses for residents, qualified surgeons from Kenya and around the region throughout other year.

Our research portfolio is impressive. We have continued to contribute to the anatomy literature from the strongpoint of clinical anatomy, cardiovascular and connective tissue biology, aging biology and neuroscience. Collaborations and linkages are key in our ability to advance research. The next platform is to engage colleagues in the university and industry for joint projects including medical device design and anatomy education materials.

2.4.6 Department of Medical Microbiology and Immunology

It is the mother of two institutes dealing with infectious diseases at the College of Health Sciences namely the University of Nairobi Institute of Tropical and Infectious Diseases (UNITID) and Kenya AIDS Vaccine Initiative Institute of Clinical Research (KAVI-ICR).

It serves the Schools of Medicine, Nursing, Pharmacy, and Dental Sciences. Besides teaching undergraduate students of these schools, the department teaches medical microbiology to postgraduate students from departments of Pathology, Surgery and UNITID. The department's Master of Science degree program in Medical Microbiology covers medical parasitology, bacteriology, mycology, medical virology, entomology, molecular biology and immunology. Student dissertations for the Master's degree can be based on any of these broad areas of medical microbiology. The department also offers PhD program by research and thesis in these areas. In addition to training quality healthcare professionals in carrying out creative and innovative research, out creative and innovative research, the department also provides reliable diagnostic services to patients from Kenyatta National Hospital and other health institutions.

The Department has played and continues to play a crucial role in infectious disease research and in particular HIV/AIDS, COVID19 among others and in this regard does collaborative research with various local and international partners and collaborators.

2.4.7 Department of Clinical Medicine & Therapeutics

The Department encompasses 4 Thematic Units: Internal Medicine (Unit of Clinical Medicine), and Pharmacology (Unit of Clinical Pharmacology) Unit of Medical Oncology (UMO) and Unit of Clinical infectious Diseases (UCID)

The specialty of Internal Medicine takes pride in considering itself the “mother department” from which the entire profession of medicine derives its name.

We teach the Undergraduate medical class during the junior clerkship (3rd year & 4th year) and senior clerkship (5th year). Other than teaching the specialty of Internal Medicine, the Department is also entrusted with the broad task of introducing the students to the world of Clinical Medicine and teaching the basic concepts of clinical evaluation and care. This involves both didactic and clinical sessions.

We also offer courses to Dental undergraduate and postgraduate, neurosurgery pharmacy and nursing students.

We do run a robust postgraduate program leading to the Masters in Medicine degree in Internal Medicine with a total of about 50-60 students at any one time. The postgraduate dissertation involves extensive research and is a major source of new knowledge.

The Department also offers PHD and MD courses.

The Department is composed of eminent specialists in most of the subspecialties of Internal Medicine with a sound research portfolio.

We also offer clinical fellowship training in Medical Oncology & Clinical Infectious Disease.

The Department is involved in extensive research on HIV and Non Communicable diseases through Projects namely: CRISPP and EDCTP.

2.4.8 Department of Obstetrics & Gynecology

The Department has been training specialists in Obstetrics and Gynecology since 1972. The output has been on average 10 to 15 specialists per year to date. Thus, the Department has not been able to meet the national demand for specialists in obstetrics and gynecology, having trained about 500 so far in spite of the rapidly growing population. The current estimate of obstetrician/gynecologist-to-population ratio in Kenya is 1:140,000, which falls far short of the World Health Organization (WHO) recommended ratio of 1:10,000. In addition, the establishment of new medical schools has increased the demand for obstetricians and gynecologists required to provide quality training in the country. Thus, existing national gaps, emerging reproductive health needs and advancing technological approaches have made it necessary to revise the existing curriculum for Master of Medicine in Obstetrics and Gynecology. The revised curriculum will also instil leadership qualities to the specialists for effective service delivery in alignment with the Millennium Development Goals and attainment of Vision 2030 of Kenya. The graduates will be expected to be self-motivated professionals, adaptable to changing technologies and able to embrace a holistic approach to reproductive health care and research. The Department is committed to reviewing this curriculum every five years.

2.4.9 Department of Pediatrics' & Child Health

The Department of Pediatrics' and Child Health was established in 1967 at the inception of the Medical School. The Department's main responsibility then was to provide relevant undergraduate training that would enable graduates to adequately manage common pediatric and child health problems.

In 1973, a postgraduate training program was launched, prompted by the need to have locally trained specialists in the field of Pediatrics' and Child Health. Such locally trained specialists were to be equipped with knowledge and critical clinical skills relevant to the care of local health problems, provide leadership of clinical pediatric and child health services, and be involved in training and research. The present Pediatric Post-graduate training is based on instructional objectives in Pediatrics' and Child health that were first

drawn up in 1973 and progressively reviewed in-house over the years as new challenges in the field have emerged.

Past graduates of the MMED Pediatrics' and Child Health have functioned well as clinicians, administrators, international policy makers, academics and researchers. Collectively they have greatly influenced Child Health in Kenya and globally. A lot has changed in the science and care of children round the world with increased clarification of evidence based practices that reduce child deaths and improve the quality of life.

There are new benchmarks on the different roles beyond the medical expert such as to be expert communicators, collaborators, managers, health advocates, scholars and professionals. There is also a shift from traditional approaches to increased incorporation of competency based training and evaluation.

Attached is the history as written by Prof Nimrod Bwibo, the first Kenyan chair of the department of Pediatrics' and Child Health.

2.4.10 Department of Psychiatry

It was established in 1971 soon after the start of the medical college in 1967. The department is situated at the medical school, Kenyatta National Hospital (KNH). For teaching purposes, the department also uses Mathari Hospital, which is situated about 10 kilometres away from KNH. At KNH together with staff from KNH we run outpatient clinics for both adults and children. Mathari hospital with approximately 700 inpatients also offers teaching facilities. An alcohol and drug rehabilitation facility has recently been established at Mathari hospital.

A number of research projects have been undertaken in the department as detailed in the publications and dissertations and the staff profiles. Several publications have also been done both by the students and staff members. The students are encouraged to publish their dissertations upon completion of the course

The clinical services are offered both at Kenyatta national hospital and at Mathari hospital. The staff members fully participate in the management of patients. The large number of patients gives the students a good opportunity for practicals.

2.4.11 Department of Diagnostic Radiology

The Department of Diagnostic Imaging and Radiation Medicine is located within the second floor of the Old Hospital of the Kenyatta National Hospital. The department was established in 1974/1975 and admitted the first batch of postgraduate students in 1977. These five pioneer students have excelled in the field of diagnostic imaging and are key leaders in both public and private radiology practice. Since inception the postgraduate program has successfully trained 188 specialist radiologists for Eastern, Central and Southern Africa. In 2012, the Department rolled out a higher diploma training program for ultrasound specialist training targeted to both medical and paramedical cadres. This was necessitated by the need to improve ultrasound practice in

the country. To date the department has trained 35 ultrasound specialists who are running ultrasound specialist clinics in the per urban and rural areas thereby increasing the availability of ultrasound imaging.

In 2019 the Department begun the first training program for Radiation Oncologists in the region with an inaugural class of 8 residents. This new program requires acquisition of new faculty and expansion of the Staff establishment. The program has continued to expand and to date has 20 residents in training.

Besides the teaching programs, the Department runs an income generating unit which offers diagnostic imaging services in radiography and ultrasound. Imaging facilities in the teaching hospital include a state of art 3T MRI, digital mammography with tomosynthesis, digital radiography, 128-slice and 64-slice CT scanners, 9 ultrasound machines in main radiology (4) and one each in labor ward, gynecological clinic, newborn, intensive care and renal units and a dual head SPECT scanner.

There have been continued research activities in basic applied sciences of medical imaging and especially in the areas of physics of imaging, ultrasound, computerized tomography, conventional radiography, magnetic resonance imaging and radionuclide imaging.

2.4.12 Department of Surgery

The original department of surgery has undergone various changes since its inception in 1974. At inception all thematic units were housed in the same department. Over time various departments have broken off from the original parent general surgery department. These include the Departments of Ophthalmology, Orthopedic surgery and Anesthesia. It is hoped that in the not too distant future the unit of Ear Nose and Throat (ENT) will also apply for separation as an independent department.

The unit of general surgery teaches both undergraduates and postgraduate Master of Medicine in general surgery students in addition to BDS and maxillofacial surgery students.

2.4.13 Department of Human Pathology

The current Department of Human Pathology was initially constituted as a Department of Pathology and Microbiology in 1967 to service the then newly established medical school within the University College Nairobi. The University College Nairobi was at that time a constituent college of the University of East Africa. The Department was started through international collaboration with The Royal Infirmary Glasgow Medical School, UK. Microbiology later separated from Pathology in the 1975 -1979 period to become the present Department of Medical Microbiology.

The Department of Human Pathology has graduated over 70 Pathologists (MMED Pathology) with different subspecialties including Anatomic Pathology, Immunology, Clinical Chemistry and Hematology. The majority of these Pathologists are serving in senior positions within the Kenya Government's Ministry of Health, local Universities and the Private sector. In the late 1990s the Department launched the MSc Clinical Cytology course which has produced over 20 clinical cytologists

2.4.14 Department of Ophthalmology

University of Nairobi started postgraduate training in Ophthalmology in 1978 under the Department of Surgery. In 1990, Ophthalmology became an independent Department and was granted the status of [WHO](#) Collaborating Centre for Prevention of Blindness in May 1991. The Department has trained over [159 ophthalmologists](#) from 20 different African countries from 1978 to date.

2.4.15 Department of Anesthesia

One of the oldest thematic units within the department of general surgery but it became a fully-fledged department on 17th June, 2013. The first academic member of staff was Professor Emmanuel Ayim who was appointed in 1972 as a senior lecturer and with the support of the British government through the British council lecturers from Britain were sent to this section on a 2 yearly contractual rotation to assist in training and teaching students but this arrangement was terminated in 1980. In 1979 the MMed Anaesthesia program was started under the leadership of Professor Emmanuel Ayim and with 2 other lecturers including Dr. Samuel Kimanjara Kahuho.

The first 3 trainees were Dr. Noah Nganga, Dr. John Wambani and Dr. CM Rajula who are now eminent anesthetists in the country. The faculty has now increased to 9 with one associate professor, 5 lecturers and 3 tutorial fellows all of whom except one are graduates of the University of Nairobi anesthesia program. The master of medicine anesthesia program has continued uninterrupted from 1979 academic year and to date has produced 160 graduates including international students from Tanzania, Uganda, Rwanda, Ethiopia, DR Congo, Zanzibar and Zambia.

This thematic unit has been running a three year master of medicine in anesthesia program for many years and is due to commence its new revised four year program in September 2013. Also in September 2013 it will commence a one year pediatric anesthesia fellowship program with support from and in collaboration with World Federation of Societies of Anesthesiologists (WFSA). This program will be targeting anesthetists interested in further training in pediatric anesthesia.

CHAPTER 3 & 4: WORK AND EXPERIENCES GAINED

Software Installation

With the bootable USB drives and CD's, I was able to install different operating systems. To remove or format the existing operating system in the pc I;

1. Inserted the CD/USB and switched off the computer
2. I switched on the computer and just when it boots up, I pressed the F12 or F10 or Esc button depending on the type of PC to access the boot menu
3. I was able to see the boot menu options , you can either boot it from the CD or USB
4. Followed the necessary steps that will direct you to copy window files
5. A window is then displayed whereby it outlines all the partitions you did in the existing PC and you select as you format and delete the partition to get the unallocated disk/space
6. Run windows set up and when it finished, you search for available updates and restart the computer

Ethernet Cable Termination

CAT 5 cables are the most common. Due to loose attachment of both ends, some people had issues connecting to the intranet. With these issues, using a network cable tester you can test for connection in both ends. Termination happens when the cable is cut and using RJ-45 plug you renew it. There are 8 wires in an Ethernet cable. The wires are however arranged using the following order;

- a) Orange white

- b) Orange
- c) Green white
- d) blue
- e) Blue white
- f) Green
- g) Brown white
- h) Brown

This is the Standard B protocol used when arranging wires

Data Back-up

Some computers start misbehaving due to the system unit slowness and unresponsiveness. With this disturbance the system unit needed to be formatted. To avoid carrying the whole system unit, I opened the system unit and removed the hard drive carefully. Using another system unit, I removed the SATA cables from the CD/DVD drive and replaced it with the faulty hard disk.

When booting up, the system unit detected two hard drives. When displaying the windows start up, I managed to access my computer and there, I was able to see the two hard drives and copied the required files needed by the clients.

Active Directory Constraints

With the administrator rights, I was able to add various computers to the active directory. I right clicked on my computer and accessed the properties. I selected the advanced system settings and clicked on the computer name. I found the domain option and workgroup. Clicked on the domain and typed the correct domain name e.g. zetech.ac.ke. After that, the client is needed to put his/her

username and password and immediately a restart is required. When it restarts the client now puts his/her credentials and it will be successful.

I.P Telephones configuration

I.P phones or VOIP are full duplex. The phones are used in and out of the organization to make calls. They are prepaid phones. The phones however have 3 ports of which 2 are RJ-45 ports and one is for plug ins. The 2 RJ-45 ports; one is for the Ethernet cable coming directly from the switch or access point and the other is for the Ethernet cable coming from or connected directly to the system unit to provide internet to the computer. For VOIP to make calls outside the organization (Level 9) you start by dialing 9 followed by 07..... VOIP is configured using bought and licensed software's.

Printer & Scanner Troubleshooting

Some clients complained when trying to print the printer does not work. It was the regular challenge in the institution. I checked whether the cable connecting to the printer from the system unit is firmly attached. After that I checked the status of the printer by accessing the devices and printers in the control panel. Some stated that they were offline. This was due to the outdated drivers or no drivers installed. After installing necessary drivers, the printers work successfully. Other clients wanted to use the printers but the cable was one thus decided to share the printer in the network. To share the printer, you type the name of host PC (USB cable is physically connected) and search. When the printer or scanner is available you connect to the printer and try printing the test page.

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF ATTACHMENTS ACTIVITIES

Most of the times the issues were about hardware's. We as the user support and maintenance team in the institution, we diligently served the staff, students and non-staff without any challenges. Software installation depends on the effectiveness of the Pc. Compatibility however plays a big role when installing software's. Network troubleshooting is really nice. Skills are needed when terminating Ethernet cables. Use of network tester you can be able to detect which wire on which end has an issue. Wires should be arranged in the correct format. Hardware troubleshooting, check whether peripheral cables and devices are linked with each other. VOIP eases the work of clients since calls are made with unlimited airtime. Also it can be used as a tap to the PC to provide network. Data back-up, depends on the effectiveness of the PC. The hard drive status is of importance. When it is faulty all data is lost, when it is still in good condition data can be retrieved. User support and maintenance is fun, since hardware and software works hand in hand

5.2 PROBLEMS ENCOUNTERED

- ❖ Some machines lost the I.P address making clients not able to connect to the internet.
Had no idea on command prompt I.P commands to renew I.P address
- ❖ When a PC refuse to share files over a network, you can't be able to transfer files. Had no idea also that to enable file sharing, you access the run prompt and type *optionalfeatures* and you look for SMB1 protocol and enable it/turn it on

- ❖ Less knowledge in termination of faiba cables since the tool is very delicate
- ❖ When printer suddenly stops working, had inadequate knowledge of what a printer spooler is. Using the run prompt you type *msconfig* and there you find the printer spooler enabler

5.3 SUGGESTIONS FOR IMPROVEMENT OF THE SCHEME

The scheme has brilliant components but if everyone in the institution is provided with a PC that has a RAM above 8GB and above it could be better. Since the operations in the school are of high tasks. All the machines can have windows 10 pro since the ICT office only have the product key for windows 10 pro.