

**IMPROVING STUDENTS' SKILLS PRACTICE IN SAFETY MANAGEMENT IN
EDUCATIONAL WORKSHOP IN THE DEPARTMENT OF MECHANICAL AND
PRODUCTION ENGINEERING OF KYAMBOGO UNIVERSITY**

AGOLE PETER

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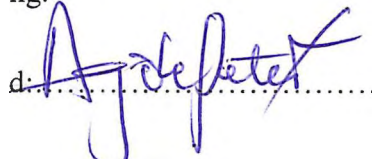
OCTOBER, 2016

DECLARATION

I, Agole Peter hereby declare that the work contained in this report is my own original work and that it has not been previously in its entirety or in part submitted to institution of higher

ng.

Signature:



AGOLE PETER

Date:

11th/04/2016

APPROVAL

This report prepared by AGOLE PETER has been carried out under our supervision and is now ready for presentation to Graduate school of Kyambogo with our due approval

DR. TITUS BITEK. WATMON

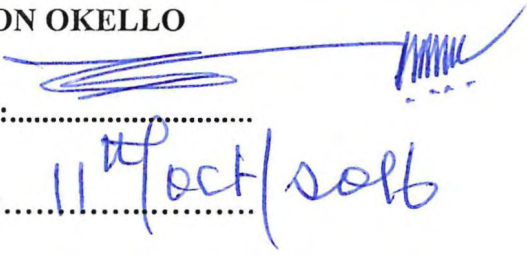
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DR. BENSON OKELLO

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LIST OF ACRONYMS/ABBREVIATIONS

CNC	Computer numerical control
KyU	Kyambogo University
DMPE :	Department of Mechanical and Production Engineering
MVP	Masters in vocational pedagogy
VET	Vocational education and Training

ABSTRACT

The study set to investigate students skills practice in safety management in educational workshop. The study was guided by the following objectives; To identify the safety measures to be used in skills practice at the department of Mechanical and production Engineering, to design precautionary signs for Skills Practice in the department of Mechanical and production Engineering, implement safety measures for skills practice in the department of Mechanical and production Engineering. In the study, a descriptive research design was used, where both qualitative and quantitative research methods were used. The total number of respondents who participated in the study was 30 and these included the Head of Department, lecturers, students, technicians from the Mechanical & Production Engineering Department of Kyambogo University. Data was collected from respondents by use of questionnaires and interview guide as the research instruments. Data was presented and analyzed using tables and then descriptions were done using percentages. From the study findings, respondents enumerated common hazards in the training Workshops of Kyambogo University and they gave the following Physical hazard, Ergonomic hazards, Chemical hazards, Psychological hazards and Biological hazards. The study also revealed that accidents always occur in the department of mechanical and production workshops. The study revealed that the common causes of accidents in the workshop are Lack of knowledge about tools and equipment used, lack of safety gears, carelessness of students, non-use of safety protective wears, improper storage of materials, lack of proper instructions to follow, use of un recommended tools for a particular task, lack of supervision, congestion in the workshop and unawareness of the operations safety hazards. The following were given as strategies to improve on the department workshop, warning signs which should be put in place with clear writings, providing protective gears to students and staff, provision of first aid kits, training have health and occupation safety team to evaluate and assess for improvement, renovation of workshops, warning tags be put on machines and it was concluded that that Kyambogo University lacks a proper and basic safety management practice trainings and therefore measures to improve the proper and basic safety management practice training should be in place.

CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND TO THE STUDY

Health and Safety Policies that relate to work involve measures taken by employers regarding working conditions. These aim at creating a healthy and safe environment for employees and users/stakeholders. The law requires employers to conduct business in such a way as to ensure the people who use their facilities are not exposed to risks to their health or safety.

According to the World Health Organization (WHO), each year an estimated 100 million workers are injured, 200,000 die each year in occupational accidents and 68 million to 157 million new cases of occupational disease are attributed to hazardous exposures in workplaces. Such high numbers of adverse health outcomes impact significantly on the health of the world's population. By affecting the health of the working population, occupational injuries and diseases have profound effects on work productivity and on the economic and social well-being of workers, their families and dependents (Veltri, 2011). Since 1995 the International Labour Organisation (ILO) and World Health Organisation (WHO) have shared common objectives of occupational health. The objectives were adopted by the Joint ILO/WHO Committee on Occupational Health at its first session in 1950 and revised at its twelfth session in 1995. The objectives were;

(i) the maintenance and promotion of workers' health and working capacity; (ii) the improvement of working environment and work to become conducive to safety and health and (iii) development of work organizations and working cultures in a direction which supports health and safety at work and in doing so also promotes a positive social climate and smooth operation and may enhance productivity of the undertakings. The concept of working culture is intended in this context to mean a reflection of the essential value systems adopted by the undertaking concerned. Such a culture is reflected in practice in the managerial systems, personnel policy, principles for participation, training policies and quality management of the undertaking.

Consequently, all over the World the issues of the workplace and occupational health became paramount. In Trinidad and Tobago

The number of reported workplace accidents in Trinidad and Tobago for the years 2008 to 2011 and the associated number of fatalities are shown below in Table 1 below.

Table 1

Reported Work Related Accidents in Trinidad and Tobago Fiscal Year (October to September)	No. of Reported Workplace Accidents	No. of which were fatalities
2010-2011	919	5
2009-2010	904	6
2008-2009	1114	15

The Occupational Safety and Health Act was assented to on the 30th January 2004 and was published in the Trinidad and Tobago Gazette (2004). The Factories Ordinance of 1948 was still law at that point in time. All these were put in place to protect their workers.

In Spain occupational safety and health is regulated by the Act on prevention risks. The Ministry of employment and social security is the authority responsible for the issues relating to labour environment. The national Institute for labour and hygiene is the technical public organisation specialised in occupational safety and health (Roughton, 2002).

In India the labour ministry formulates national policies on occupational safety and health in the factories and docks with advice and assistance from the directorate general of factory advisory service and labour Institutes (DGFASLI). Policies are enforced through Inspectorate of factories of dock safety DGFASLI is technical arm of the ministry of labour and employment. Government of India advises the factories on various problem concerning safety, health efficiency and wellbeing of person at work places. The DGFASLI provides technical support information rules, conducting occupational safety surveys and also for conducting occupational safety training programmes.

In South Africa the department of labour is responsible for occupational health and safety inspection and enforcement in commerce and Industry apart from mining and energy production, where department of mineral resources is responsible. The main statutory legislation on health

safety is the jurisdiction of the department of labour in Act No 85 of 1993; occupational health and safety amendment Act No 181 of 1993).

According to Blake (1989), building structures may be subjected to such hazards as impact from aircraft or vehicular traffic; internal or external explosion caused by gas, petrol vapour or sabotage; fire; settlement; coarse errors in design, detailing or construction; and special sensitivities to differential movement or conditions of elastic instability, not appreciated or allowed for in design. It is pertinent to recognize that hazards exist outside the range of conditions normally considered in design and must therefore be eliminated or the structure designed so that their consequence is acceptable. Carasco (1993) carried out a study on conditions of work and their impact on the safety and health of workers. This study revealed that individual workers are very often prone to accidents associated with their work because of inadequate safety provisions.

However, the accidents that have received wide publicity in the recent past have mainly been associated with inadequate shoring of excavations, and inadequate reinforcement of columns, beams and slabs (and formwork) in reinforced concrete structures. Safety in excavation has particularly received considerable attention because of recurrent fatalities in this work.

In 2005 a bill on occupational safety and health was brought to parliament ending in to the enactment of occupational and health Act, 9, 2006 with the overall purpose of safe guarding safety and health of all workers in the work places in Uganda. The act defines the work place as all places of work and all sites and areas where work is carried out including not only the permanent and indoor stationery places of work such as, shops but also temporary places of work such as civil engineering sites, open air places such as fields, forest, roads, oil refineries and mobile places of work such as tractors and excavators, ships galleys, freight desks of aircraft, and without exception. Places where workers are found as consequences of their work including canteen, living quarters on board ships.

1.2 Situation Analysis

Safety and Health

In Uganda, the Factories Act Cap 198 (1964) makes provision for the health, safety and welfare of persons employed in factories and to building operations and works of engineering construction undertaken by or on behalf of the Government (or the Common Services Authority). The parts that are specifically relevant to factories, premises and sites of building operations and works of engineering construction are Part IV (General Provisions for Health); Part V (General Provisions for Safety); and Part VI (General Provisions for Welfare). Clauses 34 and 35 of the FIDIC Conditions of Contract for Works of Civil Engineering Construction (1987) state as follows: "Due precautions shall be taken by the contractor, at his own cost, for the safety of his labor and personnel. He must ensure that medical staff, first aid equipment and stores persons are available at the camps, housing and in the site at all times throughout the period of the contract." According to Henry (1996), all aspects of safety are of paramount importance in both design and construction and many of these are covered extensively in national regulations and codes.

According to viscusi, (2008), statistics in Ugandan industrial sector, the manufacturing sector was the most hazardous causing most occupational fatalities (with 84% of the occupational fatalities and only 3% of the occupational injuries), followed by the construction sector (with 12% of the occupational fatalities and 29% of the occupational injuries). the services industry had 3% of the occupational fatalities and 56% of the occupational injuries. Other sectors accounted for only 1% of the occupational fatalities and 12% of the occupational injuries.

In the year 2002, the number of occupational accidents increased by 69% i.e. there were 354 occupational accidents in Kampala District, which resulted in death or serious injury (injury requiring more than two days of absence from work). The reported occupational accidents in 2002 resulted 34 occupational fatalities, a 63% reduction in the number of deaths, compared to the previous year (Paton, 2008).

In 2008 seven people died and two were injured when a wall collapsed at national social security fund (NSSF) building in Kampala

In 2016 March building collapsed at Kikandwa zone Mengo in Kampala where three were buried under the soil and the engineer was to account for the lost lives and all these from number six

was reported in the Ugandan New Vision and from one to five are from Kyambogo University workshops report.

- Coming down to Kampala and Kyambogo in particular, there are very many challenges that affect both staff and students at the department of mechanical & production engineering of Kyambogo University (DMPE). To mention but a few are; poor lighting in the Mechanical Workshop, Broken windowpane, absence of instructional and or prohibition signage, absence of Machine Guards, warning signs to guard against accidents spillage of Coolant on floor which causes users to slip and fall, lack of Water for washing hands after work, poor storage of materials and tools including lack of Gangways in the workshops. These problems prompted this study to improve general Health and Safety practice at the Machine shop at the department of mechanical and production engineering of Kyambogo University. In 2006 February, one student of environmental engineering cut her finger with the shearing machine during practical in DMPE Kyambogo University.
 - In 2010, a student of ordinary diploma in mechanical engineering crushed his hand in a drilling machine in machine shop DMPE Kyambogo University.
 - In2012 two students of automotive and power engineering crushed their hands in the sheet metal rolling machine in DMPE Kyambogo University.

Whereas the above being the scenario, the constitution of Uganda recognizes the importance of working in good condition environment to all workers and their rights. Article34 (4) constitution of republic of Uganda (as amended) not only looks at the labor force but also children who are to be protected from social or economic exploitation. The article pronounces itself that the children are not supposed to do work that is likely to be hazardous or interfere with their education, health, physical, mental spiritual or moral development.

Article 39 gives workers a right to a clean and healthy environment while Article 40(1) empowers parliament to enact laws to provide for the right of persons to work under satisfactory, safety and health condition.

1.2.1 Personal and Professional Background

I am a senior technician with biased in mechanical engineering. My main task is training of undergraduate classes (students) both on the diploma and bachelor degree programmes. . I joined

Uganda Polytechnic Kyambogo in 1994 after completing senior four from Comboni College Lira to work as a security guard from 1994-1996 when I was admitted to pursue a course in Mechanical Engineering Craft Practice II Certificate. I also hold a certificate in Technical Teacher Education from Uganda Polytechnic Kyambogo. My craving to learn never ended there. The zeal made me obtained Diploma in Mechanical Engineering followed by bachelor degree in Mechanical and Manufacturing Engineering also from Kyambogo University (KyU). After graduating with the diploma I was transferred from Security (guarding) to work as a Technician in the department of mechanical & production engineering in 2006. I also had a brief time in Germany. I went to Germany on a short Course in CNC programming sponsored by a Germany company called Novazet. While in Germany, I learnt good housekeeping philosophies and procedures. The opportunity to study master degree in vocational pedagogy at this University has empowered me to view Action Research as a tool for the future and the best avenue for building Uganda economy from scratch to glory. With these backgrounds of academic achievement and work, I can say that I have good knowledge in safety management and skill competencies in the workplace.

1.2.2 Statement of Motivation for the Study

The Master degree programme in Vocational Pedagogy exposed me to vocational training and vocational didactics in other word training by participation at the place of work or workshops to make the learners own-up the outcomes of their participation or involvement. This training, no doubts are more democratic to the extent that the learner owns the teaching/learning process and is more motivating and captivating. It is this mode of training I received at MVP which has motivated and empowered me to take up the challenge to research on this project topic and implement its findings. Thus, I am of the view that the learning outcome and its associated benefits are good for students studying at the department of mechanical & production Engineering (DMPE) of Kyambogo University. It is my hope that KyU adopts this vocational didactics approached to learning so that Uganda develops her own competent manpower in all sectors of the economy.

The main challenge I see stems from the fact that the University has totally ignored Health and Safety issues within its Laboratories and Workshops. Nonetheless, I will strive to promote vocational education and training (VET) by emphasizing holistic learning method.

In 2006 February, one student of environmental engineering cut her finger with the shearing machine during practical in DMPE Kyambogo University

In 2010, a student of ordinary diploma in mechanical engineering crushed his hand in a drilling machine in machine shop DMPE Kyambogo University.

In 2012 two students of automotive and power engineering crushed their hands in the sheet metal rolling machine in DMPE Kyambogo University.

In 2015 one student of environmental engineering year fell on the lathe machine which is without guard. This phenomenon has to change and the researcher intended to design setup and commission safe working procedures at the department to minimize future accidents and improve health and safety at the workshop in DMP Kyambogo University.

1.3 Statement of the Problem.

Over ten years of my stay in the department of mechanical engineering, several accidents have occurred on our young generation of engineers. Despite the occurrences of accidents, no emphasis has ever been put in the improvement on the safety management skills of students in this workshop.

Neither had any research been done to find out the causes of the mayhem in the workshop. Given the situation in the workshop, there was a wide gap in knowledge that needed to be bridged. This was the gist of this action research carried out in the department.

Designs and signage were therefore made to solve the problems in the workshop.

1.4 Purpose of the Study

The purpose of this research was to improve Students' Skills Practice in Safety Management in educational workshop of Mechanical & Production Engineering Department of Kyambogo University

1.5 Research Objectives

The objectives of this research are;

- a)* To identify the safety measures to be used in skills practice at the department of Mechanical and production Engineering.
- b)* To design precautionary signs for Skills Practice in the department of Mechanical and production Engineering.

- c) To implement safety measures for skills practice in the department of Mechanical and production Engineering.

1.6 Research Questions

The following are the research questions that guided this study;

- (a) What are the occupational hazards in Mechanical and Production Engineering Department?
- (b) What of precautionary signs can be designed for Skills Practice in the department of Mechanical and production Engineering?
- (c) How can we implement safety measures for skills practice in the department of Mechanical and production Engineering?

1.7 Justification of the Study

In a learning environment where many learners come to acquire skills, there must be conducive environment to enhance learning. If the environment is not safe, Instructors may find it hard to manage health and safety of all involved (students and instructors alike).The researcher views safety management as problem solving process of efficiently achieving organizational goals and objectives through efficient and effective use of scarce resources in a changing environment(Kreitener, 1980). The project will encourage management at the Department of Mechanical and Production Engineering and all stakeholders to practice health and safety policies according to government guidelines (Act Cap. 198 (1964)) for place of work. If the stakeholders can develop a culture of practicing health and safety management repeatedly according to Kolb experiential cycle, then there is hope to improve and maintain everyone's proficiency. The end results will be developed Skills in the execution of learned physical tasks.

1.8 Significance of the Study

The following are the significance of this study;

This study may help Mechanical and production engineering department to improve students skills practice in safety management reducing on the rate of accidents, and injuries that causes unnecessary expenses to Kyambogo University.

To the institutions of higher education that carry out training, this study will help them to learn from the implementation of safety mechanisms in workshops hence reducing on the rate of accidents in their workshops.

To the government and other policy makers, this study will provide information on the challenges that are faced in the training workshops of institutions and this will help them to formulate policies that will help to improve on the workshops of such institutions.

To other researchers who intend to carry out research in improving students' skills practice in safety management in educational workshop, this research will work as source information to their studies.

1.9 Scope of the Study

This is categorized into content, geographical and time scope as explained below;

1.9.1 Content Scope

The study is aimed at assessing the ways of improving students' skill practice in safety management in vocational education. However, the primary focus of this study was to identify safety measures, design precaution signs, Implement the safety measures and evaluate their impact in department of Mechanical and production Engineering .

1.9.2 Geographical Scope

The study was carried out at Kyambogo University in the department of Mechanical and Production Engineering (DMPE). It is located in the center of Kyambogo Hill approximately 8 kilometres east of Kampala city centre.

1.9.3 Time Scope

The study considered a period of ten years from 2005 to 2015. It is thought that this time frame was ample for me to analyze what happens in the workshop and its safety management.

1.10 Definition of Key Terms

Accidents: An unfortunate incident that happens unexpectedly and unintentionally, typically resulting in damage or injury or event that happens by chance or that apparent or deliberate cause

Coolants: Is a liquid or gas and normally made up of special fluid with additives because it needs to remain liquid at very low temperature. It is useful in removal of heat from other bodies

Environment: Is the sum total of all surroundings including natural forces and other living things which provide conditions for development and growth as well as of danger and damage

Health: Is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. (WHO, 1946)

Management: Management is the process of designing and maintaining an environment in which individual working together in groups efficient to accomplish selected aims (Koonts1994). Meanwhile, Merry, (1941) simply defined management as getting things done by other people.

Practice: The actual application or use of an idea, belief, or method as opposed to theories about such application or use (Merriam-Webster, 1831).

Precautionary Signs: Are signage posted to warn users to observe certain specified rules or regulations. It is a measure taken to prevent unwanted scenarios taking place.

Skills: The ability to use one's knowledge effectively and readily in execution or performance (Merriam-Webster,1831)

The Factories Act Cap. 198 (1964) Act enacted by Parliament regarding factories by laws

Physical Hazards: lighting, extreme heat, ventilation, noise, intense physical activity, electric shock, dust, fire and vibration

Chemical Hazards: exposure to diesel oil, lubricating oil, and carbon

Mechanical Hazards: vehicle, abrasive/cutting tools, hand tools, cranes and lifting gears, and contact with hot parts of machines

Ergonomic Hazards: repetitive work, poor work posture, long standing times, lifting heavy objects;

Psychological Hazards: Stress, excessive overtime, and lack of job control. Some of these hazards are true for the construction industry in general.

Safety

Safety is the state of being “safe”, the condition of being protected against physical, social, spiritual, financial, political, emotional, psychological and educational or the types or consequences of failure, damage, error, accident, harm or any other event which could be considered non-desirable. It can also be defined as to be control of recognized hazards to achieve an acceptable level of risk.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter looks at literature of other scholars in related subject matters so as to provide the foundation for the research topic. The review process shall identify Gaps in knowledge.

The literature review was done in line with the objectives of the study. Each objective/question was given a theme that reflects both variables of the study and appropriate literature reviewed. I decided on sub-headings in accordance with the research objectives.

2.1 The Safety Measures to be used In Skills Practice in the Mechanical and Production Engineering.

According to "Ministry of Employment and Social Security (2015), when you cannot remove a hazard or replace it with a less hazardous alternative (sometimes called substitution), the next best control option is enclosure. Enclosing a hazard usually means employees are not exposed to it during normal operations, although they could be during maintenance or if the enclosure system breaks down. For these situations, consider additional controls such as specific work procedures or PPE (Diving Regulations (2009).

Examples of enclosure include: Completely enclosing the moving parts of machinery, completely containing toxic liquids or gases from a process, using glove-box operations to enclose work with dangerous micro-organisms or toxic substances completely containing noise-, heat- and pressure-producing processes with materials especially designed for the purpose

If you cannot remove, replace or enclose a potential hazard, your next best approach is to install a barrier to exposure. In the case of air contaminants, you could install local exhaust ventilation systems to remove the contaminants (Diving Regulations (2009).

This control involves potential exposure for your employees even in normal operations – so you must apply additional controls to protect them, such as PPE and/or safe work practices designed specifically for the site conditions.

Barrier examples include:

Ventilation hoods (fume cupboards) in laboratories, machine guarding, including electronic barriers (unless they are virtually impossible to bypass), isolating processes in areas away from

workers, except for maintenance work, baffles used as noise-absorbing barriers and heat shields (Lebergott, Stanley(2002).

2.1.1 Minimization Using Administrative Controls

Viscusi, (2008) noted that administrative controls use procedures or instructions to minimize exposure to risks. They could involve limiting the exposure time to a particular hazard such as noise or radiation. You should only use these two options as your main risk-control methods when you have exhausted the higher-priority options. They require management, enforcement and commitment, together with behavior change, and are used alongside other controls. Wherever possible, replace them with better controls to ensure that you meet the HSE Act requirement to take all practicable steps. This is related to the Kyambogo in that there are some administrative procedures which are in place to minimize the students from exposure to the risks such as fire outbreak among others.

According to Paton, Nic. (2008), if plant or equipment failure in your workplace has the potential to cause injury or illness, you need an effective system for properly maintaining the plant and equipment.

This should include: Choosing students to be responsible for inspection and maintenance, keeping an up-to-date plant maintenance register that schedules maintenance, determining the appropriate maintenance type and frequency. Consider manufacturers' instructions and factors unique to your workplace that will affect the need for maintenance, developing a procedure (including safety aspects) for carrying out the maintenance, reporting faults and damage, and addressing reported deficiencies, instructing, training and supervising people so they carry out maintenance safely and using a safety confirmation procedure to check that equipment is safe to use after maintenance or servicing. In relation Kyambogo University provides various equipments which helps to protect students from exposure to hazards (Health and Safety Executive (2009)

Diving Regulations (2009) asserts that make sure you support any new control measures with work procedures. These may involve clearly defining the responsibilities of management, supervisors and employees. Inform all the people who need to know about the control measures. Explain the reasons for the changes and have them supervised to make sure they are implemented and used correctly. Maintenance is an important part of the process. Make sure that work procedures detail the maintenance requirements and the checking of that maintenance.

In Kyambogo University Mechanical department supervisors are given different responsibilities and this has helped to maintain the management of the workshops and it has reduced risks within the department.

Paton(2008) noted that PPE is used to reduce or minimize exposure to and contact with agents that cause physical, chemical or biological injuries. PPE does not eliminate hazards – it reduces the risk of injuries. For example, hearing protection reduces the likelihood of hearing damage if the earplugs or earmuffs are appropriate for the kind of noise exposure and they are used properly. However, hearing protection does not eliminate the noise.

Only use PPE:

As a short-term measure before you put in place more effective controls

Where you have been unable to eliminate or isolate a hazard

During activities such as maintenance, clean-up and repair

During emergency situations

2.1.2 Legal Requirements

The Health Service Executive(HSE) Act contains requirements for the use of PPE:

Trainers have a duty to provide protective clothing and equipment. The Act now states that the employer is to “provide” PPE rather than to “ensure that [PPE] is provided”

It is the employer’s responsibility to ensure that the clothing or equipment is worn

The employee has a responsibility to wear it.

You must pay for any required PPE. Note that you cannot pay an allowance or extra remuneration instead of providing it, or require employees to provide their own equipment or clothing as a precondition or condition of employment.

However, an employee can genuinely and voluntarily choose to provide their own protective clothing for reasons of comfort and conveniences, as long as you are satisfied that the protective clothing is suitable. An employee can also choose to stop providing their own protective clothing; they must then give you reasonable notice that you need to provide the clothing for them. This applies to clothing, not equipment (James, 2002). In kyambogo University Mechanical Workshops, sometimes students and workers provide their own protective means

like glasses among others protective means which has helped to reduce exposure to risks within the workshops.

In some institutions, trainers are expected to monitor the health of all students at risk to identify early any health effects and provides the needed medical care or occupational hygiene advice. This is also a way to check the effectiveness of any measures you have used to reduce exposure to hazards. For example, health problems suddenly appearing among employees in a work area may indicate a breakdown in safety precautions, procedures or supervision(WHO, 2006).

Take all practicable steps to gain your employees' consent to this monitoring. Under the HSE Act you must seek their approval and take responsibility for informing and encouraging them about health monitoring. However, your employees must consent voluntarily, without any pressure from you. In Kyambogo University, the lecturers supervise students during practical in the workshops, this helps to reduce accidents within the workshops more especially among students.

Viner (2012) asserts that keeping adequate records of your hazard management process will help you to demonstrate that you have been working to ensure the safety of your employees and visitors to your workplace.

You should ensure that all of the information gathered about the hazards in your business is recorded in some way. Many businesses list their hazards in a hazard register

Your records must show:

That you have identified hazards

That you have assessed the risks associated with those hazards, how you decided on control measures to manage exposure to the risks, how and when you implemented the control measures

Before a health and safety representative can issue a hazard notice, they must have tried to discuss the hazard with you. If you refuse to discuss the matter, or if you and the representative cannot agree on how to resolve the problem, the representative can issue the notice.

Throughout the process, even if a hazard notice is issued, you and the representative must work together in good faith to try to resolve the problem. This may mean seeking information and advice, either from someone else at work or from an expert.

There are no penalties or fines attached to a hazard notice. However, if a health and safety inspector visits the workplace and notices the same hazard, they may treat the notice as prior warning for issuing an infringement notice. If an accident happens as a result of the hazard, the hazard notice can be used as evidence in any possible prosecution (Roughton, 2002).

Sweeney (2012) points out that the causes of hazards in work place as follows; Noise and vibration, plants, machineries and electricity, gas, vapour, dust and fumes, hazard substances and dangerous goods, hazardous substances, hazardous substances are widely used in institution. exposure to hazardous substances like chemicals can have a damaging effect on the health of workers if they are not properly protected, hazardous substances can enter the body through inhalation, skin contact or mouth, ways to help protect workers from exposure to hazardous substances include using:

Physical process like ultra- sound, rather than chemical process, to clean object. ready –cut and sized form materials to avoid dust production from cutting materials on site, less hazardous substances, form, or processes, for example using a granular form instead of power, exclusion zones around work areas to restrict access and local exhaust ventilation to remove contaminated air directly from the source. These were found to be important for this study(Sweeney, 2012).

2.1.3 Appropriate Safety Measures

Organizations today are seeking graduates who exhibit both effective communication and analytical, critical, and problem solving through safety management skills as drivers of success in today's ever- changing conditions. These skills and abilities can be cultivated in the educational setting if students are given the opportunity to engage inpractical learning more actively (Merritt, 2001p.34-6).

Specific safety, efforts should target safety culture improvement and employees should be heavily involved in these efforts. This helps increase personal responsibility andemployees buy-in for safety (Geller, 2005). Innovation programs increase employee involvement. Organizations must find creative ways to increase employees' involvement for safety. According to my understanding I do agree with Morrison's (2013) argument that it is time to rethink our use of technology in school because technology has revolutionized education so due to revolutionization in education, training Institutions should realize that technology without safety practice in place is putting people's lives in the whole world at total risk including those

involved in that technology practice, Veltri,(2011) who talks about transforming safety strategy and structure in occupational hazards asserts that, the proper technology practice must go hand in hand with safety skill practice

According (Bruce, 2013), systematic hazard elimination is the primary purpose of safety system activity across several organizations. Such systems may include direct hazard-by-hazard elimination, a pervasive presence across the system elements of the identification framework and hazard management programs such as manual handling (Triggs, 2000). However, establishing the basic system infrastructure is the dominant purpose of systematic hazard elimination which may focus on the procedures and training to support 'employee safe working' and safe systems of work.

Furthermore, (Bruce, 2013) asserts that risk management operates beyond occupational hazard precautions when calculating the victims' risks and benefits. Its response is based on the standard application of broader control strategies which may include rehabilitation and claim management to mention a few. A risk management objective is evident when cases that emphasize rehabilitation before prevention (Petersen, 2000), or build an 'acceptable level of risk' into the job.

2.1.4 Compliance with Legal Requirements

Compliance with legal requirements is a purpose attracting cases at opposite ends of the spectrum (Stricoff,2000) asserts that while compliance with legislation underpins HosCare's safety management system, and has stimulated the current hazard identification and assessment project at Auto press, in Pig works conforming with legal requirements appears synonymous with minimum safety effort. The former cases developed projects consistent with performance based standards, while Pig works lacked awareness of performance standard legislation. Other cases expressing an intention to move beyond minimum safety legislative standards exhibited a lack of awareness of key legislative provisions.

2.1.5 Everyone's Involvement in Safety Issues

Safety management has to be held personally responsible for safety. That means everyone in a company/Institution can be held accountable, says (Garner and Horn, 2000).In successful businesses, leaders are graded not only on a financial scorecard, but on their ability to integrate

safety into the business process (Krause 2000,). Safety is a core value, and core values are integrated into the day-to-day operations of the business. Employee engagement in safety management is key here 'all employees that is; everybody from the CEO down is an employee. Everyone is engaged in the safety management process. If you don't engage all employees, you don't have a prayer at becoming a world-class company /Institution in safety or in business," (Krause2000).In my experience the statements mentioned above about safety by Krause are correct because in any Institution where management is detached from safety management policies, the employees tend to ignore safety practices at work place, yet when safety practices are followed properly they prevent most work related accidents hence provides better working environment for social interaction with personnel and equipment for better production.

Lee (2009) asserts that safety should not be an emotional subject any more than anything else in business. Take a rational, disciplined approach. Many companies try to play on the emotional aspect of injuries, i.e., the impact an injury could have on the lives of employees and their families. That might work for a while but not for long and not consistently."

He suggests devoting energy to finding the root cause of anything that goes wrong in a disciplined way. What get investigated are usually the symptoms of the problem when the real problem is the culture in a related issue of treating a symptom instead of the root cause Eckenfelder(2000) notes that the "root cause of the Columbia shuttle crash that left many people dead wasn't stuff flaking off the outside of the shuttle. The root cause was the safety culture at NASA.

2.2 The Impact of Safety Management Systems

The primary rationale for ongoing development of safety management systems is the achievement of safe and healthy workplaces. The principle criterion for success is a reduction in the incidence and severity of work-related injury and disease. Descriptive and case study accounts by various authors noted below attest to the success of particular firms in improving safety performance following concerted effort to improve safety management (Guymon, 2009). Investigation of the links between safety management effort and injury performance also connects a group of studies which analyze safety program effectiveness. The studies have explored organizational and health and safety system/program characteristics, sometimes referred to as the 'safety climate' (Glennon, 2011).

Effective health and safety planning has been defined as having well-developed plans in place, which focus on key hazards and systems and informed by hazard and injury data known by employees, are seen to have the visible commitment of senior management and are monitored and reviewed during implementation. The plans should establish measurable organizational objectives for health and safety, set priorities and allocate resources (Glennon, 2011).

Viner, D. (2012) asserts that among the ways of managing safety, there is the audit review: The audit criteria call for the conduct of planned and documented safety management system to be undertaken by competent persons, with reports distributed to appropriate personnel in the organization. The deficiencies identified and corrected. In turn audits provide a tool for the formal review at senior level of the appropriateness and effectiveness of the safety management system. This can effectively be executed using Kolb's model of training / working

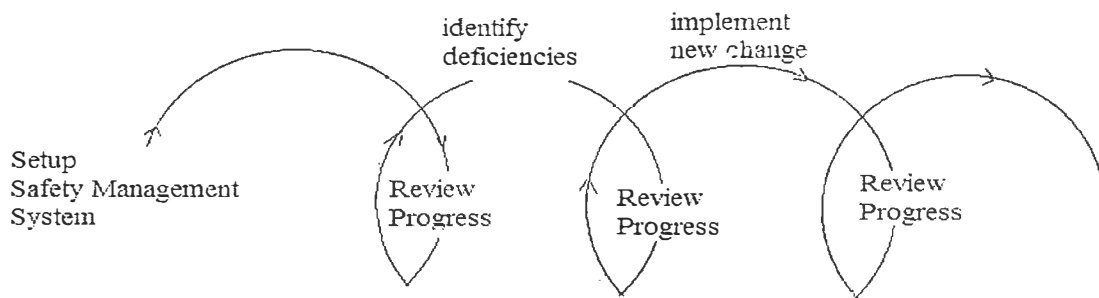


Figure 1.1: demonstrating Kolb's experiential Cycle (Swartz, 2003)

2.2.1 Health and Safety Responsibilities

According to Lebergott, (2002), health and safety responsibilities, according to the audit criteria, should be defined and communicated, in enterprise policies or directives, job descriptions or manuals. Responsibility clearly must be allocated for ensuring current legislation is available and for the identification and allocation of responsibilities imposed by legislation, while the level of responsibility must be consistent with legislated responsibility statements.

A majority of cases provide written information on health and safety responsibilities, in policy statements or in job descriptions. Fourteen cases do so, and nine of these include health and safety in job descriptions at manager and supervisor levels (HosCare, Soapchem, Car Parts, and Superstores 1 & 2, Make mats, Auto press, Pig works and Grande Hotel). Buildashop uses the

site safety plan for each construction project to outline the responsibilities of specified positions. There is less vigilance across the cases towards the identification and allocation of legislative responsibilities, ensuring managers and supervisors are aware of the legislative responsibilities towards contractors and the provision of information more generally on legal responsibilities. Only HosCare and Auto press had a high overall level of compliance(Stanley, 2002).

Paton (2008) asserts that the audit criteria for effective line management and supervisor involvement envisage an active and broad-ranging role for the line manager and supervisor, including involvement in planned hazard management activities, health and safety consultative arrangements, more traditional activities such as incident investigation, and other activities identified. Supervisors are expected to be appropriately trained, in order to participate effectively in hazard management and to incorporate health and safety into the day-to-day supervision of work.

Health and Safety Committees, according to (VELTRI, A. 2011) an effective health and safety committee, according to the assessment criteria, will have documented terms of reference and composition, meet regularly, and have a wide distribution of minutes. It is expected also that the committee will include senior management representatives and that management and employee representatives on the committee will be trained. The focus of committee deliberations should be policy/procedure development, health and safety planning, measurement and review, and planned hazard management programs, together with health and safety promotional activities. On the other hand, the committee should not have a predominant issue resolution role, although it may have an issue resolution monitoring role. Further, an effective committee is one with a high success rate in dealing with health and safety issues. Finally, there should be mechanisms for communication between employee representatives on the committee and the employees they represent

2.2.2 Encourage Safety Accountability

It's important that safety professionals let people know that they are each responsible for safety, but also subtly demonstrate this. This means asking questions in safety meetings that get the team to come up with safety solutions, but not offering any ideas. In fact, the more you give ideas or offer the suggestions, the more the weight of safety accountability will fall back on you. Ask tough questions that challenge any outdated assumptions in your organization. Find out

what safety challenge they are most concerned about and what needs to be done. This is important, as by allowing your team to come up with ideas you are growing their collective brainpower. You're also encouraging them to think more in their jobs (and improve autonomy and even, job satisfaction), which will result in you having to help them less, while they become more responsible (quick note: this is also good with children of all ages(Glennon, 2011).

High Performance Safety Meeting- Running a safety meeting at a high performance level means getting everyone to come up with safety solutions, having open safety discussions and ensuring action is taken. Learn how to be an expert in running a safety meeting where everyone collaborates and action is taken (which is also about the two previous skills - encouraging safety accountability and leading by asking questions(Stanley, 2002).

Removing Gender Bias- Human beings can be remarkably biased. Men can often unwittingly have a bias towards women at work even when they think they agree with feminist principles. It's important for male leaders to also include women in the team (without subconsciously blocking them). And it's also important that female leaders, include males. However, if you're a male safety leader, it's important that you ensure women feel comfortable talking to you about safety issues and that you will take matters seriously(Paton, 2008).

Actively Listen. It's easy to 'hear past' someone who is talking. (Our minds work about five times the speed of our mouths. In our rush to finish the speaker's thought and put our own two cents in, we shut the other person down.) If you have a bias, it's even easier to want to interrupt. Slow down and listen. If your response demonstrates that you've heard what she's said, she'll feel more enabled to contribute more fully to your organization (Veltri, 2011).

Work with Senior Management- It's important that safety staff know how to work with senior management and also how to influence them. Being able to get senior staff to support a new safety initiative is integral. At the same time, if senior management wants to push a new initiative it's important that you let them know they best way for it to work. It's a two-way relationship (Veltri, 2011).

According to Paton, Nic. (2008), eating and drinking in the mechanical workshop areas are strictly prohibited, when working with machine tools or other equipment with rotating spindles, jewelry, loose clothing etc. are prohibited and long hair must be completely covered, Personal

Protective Equipment (PPE) is supplied and must be used where necessary. Barrier cream, lab coats/overalls, eye and hearing protection, dust masks and safety shoes must be used as the work/risk assessment dictates, Lab coats/overalls and safety boots must be worn by technicians operating the machines, the gangway through the workshop must be kept clear. Any oil spillage, grease etc. must be cleaned up immediately, do not carry loads such that the weight may be dangerous or vision obscured. Refer to and no hazardous substance to health can be used before a COSHH risk assessment is undertaken and a safe system of work issued to the users

The wearing of heat-resistant gloves is common sense and essential to prevent burns from the work piece, sparks and hot metal. A heat and fire resistant apron should also be worn to protect clothing and prevent sparks or hot metal becoming trapped in pockets. Rolled up sleeves and trouser turn-ups should not be allowed for the same reason. The wearing of nylon overalls should not be permitted during welding.

2.3 Designing a precautionary signs for skills practice in the workshop at the department of mechanical and production engineering.

2.3.1 First Aid

All accidents, cuts and abrasions must be reported before leaving the workshop. If an accident does happen, no matter how small, it must be reported to the workshop staff and an Accident Report Form filled out. Filling out this form is imperative for any future complications resulting from an accident.

2.3.2 Warning Signs

WHO (2014) asserts each safety signboard and associated supplementary signboard should be used to convey only one safety message. Composite signs giving more than one safety message should not be used. Graphical symbols should not be combined to convey more than one safety message. For example, if a mandatory instruction to wear safety helmets and safety goggles is required, two signboards should be used. The safety helmet and safety goggles should not be combined as one graphical symbol.

A supplementary signboard placed with a safety signboard should not be used to convey a second safety message. For example, if a safety signboard indicating warning is to be accompanied by a mandatory action, either two separate signboards should be used or the separate signboards (and supplementary signboards) can be combined on one carrier.

Rooms or areas used to store significant quantities of dangerous substances or preparations must be indicated by a suitable warning sign. This Part of the Schedule governs signs on containers and pipes but paragraph 1 does not apply to containers used at work for brief periods nor to containers whose contents change frequently, provided that alternative adequate measures are taken, in particular for information or training (or both), which guarantee the same level of protection.

2.3.3 Identification and Location of Fire-Fighting Equipment Used Exclusively For Fire-Fighting Purposes

This Part of the Schedule applies to equipment used exclusively for fire-fighting purposes and requires fire-fighting equipment to be identified by using a specific color for the equipment and placing a location signboard, or by using a specific color (red) for the places where such equipment is kept, or their access points. The red area must be sufficiently large to allow the equipment to be identified easily.

According to (Veltri, 2011), lamps are fragile and they can easily break. The regulations distinguish between accidental breakage that occurs during normal transport and intentional breakage or crushing. While there is no specific amount of breakage that is considered accidental, less than 5% is typical. Anyone who chooses to recycle lamps under the UWR should take standard precautions to minimize breakage, such as using the boxes from new lamps to store old ones in more specific guidance on this is available from recyclers.

In regards to the University of Edinburgh article published on (Dec 12/2015), stating safety in the workshops is subject to a number of various risk assessments and safe codes of working practices which have to be observed and adhered to by all workshop users and enforced by the person in charge of these areas. Due to high risk activities taking place in the workshops access to these areas is restricted to authorized personnel only. No other person may enter the workshops without permission. Therefore health and safety guidance on workshop was designed as follows;

No machine may be used or work undertaken unless the technician-in-charge is satisfied that the person is capable of doing so safely. If equipment is fitted with guards these must be used. Equipment must never be used if the safety guards have been removed. Any person working in the mechanical and electronic workshop must have read and signed the appropriate risk

assessment if the work or equipment they are using has been risk assessed. Risk assessments are kept in a filing cabinet within the mechanical workshop (B.128). No person shall mount any abrasive wheel unless he/she has been trained in accordance with the Provision and Use of Work Equipment Regulations 1998. Grinding machines shall only be operated by technical staff and eye protection must be worn.

Service records of all machine tools, plant and equipment must be kept. They must list the date of any service/repair and name of the person responsible for carrying out that service/repair. Faults which cannot be repaired immediately should be reported to the technician-in-charge and a note should be attached to the machine where it is clearly visible indicating that the equipment is out of order.

All Portable Electrical Equipment must be regularly inspected and tested for electrical safety, Lifting equipment must be registered with the University's Engineering Insurers and be subject to annual inspection, all air receivers must be subject to a thorough examination at the statutorily required intervals, where applicable suitable Local Exhaust Ventilation (LEV) must be used. The LEV systems must be subjected to a thorough inspection and test at least once every 14 months, ladders/stepladders should be individually identified and formal inspections carried out(Goodson, 2015).

No welding may be undertaken unless the technician-in-charge is satisfied that the person is capable of doing so safely. During any welding operation the fume extraction system must be used, when using woodworking machines the dust extractor and face masks must be used, Equipment must be cleaned after use. Any materials, tools or equipment used must be tidied away, Precision measuring equipment, drills, etc. must be replaced in their appropriate cabinets after each working day, Tools and equipment must not be removed from the workshop without permission from the technician-in-charge(Goodson, 2015).

At this point TarunGoel edited by Kenneth Sleight on 29 Aug 2011 supported the University of Edinburgh saying Mechanical workshop safety rules are important to follow because workshop rules and regulations not only ensure worker safety but also bring efficiency to the work process. Safety guidelines, fire precautions, and general work rules ensure that a symmetrical work process is observed in workshops.

Most engineering colleges across the globe include workshop training in the first year, which is common for all engineering disciplines, be it mechanical engineering or electrical engineering. The basic aim of such courses is to make students familiar with industry practices and help them understand the basics of working in a workshop. When new employees start working in a workshop they will see that certain guidelines are often posted on the walls. These guidelines might not suit a young engineer or a new worker but they are very important to follow, to understand, and to implement in the daily work schedule. Improved efficiency, reduced security threats, and symmetrical proceedings of work are some of the advantages of following the workshop practices. And in view of my Research study on Improving Students Skill Practice in Safety Management in Educational Workshop I find that this statements are correct and so relevant to the study whereby most of the stated errors do occur in Mechanical and Production Engineering Department since most students do not observe health and safety as the basic principles as far as Engineering courses are concerned(Goodson, 2015)

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter looks at the methods that was used during the research study and the basic contents in this chapter include; research design, area of the study, target population, sample techniques and sample selection, research instruments, data collection procedure, data analysis and the limitations that are likely to be faced during the study process and their possible solutions.

3.1 Research Design

Descriptive research design was adopted for this study on Health and Safety Practice at the Workshops within the department of Mechanical and production Engineering. I envisaged this approach to be the best for obtaining suitable responses to questions concerning the status of the subjects under study. Qualitative method of data collection was employed in the research process. This is because it involves recording and analyzing of data on already existing process without controlling or exerting any control on research conditions.

3.2 Study Population

The study population constituted the Head of Department, lecturers and students from the department of Mechanical Engineering. In this study, Technicians and Lecturers will be purposively chosen in order to get their views on the improving students' skills practice in safety management in educational workshop in the department of mechanical and production engineering of Kyambogo University. Students will be selected using simple random sampling; this is because it gives equal chances of being selected.

3.2.1 Sample Size

I carried out the research using a sample of 45 respondents. The samples were got from the staff and students of the department

Table 3:1 showing the sample size

Respondents	Size	Percentage	Sampling technique
Head of Department	1	2.2%	Purposive sampling
Lecturers	4	18.8%	Purposive sampling
Students	19	56%	Stratified random sampling
Technicians	6	23%	Purposive sampling
Total	30	100%	

Source: Primary Data

3.3.2 Sampling Techniques

The study adopted purposive sampling to select the Head of department, lecturers and technicians. It helped so much in selecting the most knowledgeable people about the problem under investigation.

The study used simple random sampling and purposive sampling techniques to select the students from the department of Mechanical and production engineering of Kyambogo University. This method helped to give equal chances to the respondents to participate in the study.

3.4 Methods of Data Collection

3.4.1 Documents analysis

This involved reviews of documents which included safety reports, accident reports, health reports that are filed by the departments' safety personnel. The safety reports provided the information about the safety standards of the Mechanical and production engineering department. Internal documents were reviewed on safety gadgets provided by the department and how often the worn out gadgets are replaced.

The accident reports help in providing the information about the accidents that have happened and how often these accidents happen. And health reports provide the information of on individual worker's health and the health services provided by the institution.

3.4.2 None Participative Observation

This method was chosen to enable me get involved with the respondents in order to obtain a detailed understanding of the health and safety concept at the department basically it helped me

to see events as they happened. As a result, this helped me make independent judgments on what I need to improve on.

Emphasis was directed towards machine operators to assess their ability in using safety protective gears while at work. This enabled me gauge whether students are practicing safety management and or obeying instructional signs posted on the Walls.

3.4.3 Work Process Analysis

In order to improve the skill of the workshop users in applying Health and Safety work process /awareness, I referred to competencies from world-of-work and I documented the experience according to Porter (1992) and Kleiveland (1994) work procedures

3.4.4 Future Workshop

Future Workshop is a method of action research design which is used to collect both qualitative and quantitative data using tools such as questionnaire, in-depth interview schedules, documentary review and observational check- lists, camera, audiovisual recorder and individual or group reflection interview guides. Using these tools, a lot of primary data was gathered from multiple sources and all facts needed during the ‘Future Workshop’ session were prioritized, triangulated and verified for action. According to Apel (2004) a “classic” futures workshop consists of five phases: preparation, critique, fantasy, implementation, and the follow-up phases.

I involved all stakeholders in consultation meetings to discuss and identify weaknesses that ought to be addressed. One such meeting was conducted at the department in February 2016. This is evident by the Picture in figure 3.1 below



Figure 3.1: First Future Workshop meeting at the staff room at DMPE

Figure 11: shows people identifying the challenges in the workshop during the future workshop



Figure 12: The researcher is explaining the challenges identified during future workshop



Figure 13: students and staff are attentive during the explanation

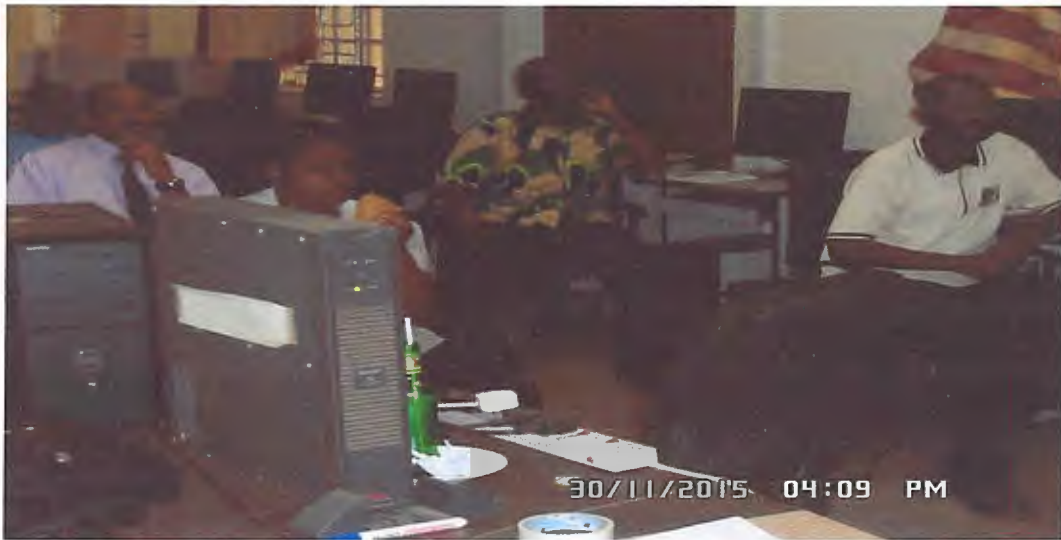


FIGURE 14: STAKE HOLDERS ARE BRAINSTORMING ON THE SOLUTIONS TO THE CHALLENGES IDENTIFIED DURING THE FUTURE WORKSHOP

At this stakeholder meeting, it was realized that the following shortcomings existed at the department;

- (a)* Lack of Machines Guards to safeguard users
- (b)* Lack of Protective gears
- (c)* Inadequate lighting in the workshop
- (d)* No warning signs in the workshop
- (e)* No first Aids Kits in the workshop
- (f)* Lack of Fire Extinguishers in the workshop
- (g)* Inadequate guidelines and instructional signage in the workshop
- (h)* Ineffective machine maintenance systems. In fact these machines are used to Failure Before Maintenance

3.5 Implementation of Action Research

When I completed my research and sensitize users about health and safety procedure and all is done;

- I. I posted warning signs on the walls carrying instructions to all users of the workshop see sample signs in appendix iii.
- II. Marked on the floors the gang-way for walking and storage of materials.
- III. I Put first aids box in place for easy first aid treatment in machine shop.
- IV. I bought florescent tubes to put full light in the work shop as required.

3.6 Instruments of Data Collection

3.6.1 Interviews

A structured interview guide was used to collect information from users of the workshop so as to obtain firsthand information. This was done through face to face interaction between the interviewer and the interviewee. This helped me obtain information from the students, lecturers and technicians while at work.

3.6.2 Questionnaires

I employed self-administered questionnaires to obtain data and these questionnaires were designed to address the research objectives of the study. These questionnaires were first pretested on few respondents from the department of Mechanical engineering to check if they are valid in capturing the information that is needed for the research.

3.7 Data Collection Procedure

I collected data by observing, recording field notes, reviewing notes for developing themes and patterns, and then coding the notes for analysis. In addition I conducted interviews after reviewing documents, to identify sources for data collection. Interviews and documents were also reviewed according to Kolb's experiential cycle as illustrated in figure. All data was coded to unlock information that facilitated an understanding of Health and Safety practice in the Workshop at the department.

3.8 Data Processing and Analysis

Raw data collected was first sorted, edited, coded and then entered into a computer spreadsheet. The data was then analyzed using Microsoft Excel (spreadsheet). The response rate for each item in the questionnaire and site observation datasheet was analyzed. I computed the overall percentage of returned questionnaires from the sample size. The analyzed data was finally presented using descriptive methods for easy interpretation and to enable comparisons and inferences to be drawn. This was supplemented with qualitative data obtained in form of verbal responses from interviews.

CHAPTERFOUR

PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

4.0 Introduction

This chapter presents the major findings of the study, discussion and analysis. It presents the socio- and demographic characteristics of the sample population. It contains data collected using various methods such as written and oral interviews. Written interviews were conducted using questionnaires which were distributed to the respondents in Kyambogo University Mechanical & Production Engineering Department.

The research had a sample size of 30 respondents both students and the staff all of them were able to fill the questionnaires and were returned to the researcher. Besides that, the future workshop was also conducted which around 21 people both staff and students as seen below. Before any detailed analysis was carried out, the raw data was thoroughly checked to minimize errors of inconsistency and incompleteness. Where necessary, a re-visit to the field was made.

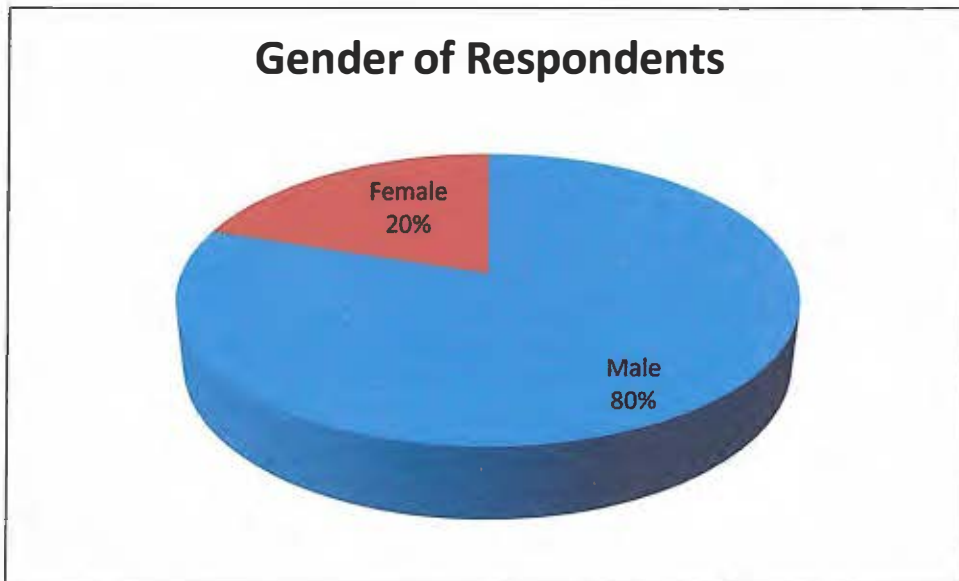
4.1 SOCIAL -DEMOGRAPHIC BACKGROUND OF THE RESPONDENTS

During the study, the researcher collected information on demographic background of respondents like gender, age, level of education and their marital status as presented in the table 2 below:

4.1.1 Gender of Respondents

This explains the gender of the respondents who participated in the study and the findings were as presented below;

Figure 1: Shows the Gender of Respondents

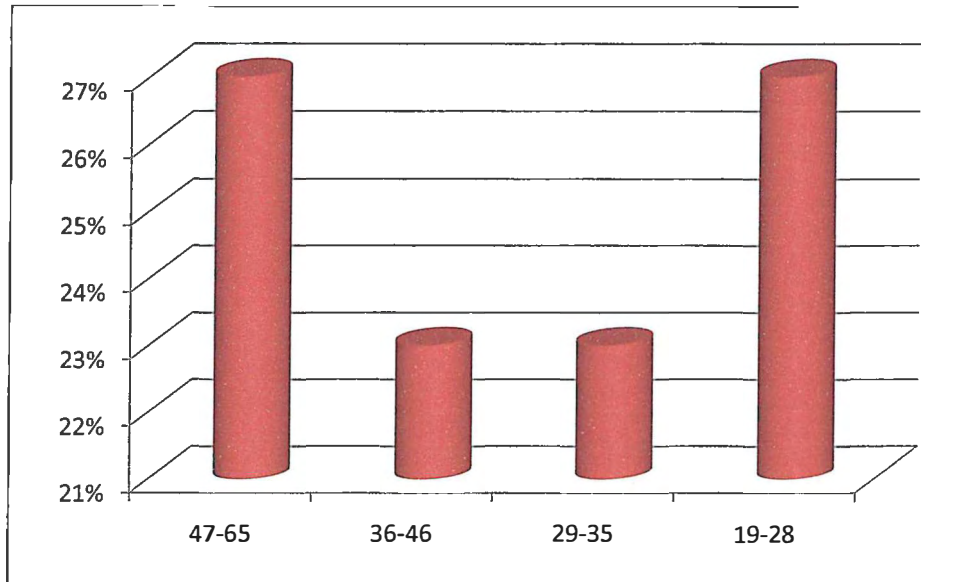


Source: Primary Data

From figure 1 above, it was revealed that the bigger number of respondents was male and these contributed 80% of the total sample size, the female respondents were 20% as presented in the figure. The bigger number of male respondents was due to the fact that the department of Mechanical & Production Engineering is mostly composed of males, so they were easily accessed by the researcher.

Age of the respondents

Figure 2: Shows the Age Bracket of the Respondents

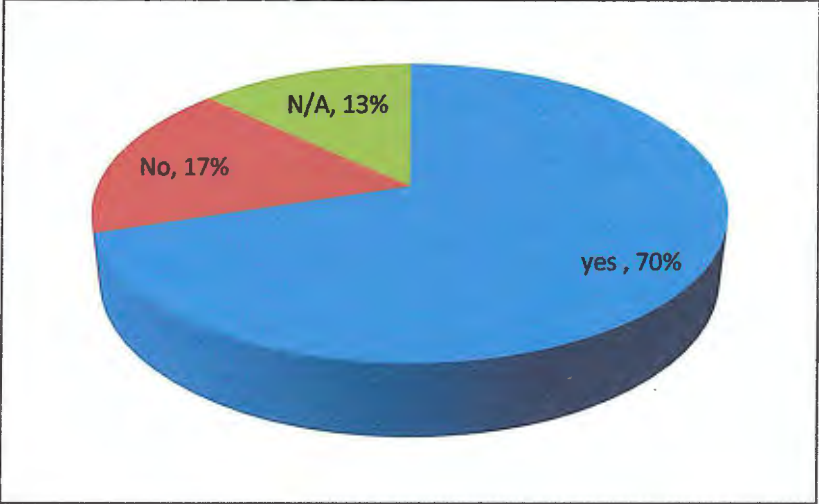


Source: Primary Data

From the figure above, it was revealed that respondents with the age of 19-28 contributed the largest number with those who had 47-65 and these were 27% those who had 29-35 were also equal with those who had 36-46. There was no respondent below the age of 19. Most of the respondents between the ages of 19-28 were students.

4.2 Responses as to whether respondents ever heard of some students been exposed to occupational hazards.

Figure 3: shows responses as to whether respondents ever heard of some students have been exposed to occupational hazards.



Source: Primary Data

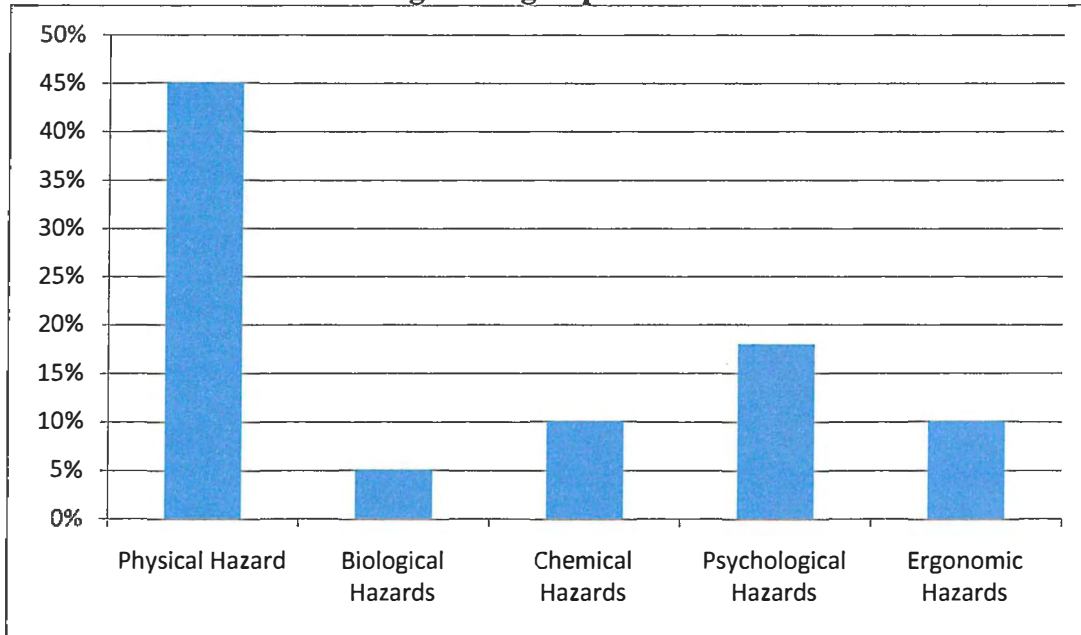
From Figure 5, is revealed that most of the respondents (70%) had ever experienced or heard of their friends who had been exposed to occupation hazards, 17% said had never been exposed to occupational hazard and finally 13% did not answer this question.

The trend above shows that most of the respondents were knowledgeable about occupational hazard and these were 70% which means this was a good number of respondents for the researcher to get enough information about the study.

4.3 The Common Hazards in the Training Workshop

This explains the kind of hazards that are in training workshops of engineering department of Kyambogo University and they were as presented in the table 6 below;

Figure 4: shows the common hazards in the training workshops of Kyambogo University Mechanical & Production Engineering Department.



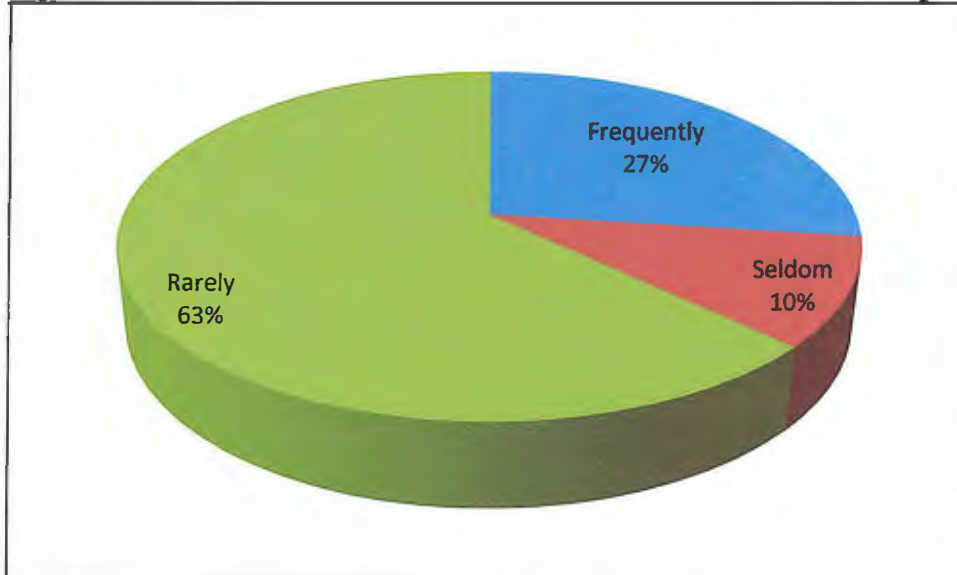
Source: primary data

From figure 6 above, it was revealed that there are different hazards that occur in the department of mechanical and production workshops of Kyambogo University. Among the hazards that occur, physical hazards was commonest and this was mentioned by 47% of the respondents, these were followed by 20% of the respondents who mentioned psychological hazard, 13% said chemical hazards, 13% also mentioned ergonomic hazards and finally 7% said biological hazards.

From the findings, it can be reviewed that physical hazards occurs in the workshops frequently and this was attributed to lack of warning signs in the workshops. Psychological hazards were also mentioned by many respondents and this was attributed to the noise and lack of protection gadgets in the workshops.

4.4 The period in which accidents occur in the department of mechanical and production engineering of Kyambogo University.

Figure 5: shows the time frame in which accidents occurs in the Department Workshops



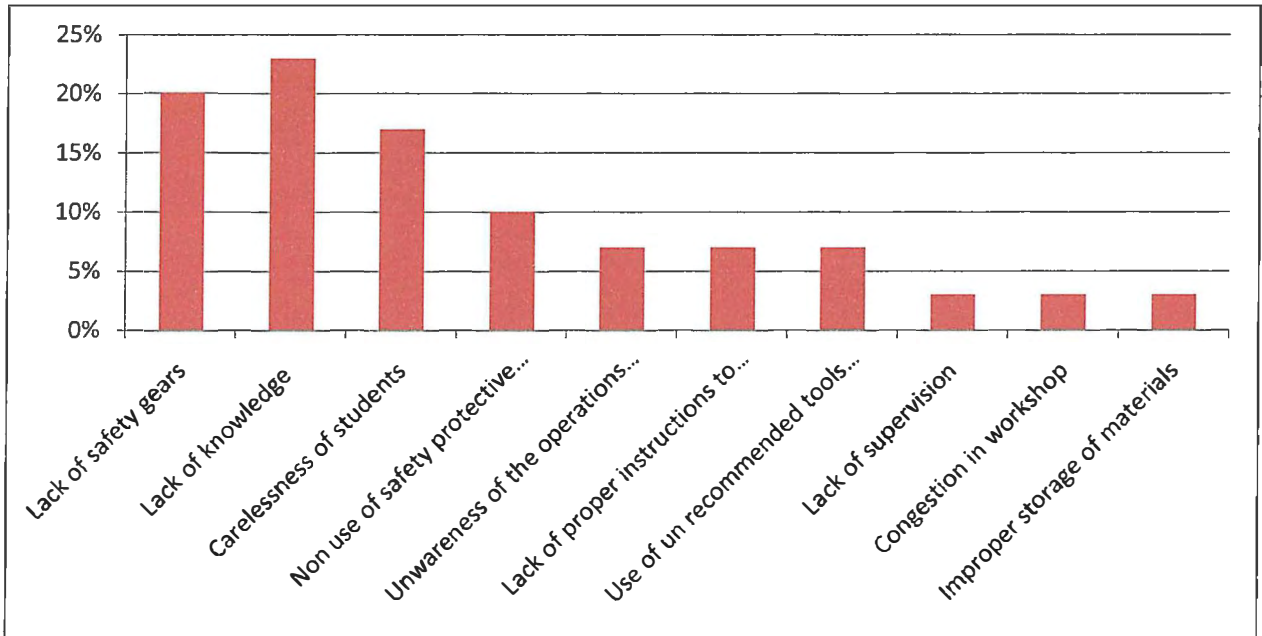
Source: Primary Data

Figure 7above indicates that the biggest number of respondents agreed that accidents rarely occur in the department of mechanical and production engineering of Kyambogo University and this was agreed by 63% of the respondents, 27% said that accidents frequently occur, 10% agreed that accidents seldom occur at the department of Kyambogo University. According to the findings, no respondent said that accidents have never occurred and this therefore indicates that accidents occur at the department workshops though on a rare case.

4.4 Common Causes of Accidents

This presents the common causes of accidents in the department mechanical and production engineering Kyambogo University and the responses were as presented in the table 7 below;

Figure 6: shows the common causes of accidents in Mechanical and Production Department of Kyambogo University
Source: Primary Data

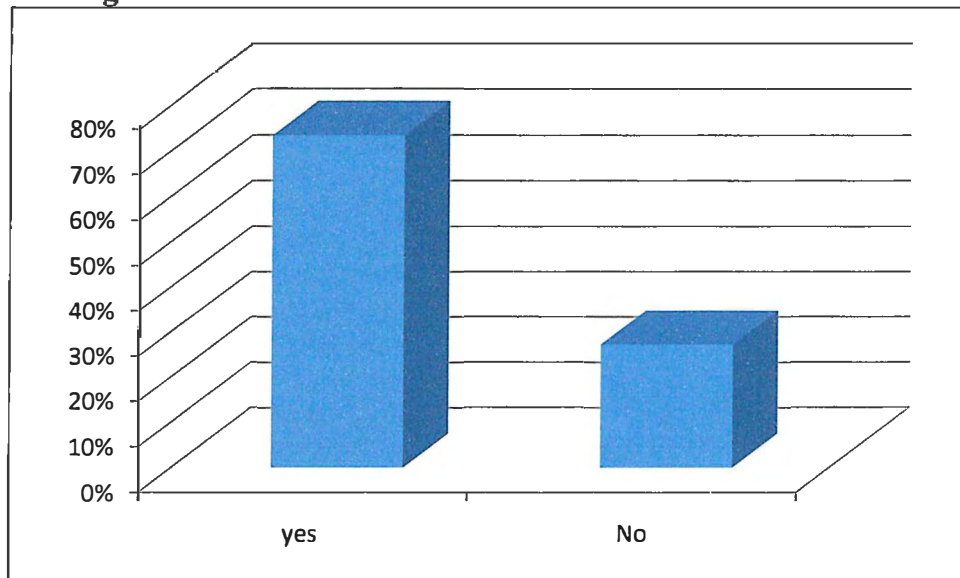


Source: Primary Data

Figure 6 above shows that lack of knowledge about tools used and equipment used in the workshop and these were 23% of the respondents, 20% said that lack of safety gears, 17% said that carelessness of students also cause accidents in the workshop, 10% said that there is nonuse of safety wear, 10% said that non use of safety protective wears, 7% said that Unawareness of the operations safety hazards also causes accidents in the workshops, other 7% agreed that lack of proper instructions to follow, 7% said that use of un recommended tools for a particular task, 3% said lack of supervision, 3% said that congestion in the workshop and finally other 3% Improper storage of materials.

4.5 Responses on whether students have ever been exposed to risks during workshop training.

Figure 7: shows whether students have ever been exposed to risks during workshop training.



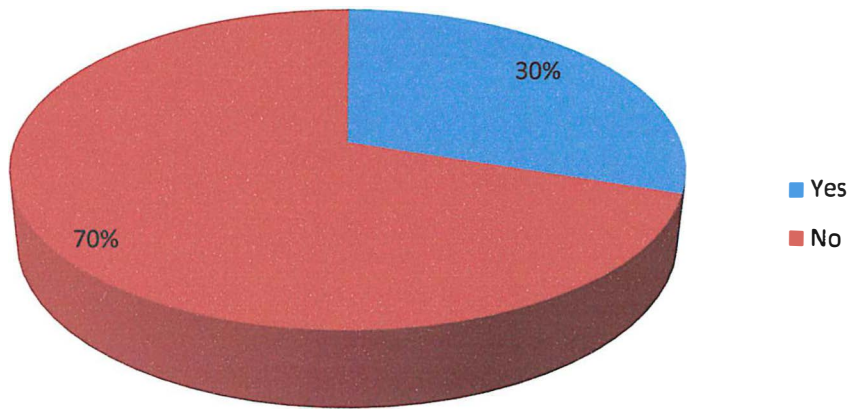
Source: Primary Data

As presented in figure 9 above, 73% of the respondents had ever been exposed to risks in the workshop and only 27% of the respondents had never been exposed to risks. From the findings, all the respondents who agreed that they have ever been exposed to workshop risks, they said that it was either injury or diseases risks. This therefore indicates that many of the students are exposed to injury or disease risks in the workshop.

Responses as to whether there are first aid facilities at the department of mechanical and production department of Kyambogo University

Figure 8: shows whether there are first aid facilities at the department of mechanical and production department.

According to the above table, it was stated by 70% of the respondents that there are first aid facilities in the department and only 30% said that there are first aid facilities. This therefore indicates there are very few or even no first aid facilities in the workshops of mechanical and production department of Kyambogo University.

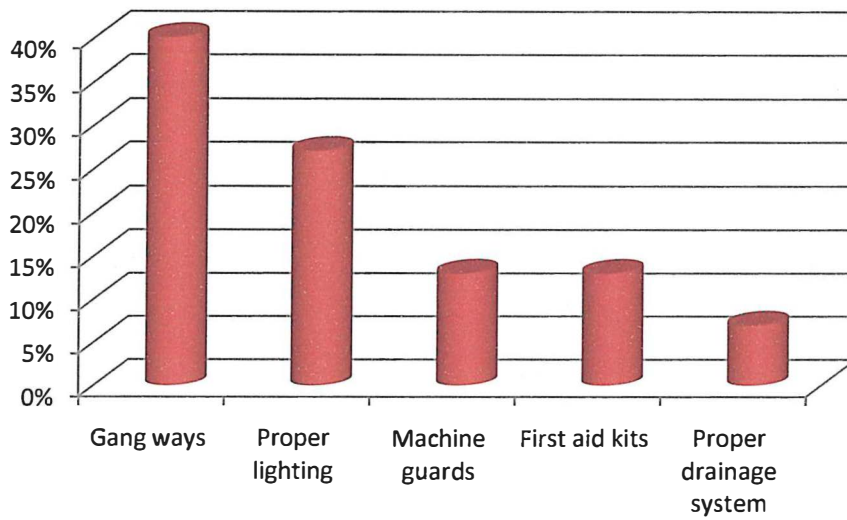


Source: Primary Data

4.5 The Facilities that are supposed to be established In the Training Workshop of Mechanical and Production Department of Kyambogo University

When respondents were asked about the facilities that should be put in the training workshops, the responses were as presented in the table below;

Figure 9: shows the facilities that should be put in the training workshops of mechanical and production department.



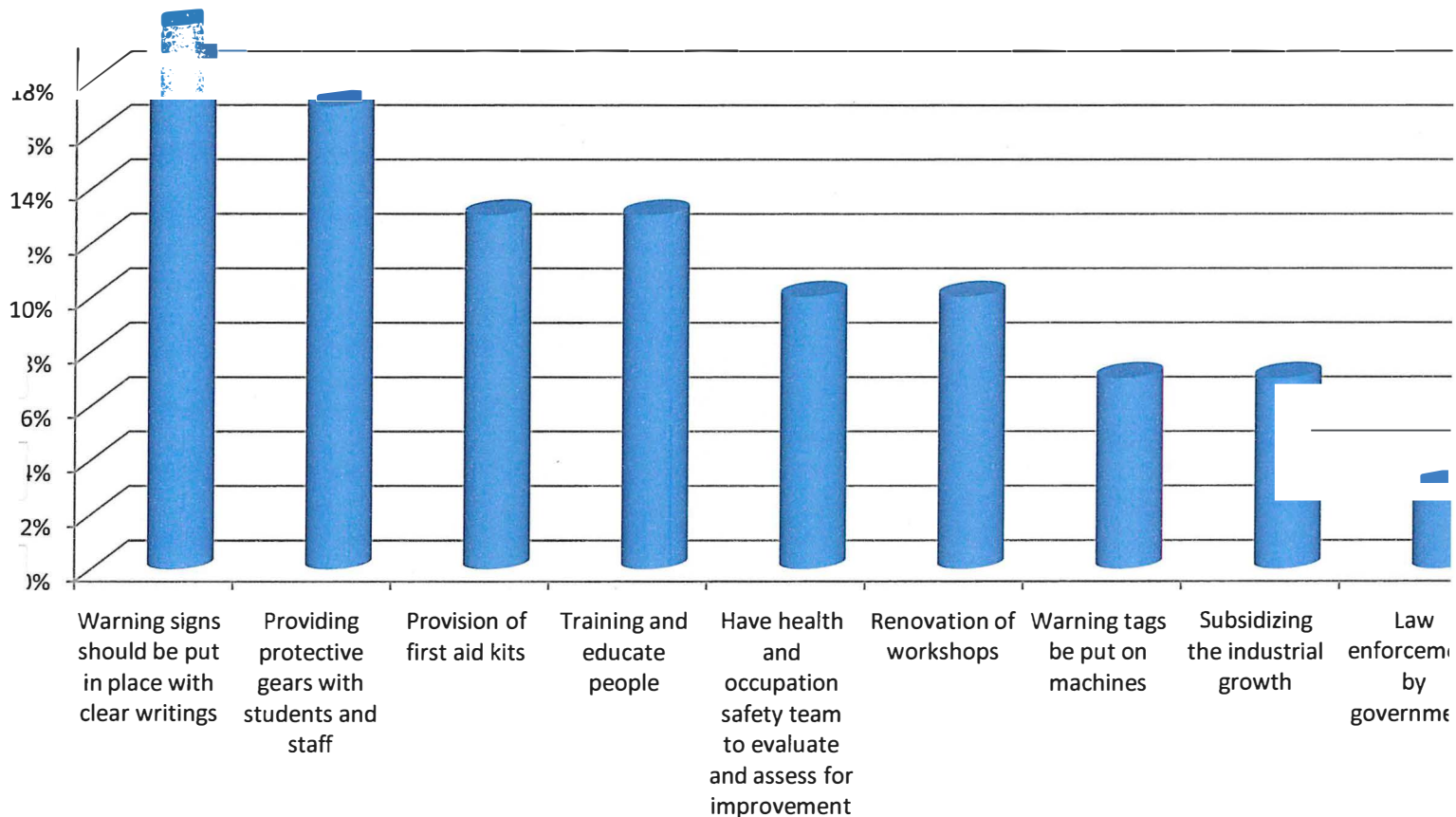
Source: Primary Data

From the figure 11 above, it was revealed by 40% of the respondents that gang ways should be put in the training workshop, 27% agreed that there should be proper lighting, 13% said that machine guards should also be put in place, other 13% of the respondents agreed that there is a need for first aid kit and finally 7% agreed there should be proper drainage system.

4.6 Strategies to Improve on the Department Workshop

Respondents were asked to suggest possible ways of improving on the department workshop and they suggested the following as presented in table 12

Figure 10: shows the strategies to improve on the department workshop



Source: Primary Data

From above 20% of the respondents said that there should be warning signs, 17% agreed that there is a need for providing protective gears with students and staff, 13% agreed that there is a need for provision of first aid kit, other 13% said that there is a need to educate and train people about the workshop injuries, other 13% agreed that there is a need for provision of first aid kits, 10% agreed that there is a need to have health and occupation safety team to evaluate and assess for improvement, other 10% agreed that there is a need for renovation of workshops, 7% said that there is a need for warning tags be put on machines, other 7% agreed that there is a need for subsidizing the industrial growth and finally 3% said that there is a need for subsidizing the industrial growth.

Findings from the future workshop

Future Workshop is a method of action research design which is used to collect both qualitative and quantitative data using tools such as questionnaire, in-depth interview schedules, documentary review and observational check- lists, camera, audiovisual recorder and individual or group reflection interview guides. Using these tools, a lot of primary data was gathered from multiple sources and all facts needed during the 'Future Workshop' session were prioritized, triangulated and verified for action. According to Apel,(2004) a “classic” futures workshop consists of five phases: preparation, critique, fantasy, implementation, and the follow-up phases as stated in chapter three.

I involved all stakeholders in consultation meetings to discuss and identify weaknesses that ought to be addressed. One such meeting was conducted at the department in February 2016. This is evident by the Picture in figure 3.1 below

Implementation of action research

When I completed my research and sensitize some workshop users about health and safety procedure and all is done;

- V. I posted warning signs on the walls carrying instructions to all users of the workshop see sample signs in appendix iii.
- VI. Marked on the floors the gang-way for walking and storage of materials.
- VII. I put first aids box in place for easy first aid treatment in machine shop.
- VIII. I bought florescent tubes to put full light in the work shop as required

However, at this stakeholder meeting, it was realized that the following shortcomings existed at the department;

- (i)* Lack of Machines Guards to safeguard users
- (j)* Lack of Protective gears
- (k)* Inadequate lighting in the workshop
- (l)* No warning signs in the workshop
- (m)* No first Aids Kits in the workshop
- (n)* Lack of Fire Extinguishers in the workshop
- (o)* Inadequate guidelines and instructional signage in the workshop
- (p)* Ineffective machine maintenance systems. In fact these machines are used to failure before maintenance

CHAPTER FIVE

DISCUSSION, SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 INTRODUCTION

This chapter contains the discussion, summary of the study, conclusions and recommendations.

The people whom were interviewed were Head of Department, Lecturers, Students and technicians. They were of age, good academic level and experienced. The future workshop was held with experienced members of the Department therefore the information given are credible and can be generalized in the context of Kyambogo University.

Discussions, summary conclusion and recommendation were done critically with the objective of the study in view.

The objectives were as follows; to identify the safety measures to be used in skills practice at the department of Mechanical and production engineering, to design precautionary signs for Skills Practice in the department of Mechanical and production Engineering and to implement safety measures for skills practice in the department of Mechanical and production Engineering.

5.1 DISCUSSION

5.1.1 The occupational hazards in Mechanical & Production Engineering Department

The results of the study on the occupational health hazards in Mechanical & Production Engineering Department showed that there were some obvious unsafe working conditions. It showed that there were a number of categories of insidious hazards. These include;

- Physical hazards, such as noise, vibrations, unsatisfactory lighting, radiations and extreme temperatures, explosions and falling bodies.
- Hazards associated with non-application of ergonomic principles, for example poor mechanically conditioned machinery, poorly designed mechanical devices and tools used by workers, improper seating, bad work station design, poorly designed work practices.
-



Figure 11: shows people identifying the challenges in the workshop during the future workshop

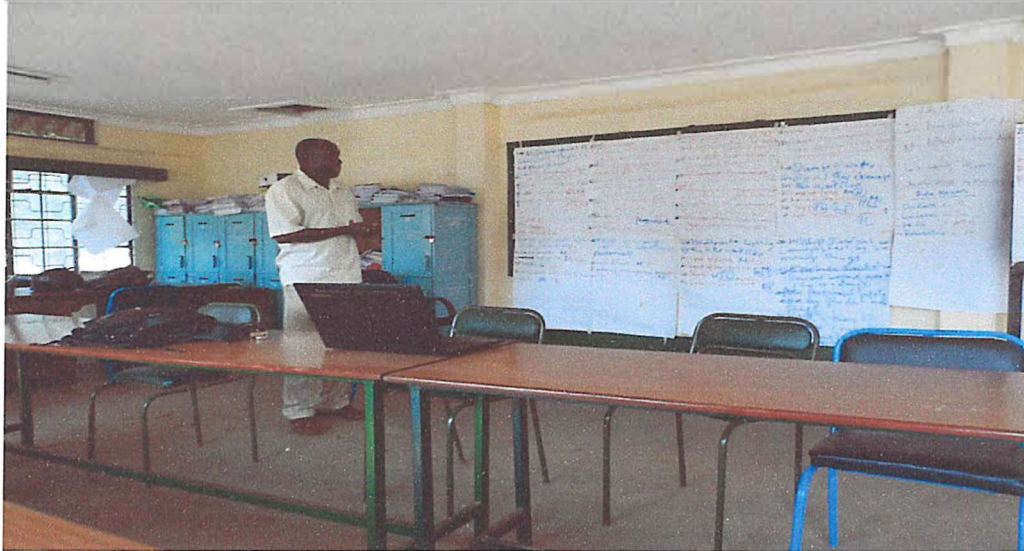


Figure 12: The researcher is explaining the challenges identified during future workshop



Figure 13: students and staff are attentive during the explanation

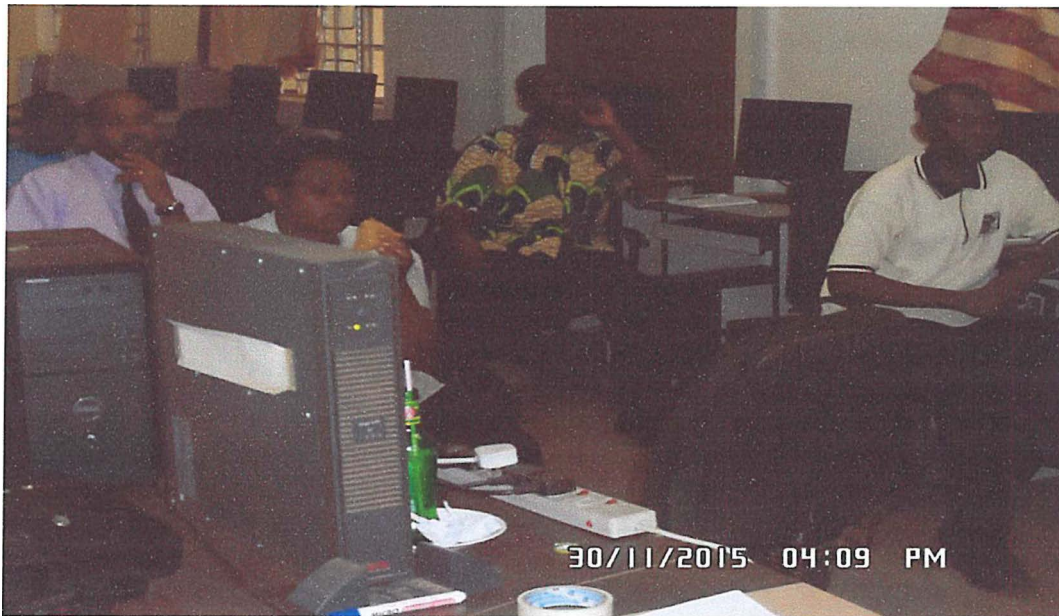


Figure 14: stake holders are brainstorming on the solutions to the challenges identified during the future workshop

Figure 6 in chapter 4 of this thesis shows the identified risks and accidents in Mechanical & Production Engineering Department. From the figures, injuries were the highest identified with a total of 8 injuries followed by diseases and accidents. The workers must apply all safety profile to ensure total accident-free operation throughout the year in their company. According to the

company act, safety of workers must be a priority though it is not actually practiced even by the management itself and hence no one to enforce the act.

Nowadays it is clear that an accident damages the factory and their reputation besides having to dole out huge compensation and even face the prospect of closure. Various machinery and chemicals are being handled through several equipment, machinery and processes using electricity and mechanical devices such as furnaces and even hot metal handling.

Various plants and machinery that are sophisticated are also being handled both especially in the production process. So it is required to study the whole setup, machinery, process, raw materials, chemicals, microorganisms, etc. thoroughly. It is also required to identify all possible hazards and then take preventive and corrective measures to prevent the accident. In view of these, it has been necessary to consider all these aspects for safety purpose during planning and implementation of project. This helps in prevention of accidents during running of plant.

According to my experience in Kyambogo University mechanical workshop much as safety policy may be in place of most of the students do not take as a serious matter that why most students get accidents. 2006 one student of environmental Engineering cut her finger with a shearing machine during practical in DMPE Kyambogo University.

In 2010 ordinary Diploma student in Mechanical and Production crushed his hand in a drilling machine in DMPE Kyambogo University. In 2012 two students of Automotive and power Engineering crushed their hands in sheet metal rolling machine in DMPE Kyambogo University. In 2015 one girl student of Environmental Engineering year II slide and fell on the lather machine which is without guard.

In 2015 during practical in welding workshop due to power load welding machine caught fire which attracted a lot of money to replace new machine.

5.1.2 The common causes of accidents in mechanical and production department of Kyambogo University

From figure 7 in chapter four above, it was found out that lack of knowledge about tools used and equipments as the major cause of accidents in mechanical and production department, it was revealed that some workers and students in the department do not have enough knowledge about

the machines, as a result they mishandle them and end up into accidents in the workshop, a respondent said that; “*we lack enough training on machine usage and this has increased accidents within the workshop*”. This is in the same line with Veltri,(2011) who says that inadequate knowledge on machine usage is one of the biggest challenge that cause accidents in workshops.

Students stated that there is lack of enough training on machine usage and this has increased accidents within the workshop. According to the respondents, this statement is true some students may lack training, in the University mostly machine shop the ratio of students to the technician is quite big to handle the big number i.e only one technician to handle the whole Engineering students which is impossible.

Carelessness of students was also given as a reason for accidents in the workshops, this is because some students tend to mishandle the machines and on top of that the machines have no warning signs and hence resulting into accidents in the workshops. This finding agrees with that of Morrison (2013) who noted that the major cause of accidents in the workshop is carelessness of the employees.

Carelessness of the students was also cited as the cause of accidents and this is very true that in most cases some students treat themselves to be careless even to the point of not caring what to be done and not to be done, where they should pass or not, what tools should be used or not, where should some of the activities should be operated from or not because technician cannot lock himself all the time to wait and see which students are going to do in the workshop.

It was also revealed that there is lack of proper instructions to follow within the workshop, respondents agreed that there is lack of proper instructions to follow in the workshop and this was attributed to inadequate training. In the same line, respondents also said that accidents within the workshops are due to lack of supervision.

Other respondents cited lack of proper instructions which is very clear and true because sometimes some students during the introduction and demonstrations absent themselves but due to pressure to do their practical exercise they tend to operate the machine without instruction because every practical are time tables whereby no extra hour to those absentees.

When you move outside Kyambogo University where most engineers trained by Kyambogo University are exercising their engineering skill practice one would wonder whether these students' engineers observe safety as a key factor as far as engineering construction is concerned.

In the year 2002, the number of occupational accidents increased by 69% as reported by Ugandan New Vision. That is to say there were 354 occupational accidents in Kampala District which resulted in death or serious injuries requiring more than 2 days absent from work. In 2010, 2 buildings collapsed at Kololo and Bunga in Kampala leaving 4 people dead and other building collapsed on Nassar road killing 2 people after engineers excavated as near it.

IN 2008, seven people died and two were injured when a wall collapsed at National Social Security Fund (NSSF) building in Kampala, in 2016 March, building collapsed at Kikandwa zone Mengo in Kampala where 3 people were buried under the soil and the engineer was to account for the lost lives as all those was caused by lack of safety precaution from our student engineers. Therefore this paper will inform the reader how safety could be observed and practiced in Mechanical and production engineering workshop of Kyambogo University which is the largest producing number of graduate engineers in the whole country.

Design of precautionary signs for Skills Practice in the department of Mechanical and production Engineering.



Plate 1 above someone slid and fell on the floor due to oil spillage on the floor because no care about cleaning the oil from the floor
Accident at Work: Slip and Falls



Plate 2 tell everyone to observe work safety as the factor of safe environment



Plate 3 Tells everybody that Banana pills can cause accidents when one step on it and you slide causing accident in the workshop so it must be kept away from the workshop or put in the dust bin



Plate 4 Ensure Workshops have First aid Kits and Fire Equipment

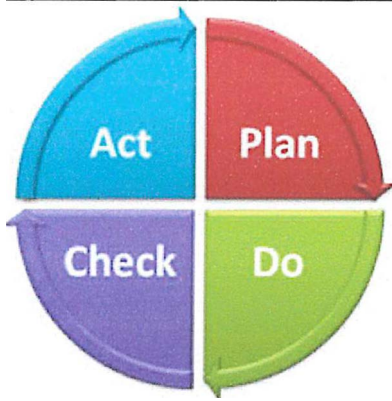


Plate 5: This plate tells the workshop users to plan, do check and act.

WARNING
THIS
MACHINE
HAS NO
BRAIN
USE YOUR
OWN

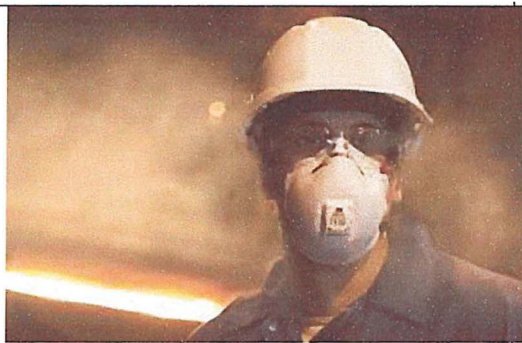
Plate 6 warns the workshop users that the machine does not reason like a human being so you must use your brain to know what you are doing.



Plate 7: shows First aid kit in case of accidents in the workshop



Plate 8: tell the workshop users that the proper workshop must have First aid Kits and Fire Equipment



Use Protective Wear at all Times



Keep Gangways Clear at all Times



WARNING
THIS
MACHINE
HAS NO
BRAIN
USE YOUR
OWN



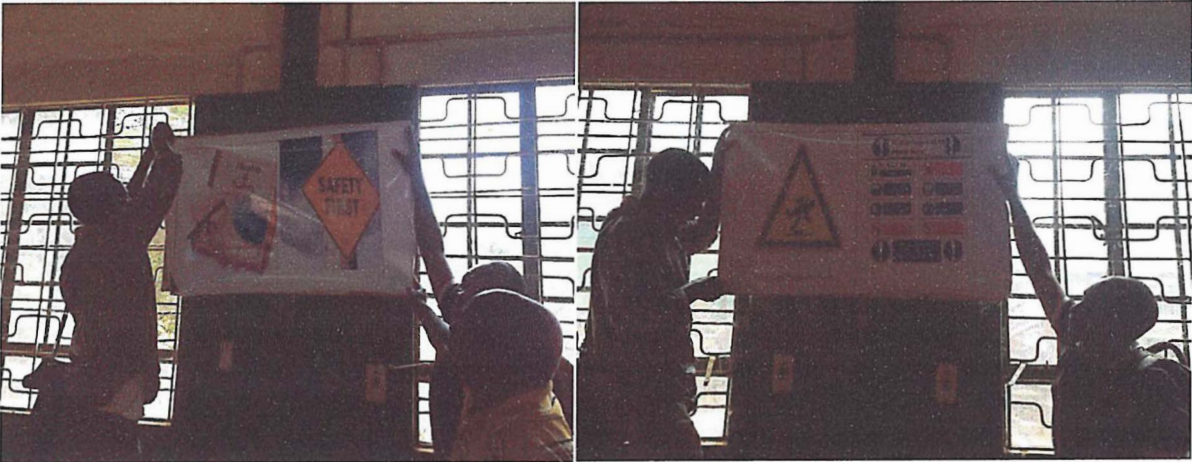
5.1.3 Facilities that should be put in the training workshops of mechanical and production department.

The study also revealed that there is a need to put machine guards in the department, according to respondents, these machine guards will help to prevent injuries in the department. During the interview with respondents, a respondent said that; *“the administration should put machine guards within the workshop and this will help reduce on the injuries within the workshop”*. In the same line, Petersen,D., (2000) in his findings of the study conducted in 1997, he found out that machine guards can help reduce accidents in the engineering workshops.

It was revealed that there is a need for provision of health team and first aid kit in the department. According to respondents, an effective health and safety committee, according to the assessment criteria, will have documented terms of reference and composition, meet regularly, and have a wide distribution of minutes. It is expected also that the committee will include senior management representatives and that management and employee representatives on the committee will be trained. The focus of team deliberations should be policy/procedure

development, health and safety planning, measurement and review, and planned hazard management programs, together with health and safety promotional activities and this will help to reduce injuries in the department. Other respondents agreed that there is a need for proper lighting, Proper drainage system among others in order to reduce accidents in the workshop.

Implementation of safety measures for skills practice in the department of Mechanical and production Engineering.





5.2 Summary

5.2.1 The occupational hazards in Mechanical & Production Engineering Department

From the study findings, it was revealed that respondents have ever heard of workshop injuries and these were 70% which shows that most of the respondents were aware of the injuries in the workshops. They revealed that the commonest types of hazards in workshops and these were Physical hazard, biological hazards, chemical hazards, psychological hazards and ergonomic hazards.

5.2.3 The common causes of accidents in mechanical and production department of Kyambogo University

The study revealed that lack of knowledge about tools used and equipment, Carelessness of students, lack of supervision, non-use of safety protective wears, lack of proper instructions to follow, use of un recommended tools for a particular task, congestion in the workshop, improper storage of materials, lack of safety gears and unawareness of the operations safety hazards

5.2.4 Facilities that should be put in the training workshops of mechanical and production department

Several strategies were suggested by respondents on how to improve on the department workshop and these were as follows; warning signs should be put in place with clear writings provision of first aid kits, training and educate people, have health and occupation safety team to evaluate and assess for improvement, renovation of workshops, warning tags be put on machines, subsidizing the industrial growth, law enforcement by government and providing protective gears with students and staff.

5.3 Conclusions

The study was meant to investigate about improving students' skills practice in safety management in educational workshop/laboratories, the study found that the safety conditions of the workshops was not good since there were several problems such as lack of knowledge about tools used and equipment, Carelessness of students, lack of supervision, non-use of safety protective wears, lack of proper instructions to follow, use of un recommended tools for a particular task, congestion in the workshop, improper storage of materials, lack of safety gears and unawareness of the operations safety hazards.

Therefore the investigation shows that Kyambogo University lacks a proper and basic safety management practice trainings and therefore measures to improve the proper and basic safety management practice training should be in place.

5.4 Recommendations

A safety culture should be instilled among the workers and students. It should be part of the behavior in carrying out their tasks. It should be everyone's duty to ensure safety for him herself and all the workers in the plant. This will be achieved through introducing and implementing the use of risk assessments and job safety analysis. This ensures that before anyone starts on particular task, all the risks are outlined and their control measures developed so as to carryout work in an injury free environment. This should be done by all the workers who will carry out the task.

Monitoring: -It is essential to monitor each and every operation for getting success. Hence all the processes & safety aspects must be monitored. It is also required to closely monitor the effectiveness of all safety tools on regular basis. On getting deviation or lapses, the cause is detected and the remedial measures are recommended for immediate implementation.

The University should provide personal protective equipment to all employees within the plant. Equipment like gloves, overalls, and safety shoes, safety helmets etc should be provided and can be replaced on old wear as immediate as possible. It should be made mandatory to put on protective gears when the workers are within the plant. This will ensure that all injuries are prevented and by reducing exposure to risks.

One of the reasons brought forward for poor safety was the failure to induct workers on safety upon joining the company. It should be made mandatory to induct all new workers and even visitors who visit the company. This will ensure that everyone is aware of the safety practices when carrying out the various tasks. Induction mainly covers the use of PPE, safety instructions when using equipment, use of safety pathways within the workshops, risk assessment and use of safety gadgets like the fire extinguishers, first aid kits and use of job safety analysis.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

Dear respondent

The purpose of the project is entirely academics and the information you give will be treated with maximum confidentiality. Please tick one answer for the objectives and fill the spaces provided. do not write your name anywhere in this questionnaires.

Surname if necessary

Others.....

1. Sex of Respondent

Male

Female

2. Age Bracket

a) 12 – 18 years

b) 19 – 28 years

c) 29 – 35 years

d) 36 – 46 years

e) 47 – 65 years

3. The highest level of Education attended

a) Certificate level

a) Diploma Level

b) Degree level

c) Masters Level

d) PHD

4. Major Occupation of respondent

a) Trainee

b) Technician

c) Lecturer

d) Head of Department Section

e) If there is any other specify?.....

Section B

5. To identify some of the hazards at the training workshop.

a) Have you ever heard of some of your fellow students who have been exposed to occupational hazards (Chemical, Physical, Biological, Psycho, social ergonomic hazard)

a) Yes

b) No

b₁) If yes which of the following hazards are in your training workshops?

a) Physical hazards

b) Biological hazards

c) Chemical hazards

d) Psychological hazards

e) Ergonomic hazards

b₂) Have you identified one of your friends exposed to such conditions as (highvibration, hot substances, dust, smoke, overloaded, over worked and much noise)

a) Yes

b) No

b₃) if yes which one of the following did you identifys?

a) Hot substances

b) Dust

c) Smoke

d) Overloaded

e) Over worked

f) None of these

How often do accidents/injuries happen in the Workshop?

a) Frequently

- b) Seldom
 - c) Rarely
 - d) Never happen.
 - e) If frequently, what are the common causes of accident?
 - f)
 - g)
 - h)
 - i)
1. For how long have you been in Kyambogo University Workshop?
- a) s1 -2 years
 - b) 3 -5 years
 - c) 6-9 years
 - d) 10 and above

SECTION C

Identification of risks, accidents, and effects due to exposure.

- a) A risk from a substance cans cause harm, damage of property or even death. Have you heard or have some of your friends at the training workshop been exposed to risks?
- a) Yes
- b) No
- b) If yes, which of the following did you indentify?
- a) Decedent
- b) Disèase
- c) Injury
- d) An accident is an unexpected event that has occurred through a combination of causes leading to physical harm or damage of property. Has any accident ever occurred during your training time in Kyambogo University?
 Yes No

e) If someone becomes ill or injured is there a first aid facility in the Mechanical and Production Engineering workshop that would help in emergency?

Yes No

If yes what do they dos?

- a).....
- b).....
- c).....
- d).....

f) Effects due to exposures to hazards can be severe or unceasing. Have you heard or seen any effects that are severe at the mechanical workshop?

Yes No If ich one of the following hazards?

- a) Cuts /Scrapes
- b) Shock
- c) Burns
- d) Eye injury
- e) Which other
specify?.....

Section D

Protection against hazards at the training workshop, their control and how they can be minimized.

a) In order to control risk from exposure to hazards , risk assessment is always done

Have you had any risk assessment at your training workshop.

Yes No

If yes how often

- a) 1 -2 times a month
- b) 3 -4 times a month
- c) 4 -6 times a month
- d) More than 6 time a month

b. In a well established training workshop the following are always in place

- a) Gang ways
- b) Proper lightings
- c) Machine guards
- d) First aid kits
- e) Warning signs
- f) Proper drainage system

b) In your training workshop which one do you think is missing?

- a) All of them are not there?
- b) Al l of them are there?
- c) Some few are missing?

Why do you think few which is not there is missing?

- a).....
- b).....
- cs).....
- d).....

.what do you think might have been the cause?

- a).....
- b).....
- c).....

What do you think should be done in order to improve the situation?

- a).....
- b).....

c).....
d).....

c) Are you aware of any organisation legally protecting you against risk and occupational hazards?

Yes No

If yes which of the following organizations do you think would avail you the most immediate rescue or protection/ security against occupational hazards and risks? NGO (Non Governmental Organization)

a) WHO (World Health Organization)

b)WHSWR (Work Health and Safety welfare regulation)

c) OSHA (Occupational Safety and Health Act)

d) After Kyu management realizing the danger of health and safety risk through research work by Kyu itself.

E) No one at all so we are ready to die

c)Has your organization done anything to control risk /hazardous situation at your training workshop?

Yes No

If yes

Do the control measures meet the standards set by legal requirements?

a).....

b).....

Do the processes comply with reorganized industrial standards and best practice?

a).....

b).....

Are you provided with personal protective gears (PPS) to shield you from hazards?

Yes No

If yes specify which?

Covered suits

Gloves only

Safety boots

Respiratory protective gear

None of the above

Or any other issue.....
.....

e) What do you think has not been done to protect both students and staff to control hazards and safety risks as the training workshop?

- a).....
- b).....
- c).....
- d).....

APPENDIX II: OBSERVATION CHECKLIST

Observation method of data collection is done to find out if the challenges mentioned are truly existing

e.g. The researcher used this method to find out whether the operators in Mechanical and production engineering department are without protective gear, not enough lights in the workshop, poor drainage system in the workshop, machines without guards, workshop without gang ways, no warning signs on the wall, no first aid kits in the workshop and see if most machine tools are broken. This gave a clear situation of what is happening in the workshops in terms of safety management condition and to observe if the students use safety gear while at workshop :-

Do the work place have fire extinguisher.

Do workers have protective gears i.e. gloves, overall, over coat, safety helmet, safety boots goggles; mask to block dust.

Do the workshop have the warning signs like:-

- a. Unauthorized access strictly prohibited.
- b. Protective foot wear must be worn.
- c. Safety helmet must be worn.
- d. Heavy machines on the move.
- e. Accident or faulty machine.
- f. All visitor must report to the safety officers.
- g. Assembling point.
- h. Fire hydrants.
 1. Water hydrants.
- j. Tool store in this direction.
- k. Where is the handle of your hand tools
- l. Are the Fire extinguishers in place?

Do your work place designed i.e. welding cage for proper welding and protect other from welding light.

Do the workshop have proper gang ways?

Do the place have proper drainage system?

Does it have enough lightings?

Do all the running machines have the guards?

Do the place have proper electrical installation without any live wire hanging?

Do the place have exit in case of fire outbreak.

Do the place have first Aids kits in case of accident or injuries?

How do the place handle dust in the workshop (dust ventilation).

Do the staffs and students observe safety rules in the workshop?

Do the workshop have the scrap yard in order to pour waste materials?

THE ACTION RESEARCH CARRIED OUT WITH YEAR THREE STUDENTS AND STAFF TO GIVE OUT RESPONSIBILITIES (IMPLEMENTATION STAGE)

You have been chosen to participate in the action research to improve student skill practice in safety management in the department of mechanical and production engineering Kyambogo University.

Presented here below is the table showing the action plan which was jointly prepared by lecturers, technicians, head of department of mechanical and production engineering and the students who are the stakeholders in the research study being conducted.

The action plan indicate the actions or activities numinously agreed up on by the all stake holders to be implemented in this action research in order to minimize the challenges in the training of the students as a result of poor safety management so as to enable the learners acquire the practical skills needed in the world of work.

In order to facilitate the implementation of the plan, attendance of the action plan, register, implementation action templates and log book have been designed and are attached here under for the purpose of recording all implementation activities being conduct by all stake holders in the action research. The implemented action will be captured in the following ways:

a. The group representative of all participants, students, lecturer, and technician should ensure the improvement of students' skill practice in safety management in the mechanical and production engineering have been addressed.

b) The group representative of lecturers and technicians should record all the daily activities of action research undertaken when assessing health and safety problems in the implementation action templates provided.

Head of department mechanical and production engineering should be aware of all the implementation action undertaken in his area of concern to address the challenges in the department.

Finally the researcher Agole Peter wish to thank and encourage each participant in this action research project to actively participate in this noble course of designing and implementing safety management skills activities in the mechanical and production engineering and the contribution from each participant is highly appreciated and will be used for academic purpose only while each participant is also assured of anonymity.

The time table for the 3rd year programs for semester II 2015/2016 academic year being used in the research study and is also attached.

ACTION PLAN: The table presents the action plan to address the challenges in improving students' skills practice in safety management with six months from November 2015 to many 2016.

CHALLENGES	ACTIONS	RESPONSIBLE PERSON	COMMENT ON THE WORK DONE OR NOT DONE
Workshop without gang ways	Bring the yellow paint mark and paint the gang ways	Researcher and the students	Paint bought but not marked renovation on progress
Poor lighting system	Buy florescence tube and replace them all	Head of department and Technicians	Florescence bought but renovation on progress
Workshop without	Buy warning signs	Researcher and	Designed not put

the warning signs (prohibition signs)	and put them on the wall	Lecturers	renovation on progress
Workshop without first Aid Kit	Buy First Aid Kit and put in place	Head of department and Researcher	Bought not put renovation on progress
Workshop without safety gargets	Buy safety garget and put in place	Head of department ,Technician and students	Not bought because funds was not enough
Poor drainage system	Buy the drainage fitting and replace	Head of Department and Technicians	Renovation on progress not done
Spillage of coolant or oil on the floor	Bring saw dust put in the place to drain them	Technicians and students	
Poor storage of materials	Improve on the storage facilities	Lecturers and Technicians	
Poor budgeting on safety equipment	Proper budgeting should be put in place	Head of department	
Lack of fire extinguisher	Fire extinguisher should be put in place	Head of department	Is in place but not filled because not enough fund
Machine without the guards .	Machine guard should be put in place	Head of Department and Researcher	Renovation on progress yet not done

APPENDIX III: WORK PLAN

This action research began in November 2015 will end in May 2016

Activity	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Feb 2016	March 2016	April 2016	May 2016	June 2016
Seeking permission from DMPE, Future work shop, Proposal writing and approval,									
Implementation of practical solutions									
Follow up and planning									
Evaluation, Data analysis and drafting report writing									
Final review process and handing in final report									
Dissemination action research report									

APPENDIX IV: THE PROJECT BUDGET

BUDGET

Budget Category	Unit cost (UGX)	Multiplying Factor	Total Cost (UGX)	Source of Funding
Stationary, typing printing and photocopying	200,000	(for proposal & thesis)	200,000/=	KYU/MVP Project
Lunch for participants meetings	13,000	24 peoplex3meeting	926,000	KYU/MVP Project
Transport	20000	6 journeys	KYU/MVP Project 120,000/=	KYU/MVP Project
Lunch	15,000	6 x	90,000/=	KYU/MVP Project
Facilitation of research assistants	100,000	3	300,000/=	KYU/MVP Project
Refreshment	50 bottles of soda @2000	50	100,000/=	KYU/MVP Project
Camera	450000	1-pc	450000	KYU/MVP Project
Data analysis and thesis report writing	200,000	1	200,000/=	KYU/MVP Project
Internet	100,000	2	200,000/=	KYU/MVP Project
Binding thesis report	50,000	3	150,000/=	KYU/MVP Project
Total			2,587,000/=	

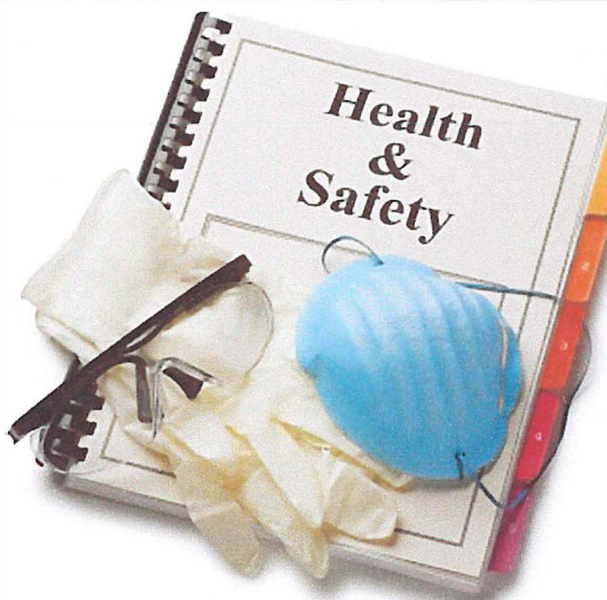
APPENDIXV: SAMPLE OF INDUSTRIAL SIGNS

The researcher will design and install these Warning Signs in the machinshop



Take Care Slippery Floor

 Workshop Safety starts here 	
 Look out	 No unauthorised persons allowed beyond this point
 Safety helmets must be worn in this area	 High visibility clothing must be worn in this area
 Foot protection must be worn in this area	 Ear protection must be worn in this area
 Children must not play on this site	 No smoking
 All visitors and drivers must report to site office 	





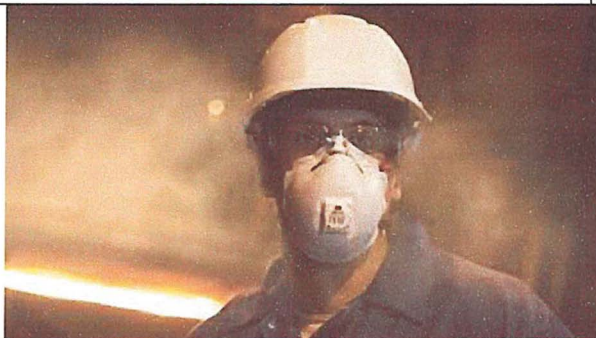
Accident at Work: Slip and Falls



Discard Banana Peels Wisely in Workshop



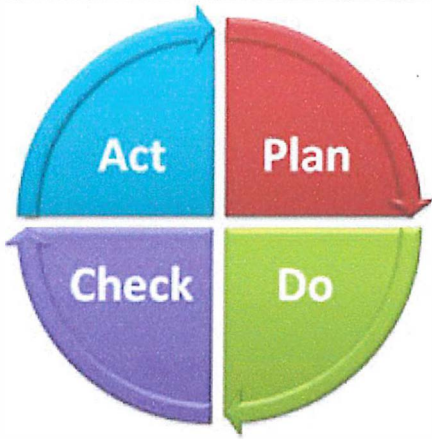
Ensure Workshops have First aid Kits and Fire Equipment



Use Protective Wear at all Times

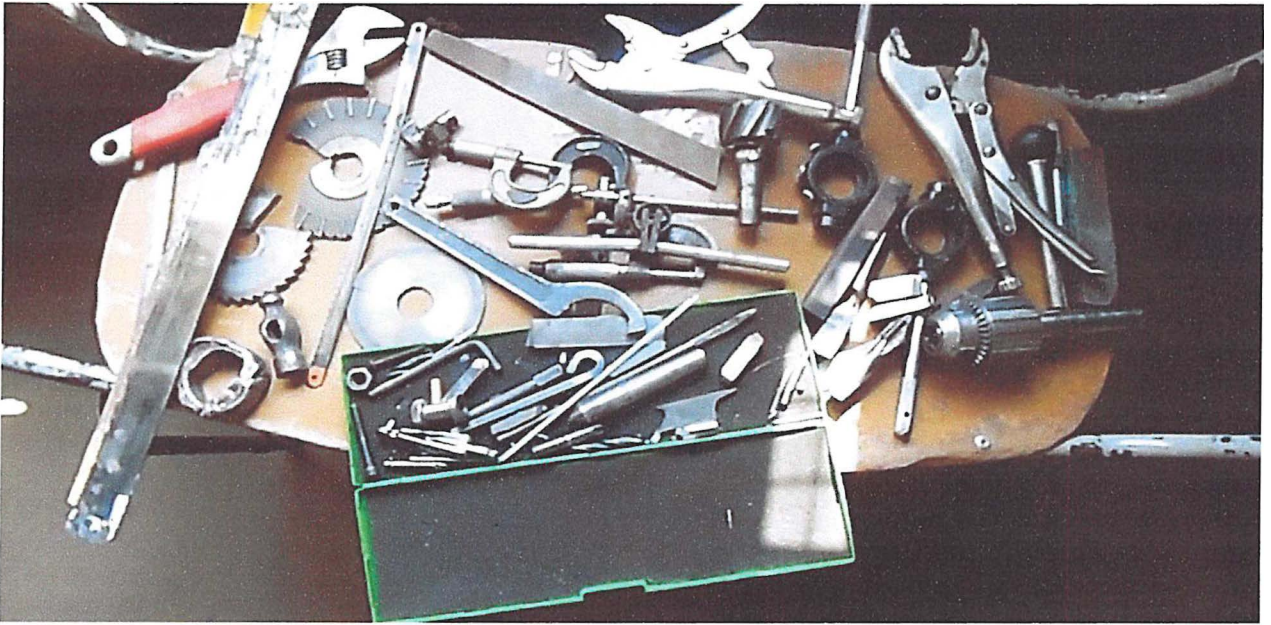


Keep Gangways Clear at all Times



WARNING
THIS
MACHINE
HAS NO
BRAIN
USE YOUR
OWN





This plate shows the broken tools and equipments



This plate shows a broken sheet metal bending and shearing machine in the DMPE workshop



This plate shows the broken angle bender in DMPE workshop



This plate shows the Bio-gas digester with stolen parts by students in DMPE workshop



This plate the workshop walls without any warning sign



This plate shows the workshop floor without the gang ways in DPME workshop

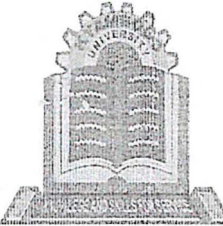


This plate shows the lathe machines with stolen motors in DPME



This plate shows both vertical and horizontal milling machines broken down by the students in DMPE

APPENDIX VI: INTRODUCTORY LETTERS



KYAMBOGO UNIVERSITY
P. O. Box 1 Kyambogo, Phone: 041-285001/2 Fax: 041-220464
www.kyambogo.ac.ug
FACULTY OF VOCATIONAL STUDIES
DEPARTMENT OF ART & INDUSTRIAL DESIGN
MASTERS IN VOCATIONAL PEDAGOGY PROGRAMME

3rd November 2015

The Managing Director, *Principal Makwasa Vocational Institute.*

Dear Sir/Madam,

REQUEST FOR AN INTERACTION WITH WORK -RELATED ACTIVITIES IN YOUR COMPANY

The Masters in Vocational Pedagogy is an action research oriented programme geared towards building capacity in form of competent/human resource that is urgent Need for the development of Vocational Education and Training in both Uganda and the region at large.

As part of their studies, the students of this programme are required to understand what "work" is, and to develop competence in work-related research activities.

The purpose of this communication is in three folds;

1. Introduce to you **Mr. Agole Peter** who is currently pursuing a Masters in Vocational Pedagogy. He will be undertaking his action research project in your Organization for a duration of 3 weeks:-
2. Request you allow the student and his mentor/supervisor an interaction with work-related activities carried out at your workplace.
3. Request you to allocate some staff who can guide him while undertaking the action research activities.

Yours faithfully,

Chris Serwaniko
Chris Serwaniko
Coordinator, Master in Vocational Pedagogy
NORHED MVP Project





KYAMBOGO UNIVERSITY

P. O. Box 1 Kyambogo, Phone: 041-285001/2 Fax: 041-220464
www.kyambogo.ac.ug

FACULTY OF VOCATIONAL STUDIES

DEPARTMENT OF ART & INDUSTRIAL DESIGN

MASTERS IN VOCATIONAL PEDAGOGY PROGRAMME

3rd November 2015

The Managing Director,

Standard Siga Company

Dear Sir/Madam,

REQUEST FOR AN INTERACTION WITH WORK -RELATED ACTIVITIES IN YOUR COMPANY

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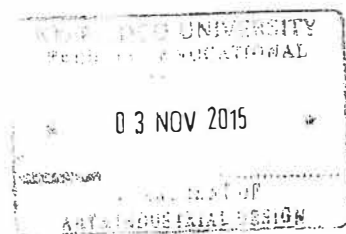
Yours faithfully,

Chris Serwaniko

Chris Serwaniko

Coordinator, Master in Vocational Pedagogy

NORHED MVP Project





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P. O. Box 1 Kyambogo, Phone: 041-285001/2 Fax: 041-220464

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FACULTY OF VOCATIONAL STUDIES

DEPARTMENT OF ART & INDUSTRIAL DESIGN

MASTERS IN VOCATIONAL PEDAGOGY PROGRAMME

3rd November 2015

The Managing Director, *Wood and Living Company Ltd.*

Dear Sir/Madam,

REQUEST FOR AN INTERACTION WITH WORK -RELATED ACTIVITIES IN YOUR COMPANY

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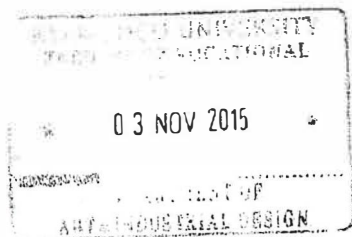
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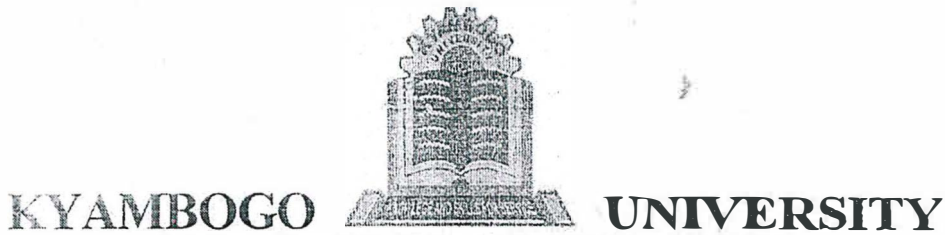
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Yours faithfully,

Chris Serwaniko
Chris Serwaniko
Coordinator, Master in Vocational Pedagogy
NORHED MVP Project





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www.kyambogo.ac.ug

FACULTY OF VOCATIONAL STUDIES
DEPARTMENT OF ART & INDUSTRIAL DESIGN

MASTERS IN VOCATIONAL PEDAGOGY PROGRAMME

3rd November 2015

The Managing Director, *Master wood industry*

Dear Sir/Madam,

REQUEST FOR AN INTERACTION WITH WORK -RELATED ACTIVITIES IN YOUR COMPANY

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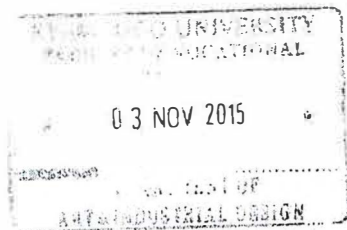
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Yours faithfully,

Chris Serwaniko
Chris Serwaniko
Coordinator, Master in Vocational Pedagogy
NORHED MVP Project




KYAMBOGO UNIVERSITY
P. O. Box 1 Kyambogo University Tel: 0414 287117
Faculty of Vocational of Studies
Department of Art and Industrial Design
Masters in Vocational Pedagogy

23rd May, 2016

To whom it may concern

RE: INTRODUCTION OF AGOLE PETER

This comes to introduce to you **AGOLE Peter** a student of Masters in Vocational Pedagogy (MVP) Programme at Kyambogo University. This student bears registration no. **14/U/2907/GMVP/PE** and in his final year. As a requirement for graduation, this student is expected to carry out Action Research whose results make up his master's thesis.

Kyambogo University is running two Vocational Pedagogy programmes: the Post-Graduate Diploma in Vocational Pedagogy (PGDVP), and the Masters in Vocational Pedagogy (MVP). While the PGDVP programme is mainly concerned with production of teachers and trainers or instructors in vocational disciplines or subjects in the public and private sector, MVP is not only concerned with production of trainers of trainers (TOTs) at higher levels but also production of personnel at policy level as well as researchers in VET. The purpose of MVP programme is to strengthen the link between learning and work, and experience-based learning in work places, research projects and the masters' research constitute a big proportion of the MVP programme.

The program has produced three cohorts of with 63 graduates. As part of its achievements the themes identified in the Masters theses of the first cohort graduates include VET country cases, VET and work life, VET and persons with special needs, VET and the labour market, VET and gender, and vocational pedagogy and indigenous knowledge.

Any support rendered to him is highly appreciated.

Looking forward to your usual support.

Yours Sincerely,



Chris Serwaniko

Project Coordinator, NORHED MVP Program
Masters in Vocational Pedagogy Program