IMPROVISING RESOURCES TO ENHANCE PRACTICAL TRAINING IN METAL MACHINING AND FITTING SECTION AT JINJA VOCATIONAL TRAINING INSTITUTE

BY

OWOR PETER

15 / U / 14596 / GMVP / PE

A DISSERTATION SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL FULFILMENT FOR THE AWARD OF MASTERS IN VOCATIONAL PEDAGOGY OF KYAMBOGO UNIVERSITY

DECEMBER 2017

DECLARATION

I, Owor Peter hereby declare that this research dissertation is my original piece of work and has never been presented to any institution of higher learning for the award of any degree.

Signature ..... Date .....

APPROVAL

This research dissertation has been written and submitted for the master's degree under our supervision as University supervisors

Signature.....Date.....

Dr. OKELLO BENSON

SUPERVISOR

Signature.....Date.....

Mr. KYAKULUMBYE ALI

SUPERVISOR

DEDICATION

This research dissertation is dedicated to my beloved parents, Onyango Zakaria, Anyango Mary daughter, son and Uncle Achieng Christine, Owor Gerald, and late Okello Sebastian.

ACKNOWLEDGEMENTS

This piece of work has been a success because of the contribution of a number of people whose effort cannot be denied but deserves to be mentioned. First and foremost, I would like to thank the Norwegian Council of Higher Education for offering me the scholarship through NORHED project at Kyambogo University. Without their support, this report would not have been a success.

I would like to extend my sincere gratitude to my supervisors Dr Okello Benson Mr. Ali Kyakulumbye, Dr. Jacob Oyugi, Dr. Senoga Maureen Assoc. Prof. Habib. Kato and Ms.Dinavance Arinaitwe and Ms. Aurelia Atukwase, whose encouragement and academic guidance was very vital during the hard times of compiling this report. I also thank my mentors especially : Mr. Chris Serwaniko, Dr. Nabagala Justine, Dr. Elizabeth Opit, Prof John baptist Matovu, Ms.Joan Kekimuli, Ms .Lucy Ajambo, Mr. Mosas Ediedu, Mr. Tusiime Edwin Wycliff to mention but a few

I wish to recognize the team spirit of fellow MVP colleagues from Uganda, Southern Sudan and Norway. Mr. Mugombeshya Patrick, Mr. Musoke Henry, Mr. Sempala Sebastian, Mr. Assaja Abraham John. Special appreciation goes to my brothers and sisters whose love and financial support towards my academic and professional endeavors greatly contributed to my success.

Finally, I would like to thank all the stakeholders (the administration, teaching staff and students) who sacrificed their valuable time to participate in this action research.

May the Almighty God reward you abundantly

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS/ABBREVIATIONS

BTVET:	Business Technical Vocational Education and Training
C/J	Carpentry and joinery
DIT	Directorate of Industrial Training
JVTI:	Jinja Vocational Training Institute
MMF	Metal Machining and Fitting Section
MoE:	Ministry of Education and Sports.
PAP	Participatory Action Research
TVET:	Technical Vocational Education and Training
UBTEB	Uganda Business Technical Examinations Board
VET	Vocational Education and Training
W/F	Welding and Metal Fabrication
Wow	World of Work

LIST OF APPENDICES

ABSTRACT

This action research aimed at improvising resources to enhance practical training in Metal Machining and Fitting (MMF) section at Jinja Vocational Training Institute (JVTI). To achieve the aim, various research questions were formulated which centered on factors affecting practical training at Jinja Vocational Training Institute (JVTI), and possible strategies to improvise resources for practical training in Metal Machining and fitting (MMF) section, at Jinja Vocational Training Institute (JVTI), and the impact of the improvised resources to enhance practical training. The study used descriptive research design and purposive sampling to select the respondents from Jinja Vocational Training Institute (JVTI.). The method of data collection included interviews, participant observation, focus group discussion and future workshops. The data collected was analyzed and presented under themes following research objectives. The preliminary phase involved identifying factors affecting practical training in Metal Machining and Fitting Section (MMF) section at Jinja Vocational Training Institute (JVTI). The finding revealed quite a number of factors of which lack of practical training resources emerged as the most outstanding. Together with the stake holders causes of lack of practical training resources were identified, solutions to causes were generated, implemented and evaluated. These included among others the use of timber off cuts from carpentry workshop, Plastic off cuts from plumbing workshop, metal scraps from Metal Machining and Fitting Section (MMF) and Welding and Metal Fabrication (W/F) workshops and past practical examination materials to be used for practical training. The results revealed that lack of practical training resources denied the students from getting the practical training they deserved. It was strongly recommended that using improvised resources should be emphasized for the students to continue have practical exercise when practical lessons are on. Students should always be on the alert to pick any material which can improvise training resources and use it for workshop practice.

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter presents the back ground of the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance and scope of the study.

This research dissertation was intended to identify the problems which affected teaching and learning in metal machining and fitting section at Jinja vocational training institute.

The work process analysis and future work shop were used to analyze how the resources for practical training can be improvised. The stake holders who were involved were students, instructors and administrators.

1.2 Background of the study

In Jinja Vocational Training Institute, Metal Machining and fitting Section, training resources were originally procured in the following ways:

The head of section makes requisition for the training resources at the beginning of the term to the head of institution. The bursar makes local purchase order which is given to the suppliers so that they can deliver the training resources to the stores. The head of section then makes an issue note which is approved by head of institution to authorize the removal of the training resources from the stores in order for them to be used for practical lessons in the section. Unfortunately the suppliers at times delay or fail to deliver the training resources

during the term. Such a situation paralyses practical training. It is on this background that the study was carried out in order to find solutions to enhance practical training in the MMF Section at JVTI.

1.3 Situation analysis:

A situation analysis was carried out at the institute which revealed the key activities of a metal machining student. According to National Curriculum Development Centre (NCDC), Uganda (2016), National Certificate in Metal Machining and Fitting (NCMF) was developed after the survey of the world of work. A report from the survey culminated into the development of professional profile which included all the jobs and tasks that the graduates of Metal Machining and Fitting course should perform as follows:

Studying drawings and specifications to determine suitable material, method and sequence of operations, and machine fabricated metal parts into products and assembling metal parts and subassemblies to produce machines and equipment. Checking fabricated and assembled metal parts for accuracy, clearance and fit using precision measuring instruments. Setting guides, stops and other controls on machining tools, setting up prescribed cutting and shaping tools. Forming metal stock to fine tolerances using machining tools to press, cut, grind, plane, bore and drill metal. Cutting, threading, bending and installing machines.

Table 1: Summary of work process involved in practical training

WORK PROCESS	TASK INVOLVED	COMPETENCES REQUIRED
Making Scheme of work	Identifying the skills to be taught	Research skills
Making lesson plan	Organizing the time frame for the skill to be taught	Time management
Making working drawing	Choosing the right scale and dimension	Ability to use drawing instruments
Making the sequence of operation	Organizing the steps which lead to the manufacture of the required component	Ability to make mechanical parts
Demonstration of the skills to be learnt	Organizing tools and materials	Ability to demonstrate the skills
Students performance of the task Marking the work made by the trainees	Ability to supervise trainees Organizing marking guide	Correct use of measuring tools Ability allocate marks for different skills

1.3.1. Future Workshop Procedures

A Future Workshop (FW) according to Jungk and Müller (1987) is a tool used for problem identification in a given setting. It consists of five phases which include: the preparation phase, the critique phase, the fantasy, the reality/implementation and follow up

1.3.1.1 Preparation phase

During the preparation phase, the researcher came up with guide that was to be followed during the future workshop session. The identified participants were invited for the workshop as planned. The room for the workshop was arranged by the organizers who even; purchased the writing materials (Pens, papers, markers and manila papers).

1.3.1.2 Critique phase

The critique phase was started by discussing critical problems faced during the practical training in JVTI. Brainstorming was used as a tool for generation of ideas in the critical phase of the future workshop. Participants' generated ideas with, no criticism, and respect for every ones idea was considered. Short responses and combination of ideas were permitted. Together with the stakeholders, challenges were identified

The generated ideas were classified into short term, medium term and long term as follows.

Short term:

- Some Machine tools were not in good working condition.
- Practical training was accorded less time compared to theory.
- Inadequate training resource for practical training Instructors did not give feedback to trainees. Instructors did not attend regularly. Syllabus was not completed in time. Time tables needed to be reviewed.
- Administration not friendly to the learners.

Medium term:

- All emergency switches were non functional.
- Library was too small for the student population.
- Some machines had no accessories.
- Some cables had their insulation torn.
- Machine tools required regular service

Long term:

- Equipment and tools were not adequate to match student population (ratio: 2:40).
- No classroom for preparation after supper.
- No adequate working space in the workshop.
- Classrooms were congested during lesson. Computers were not enough.

The researcher asked the stake holders to choose that category which could be handled within their means and the time available. This eventually led to that category of training resource which was one of the short term challenges identified by the stake holders.

However, the major problem which the participants identified which could be solved within their means and available time was training resource. Therefore it was agreed by the participants that using alternative training resources to enhance practical training in metal machining and fitting section was the major problem that needed investigation.

Figure 1: showing staff and students during the future work shop as the researcher guides the session

Table 2: Summary of the problems identified by the participants in the critical phase of the FW

SHORT TERM	MEDIUM TERM:	LONG TERM
Some. Machine tools were not in good working condition. Practical training was accorded less time compared to theory. In adequate training resource for practical training. Instructors did not give feedback to trainees. Instructors did not attend regularly. Syllabus was not completed in time. Time tables needed to be reviewed. Administration not friendly to the learners.	All emergency switches were non functional. Library was too small for the student population. Some machines had no accessories. Some cables had their insulation torn. Machine tools required regular service	Equipment and tools were not adequate to match student population. No classroom for preparation after supper. No adequate working space in the workshop. Classrooms were congested during lesson. Computers were not enough.

1.3.1.3 Fantasy phase

In the fantasy phase, participants suggested the possible ways of solving the problems identified in the critique phase. All the ideas were accepted and gathered regardless of their practicability. All the negative ideas were turned to be positive. Participants assumed that every suggestion was possible and resources were available to solve the problems phase of the Future workshop. This being un practicable, the next option was to move to the reality phase of the future workshop.

1.3.1.4 Reality phase

This is the real situation and together with the participants it was agreed that challenges which are short term should be prioritized by pair wise ranking approach to ascertain the most pressing but manageable challenge. Training resources emerged first followed by lack of tools and equipment.. It was for this reason that the stake holders in JVTI unanimously agreed that resources for practical training was the most agent problem and therefore needed to be addressed.".

1.3.1.5 Implementation of Action Research work plan

During the Implementation stage participants acted with respect to the designed work plan This is supported by psychologists like Walton who states that, feeling that you are part of the team can encourage one to take on tasks Walton,(2014). In this study, the roles of participants were clearly agreed upon and my role as a

researcher was to follow up the action implementation by responsible persons and track what is being implemented and what is not working well.

1.3.1.6 Monitoring of implementation of action research work plan

Monitoring was done to find out if there was any improvement exhibited within the period of the action research from November, 2016 to August, 2017. Also, evaluation was conducted to determine the success or failure of the Future Workshop in order to re-plan how to solve the problem.

In order to understand how the action research works, the action research cycle adapted from Kemmis and Mc Taggart (1982) was used to interpret its process. This is in line with Fish (1989) who urges that continuity in practice arises because not everything changes at ones. This is quite good but not sufficient to explain the entire passive process since Action Research involves constructing identities as shown in the cycle in figure 1.2.

Therefore, since action research is cyclic, after the first phase of improvement on problems presented, the cycle is continued until when all the problem are addressed so as to improve the practical training at JVTI.

1.4. Statement of motivation

As a student of Masters of Vocational Pedagogy and a Technical Teacher, I was prompted to carry out this study in order to put in practice the knowledge I have acquired from this programme and make a change in my ways of teaching at my work place. Also I have the interest to support the policy on Vocational Education and Training (VET) as the government is renewing efforts to promote Technical

Vocational Education and Training (TVET), make it more attractive, effective and efficient with curriculum which emphasizes acquisition of employable skills. As a technical teacher in TVET, I have the zeal to reduce the gap between the transitions from school life to the work life.

1.5. Statement of the problem.

In spite of the presence of qualified instructors in Metal Machining and Fitting Section at JVTI the performance of trainees in workshop practice has always been poor. This has been because of inadequate or total lack of practical training resources. If this problem is not addressed, the poor performance will continue to exist in the section. This is against the government policy of skilling Uganda (BTVET2008). Training resources play a vital role in participation in practical lessons. They form a focal point and attract attention, arouse interest and promote a desire to learn, supplement description and help to explain words and processes, give an accurate impression of the concept, illustrate relationships, promote retention and memory, help to Consolidate what has been learned; help to save teaching time, make learner to have self esteem, learners get motivated and have the idea of sharing in Participation in practical lesson Kothari (2001) According to (Lewis & Williams, 1994 p 6), students "learn by doing", applying knowledge to get experience in order to develop skills or new ways of thinking. For the successful acquisition of the expected competences in this course, the students should have enough practice of using the various machine tools to make the spare parts required for the maintenance of machines. Making the spare parts require adequate resource to be available for practice. This has prompted me to carry out

this study to find out ways of using improvised resources to enhance practical training in the section.

1.6. Purpose of the study

The purpose of the study was to improvise the training resources in order to enhance practical training in metal machining and fitting section.

1.7. Objectives

The specific objectives of this study were:

1. To identify resources that can be improvised for practical training in metal machining and fitting section at JVTI.
2. To utilize the identified resources for Practical Training in Metal Machining and Fitting Section at JVTI.
3. To evaluate the impact of the identified resources on practical training..

1.8. Research questions

1. What resources can be improvised for practical training?
2. How can the identified resources be utilized for practical training?
3. How can the impact of the identified resources on practical training be evaluated?

1.9. Justification of the study

According to National Curriculum Centre (NCDC) Syllabus book Uganda. (2016), National Certificate in Metal Machining and Fitting (NCMF) was developed after the survey of the world of work and it requires the graduates of Metal Machining and Fitting course to perform several duties and tasks to meet the needs of the employers. This study was therefore intended to enrich the trainees with skills to perform the expected tasks because of having the opportunity to use a variety of training resources to get enough practice.

There should be a great improvement in the quality of graduates whom the world of work requires to manage the various maintenance activities of the company machineries.

1.10. Significance of the study

The study findings are expected to:

Establish the problems which affect practical training at Jinja vocational training institute and suggest solutions to improve the training process.

Guide the policy makers on how to improve on training in other sectors rather than technical fields.

Equip other researchers with the knowledge to investigate on other problems related to training in other fields.

Aid the institute administration in improving practical training in other sections.

Enable the learners gain the competence and confidence to perform tasks in the world of work.

Help the teachers to be creative in using improvised resources for the practical lessons.

1.10.1 Scope of the study.

1.10.2 Geographical scope

The research was conducted in Metal Machining and Fitting Section at Jinja Vocational Training Institute found in Jinja Municipality, Factory village, Commercial Street Plot 18 – 35 near former BAT factory. Jinja District in Busoga region.

1.10. 3 Content scope of the study

The researcher specifically addressed the use of alternatives on which practical training depends. Materials were suggested, for instance wood and plastic materials, scrap metals and past practical examination materials could be used instead of only relying on metallic materials from the stores.

1.10.4 Time scope

The time scope was November 2016 to August 2017. This was the period from when the situation analysis was carried out up to when the research study report was written.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review in relation to the problem of improvising resources to enhance practical training. The review will be based on the following objectives:

To identify resources for practical training in metal machining and fitting section in JVTI

To utilize the identified resources for practical training in Metal Machining and Fitting section in JVTI

To evaluate the impact of the identified resources on practical training in metal machining and fitting section in JVTI

2.2 Identification of resources for practical training.

According to Obanya (2001), training resource are didactic materials things which are supposed to make learning and teaching possible. While in views of Abdullahi (2003) they are materials or tools locally made or imported that could make tremendous improvement of a lesson if intelligently used. In the same vein, Isola (2010), referred to training resource as objects or devices, which help the teacher to make a lesson much clearer to the learner. In support of these views, Agina (2005), describe training resource as concrete or physical objects which provide sound, visual or both to the sense organs during teaching. According to Sasson (2009), the quantity of materials depends on the number of learners using them,

organization of the Materials, group arrangement, time management, and records management. Ensuring availability and adequacy of training resource, the practical lesson should be learner' centered instead of teachers centered and therefore motivate learners.

Accessibility depends upon your available storage and upon your own usage habits Abdullahi (2009). Consider how much space you have for storing According to Joyce (2001), during the preschool and kindergarten years, learners add to what they have learned in the early explorations as learners expands. The environment plays a critical role, the richer the environment the more concrete opportunities there are for the trainees to train by interacting with training resource. Instructors" role is to create an environment that Invites trainees to observe, and, make choices to experiment Judy (2001). He further states that training resources are tools used for practical training hence, Supports the instructor in delivery of competence or help to emphasize specific skill.. According to Thungu (2008), training resources meet the needs of trainees, fulfill the requirements of the subjects and facilitate the practical training process. Piaget (2009) states that merely using training resources does not guarantee effective training, to make its participation effective, the training resources must be appropriately selected and used. Instructors must, therefore become familiar with the types of training resource if a greater value is to be derived from their use. He further states that the primary function of training resource as a communication device is to serve as a more concrete reference to meaning than spoken or written word. According to Mwangi (2010), in the practical training process, training

resource enhances retention which makes training more permanent. According to Phyllis (2011), training resources possess some inherent advantages that make them unique in training. For one thing, they provide the instructors with interesting and compelling platforms for conveying information since they motivate trainees to learn more. Bolick (2003) pointed to a good relationship between effective training and using of training resources. He argued that while some educators have been fascinated by the potential of training resources to enhance practical training, instructors lagged behind in using training resources during practical training.

Allen and Hart (2009) states that besides using training resources the instructor must ensure that variety of the same are available in class for effective demonstration and practical training. They say that the materials and equipment presented in early childhood setting should be chosen to provide many and varied opportunities for learners to practice and master familiar skills through a variety of materials. This is related to the study because when resources are improvised, and put in place trainees are easily served with the materials for practicing any given task during practical lessons. The students' boredom and idleness are eradicated.Improvising of the training resources is done as an alternative for practical training when the actual metallic materials have not been provided by the institute. The instructor should ensure that the improvised training resources are always picked from their respective sources by the students and stored in the workshop before the day of workshop practice.

2.3 Evaluation of the impact of improvised resources on practical training.

Evaluation is increasingly being regarded as a powerful tool to enhance the effectiveness of training. Three major approaches to training evaluation: quality ascription, quality assessment and quality control are highlighted. In order to enhance the effectiveness of training, evaluation should be integrated with organizational life. (Phillip C. Wright, 1992): Reports on a study of current and past training literature suggests that training needs, must be preceded by a needs analysis. (Farhad Analoui 195) Ajayi (2006) observed that, without the instructor who is knowledgeable, training resources cannot create change and progress; the only time it creates impact is when the instructor begins to make use of it and allows it to take over its values". This portrays the professional attributes of the teacher and knowledge or his creativity in selecting, training resources effectively Esther (2009). However, the success of using practical training resources to meet the training objectives requires effective use and communication skills of the instructor to satisfy instructional delivery. Participation is affected by the appropriate and relevancy of training resource used, Armstein (2004).

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter outlines the contents imbedded in the methodology which include research design, area of study, and selection of subjects, data collecting techniques, instrument development and their application to the improvised resources for practical training.

3.2 Research design.

The research design used was descriptive because it provided a complete and detail description of the topic. It helped to reveal trends in thoughts and opinions and dig deep into the problem. It offered a complete analysis of a research subject without limiting the scope of the research and nature of participants" responses (Collins& Hussey 2003).

3.3 Implementation of Action productive objective.

The key participants were assigned responsibilities and dates of completion. This was organized in table form and put in appendix at the time of report writing.

3.3.1 Area of the Study

The area of study was Jinja Vocational Training Institute (JVTI) in Jinja district targeting mainly the administrators, teachers, and the students. JVTI was selected because the researcher is both an instructor and a resident of the area. Since he

stays within JVTI, the researcher easily located the respondents through the face to face interviews and focus group discussions.

3.4. Population

This targeted the stake holders and they were divided into three categories namely: Twenty Trainees, three Instructors and there administrators. The total population of trainees at Jinja Vocational Training Institute was 700 and that of instructors was 47 but because the study was specifically directed to a particular section (target population) the researcher did not use the whole population

3.5. Sample and size

The exact study sample was determined by choosing the respondents who could contribute the relevant ideas and actively participate in the study

In this Action Research participants in the study were as indicated in the Table 3 below.

Table 3: Composition of study Participants (Population, Sample Size and Sampling Technique)

Category of Population	Sample Size		Sampling Technique
	Target	Actual	
Year two MM F students	20	10	Purposive
Year one MMF students	20	10	Purposive
Instructors	20	03	Purposive
Administration	06	03	Purposive
Total	**66**	**26**	

Research ideally required testing the whole population unfortunately; this could not be affected due to large size which made it practically impossible to include everybody. The samples therefore consisted of trainees and instructors who participated in the future work shop because they had the back ground of the study right from the future workshop. Using only part of the class denied others chance to learn and this was not ethical. This was backed by crewel (2011) who) who affirmed that within qualitative research, it was typical to "study a few individual or a few cases" (pg 209). Ritchie et al (2003) suggested that within qualitative research the sample size was usually small primarily because phenomenal need to appear once to be part of the analysis.

3.5.1. Sampling technique

The method used in sampling was purposive because the sample members were selected on the basis of their knowledge, relationships and expertise regarding the subject. Purposive sampling saved time and money. It was flexible and satisfied multiple needs and interests. The main goal of purposive sampling was to focus on particular characteristics of a population that were of interest and have special relationship with the problem being investigated Freedman et al (2007).This was an in depth study geared towards achieving successful results.

3.6. Methods of data collection

The researcher employed interview, Focus Group Discussion (FGD), observation and future workshop methods while collecting data for the study. The purpose of the research interview was to explore the views, experiences, beliefs and motivations of individuals on specific matters at JVTI. Vale, (1996) regarded interviews as an interchange of views between two or more people.

3.6.1. Face to face interviews.

Interviews were convenient in that they allowed the discussion to cover the topics in detail if it was conducted informally. Interviews gave the researcher the freedom to probe the interviewee to elaborate a new line of inquiry. An interview was a systematic way of collecting data from individuals through conversation.

3.6.2. Focus group discussion:

Was chosen because it required limited resources in terms of time; man power and finance .The phenomena researched required collective discussion in order to understand the circumstances, behavior and opinions. A focus group aimed at using participants' feelings, such as perceptions and opinions. While some of the available techniques had advantages over the traditional focus group, it was the intention of this write up to outline the key factors that made focus groups the effective tool that it had been for years, and importantly, why it was superior methodology to all other qualitative methods for virtually every research need. (Quirk' marketing research review June 2003). Examples of the other technique were surveys, questionnaires, experiments and brainstorming.

3.6.3. Observation

This was a systematic description of events, behavior and artifacts in the social setting chosen for study (Marshall & Rossman, 1989). Bernard, (1994) emphasized that observation was sometimes the only way to collect the right data for one's study.

3.6.4. Future workshop:

Future Workshop (FW) was used as problem identification tool, at this stage, FW was used as a data collection tool. The FW was used as a tool in this study because it was aimed at supporting participants in identifying common problems; develop visions and ideas (Sannerud, 2014). This was developed for groups with limited resources to have a say in collective decision making process.

By use of the three phases of future workshop, the resources that could be improvised for practical training resource were established. Also the stakeholders' brainstormed on how to experiment the improvised resources and how to evaluate them.

3.7 Tools of data Collection

3.7.1 Interview Guide

The researcher made interview guide based on the study objectives to gather information from the participants because they provided subject areas within which the interviewer was free to ask questions. This permitted the establishment of confidence and co-operation between the researcher and respondents, and enabled the interviewer to get vital information for the study.

3.7.2 Focus Group Discussion (FGD) Guide

The focus group typically consisted of six to eight participants who were interviewed by a moderator (Jupp, 2006). The researcher designed a focus group discussion guide to cater for the 26 respondents who participated in the study. The participants included 20 trainees, 03 instructors and 03 administrators.

3.7.3 Future Workshop Guide

Future workshop (FW) was used as a data collection tool, because it was aimed at supporting participants in identifying common challenges, and develops ideas (Sannerud, 2014). This was designed for groups with limited resources to have a say in collective decision making process. Future workshop is a suitable tool for tackling complicated problems with conflicting views, (Lauttamäki, 2014).). In

relation to Apel (2004), participants at JVTI worked out solutions through voluntary and active participation. The researcher used this tool due to the fact that when the participants, are involved in the process they are often considered in the decision making for the improvement of their work place.

3.7.4 Log book

The researcher used the log book for recording the ideas contributed by all respondents in all the discussions held by the respondents within the focus group discussions. It contained all activities, dates, work plans and the resolutions made by the respondents.

3.7.5 Cameras

The researcher used smart phone cameras and videos to collect the evidence of the research through taking photographs and videos. The electronic device was very advantageous to the researcher because of the ease of portability. This was done after the researcher had made consultation with the participants of the study..

3.8. Procedure of data Collection

Data was collected using the future workshop model which involves four phases: preparation, critique, fantasy, reality and implementation phase.

In the preparation phase, the researcher presented an introduction letter from Kyambogo University to seek permission to carry out action research and verbally explained the purpose of the research to the principal of Jinja Vocational Training institute. The researcher organized meetings to draw the work plan for all the activities that were done during the action research process. The participants

included trainees' instructors and administrators. The researcher together with the participants carried out work processes analysis of what students in JVTI go through from the start to the end of their study. The participants were organized in three (03) groups of eight (08) participants each and after their presentation, the following work processes were agreed upon as: admission; orientation; theoretical and practical training, assessment, promotion, and graduation of students. Participants observed that all work processes which the students go through during the training contribute a lot to the production of competent graduates needed for the world of work.

3.9. Data Analysis

Data from the interviewees and focus group discussions for this study was sorted according themes based on the objective and questions of the study. The data obtained was manually tabulated with frequencies which were used in the decision making and comprehensive interpretations. From the qualitative data obtained, the emerging ideas, opinions and beliefs were critically analyzed and synthesized with what other writers have said in the literature review in order to make them more understandable. This was done in order to make the study more perfect.

3.10. Data Validity:

I used interview guide which triggered the stake holders to give as many ideas as possible regarding the solutions to the problem under study. I also used other tools for data collection, and these included: observation, VIP cards, camera, and

notebook. Validity and reliability in the study was ensured by triangulation in which the results from the different tools were compared for similarities and differences.

3.11. Ethical considerations

In order to address the ethical issues, the researcher presented an introductory letter from the faculty of Vocational Studies, department of Art and Industrial Design of Kyambogo University to the respondents so as to give focus of the study and avoid bias.

Recordings photography and responses during the focus group discussions and interviews were done under the permission of the participants to avoid fear and suspicions.

The researcher assured the participants of privacy of the information given since it was for academic purpose. Anonymity was maintained through the use of respondents to conceal the identity of participants. This is because the information provided by respondents was not to reveal their identities. Principles of ethics were taken into consideration during the research because respondents were given chance to make decisions freely.

3.12. Limitation of the research

1 The major limitation in the research was inadequate finance for funding the activities. This hindered the researcher from getting all the active involvement of the participants because of not being able to motivate them to their expectations.

2 The sample size and scope affected the generalization of the findings of the study because only a small number of participants were involved in the study.

3 The researcher was not able to control the attitudes of the respondents as they respond to the instruments and this might have led to biasness. Also some participants complained of not being allowed to practice work on machine tools regularly as the population of the respondents was big compared to the machines available in the workshop.

3.13 Delimitation of the research

1 The study covered a section of the Vocational Training Institute in the country yet the problem maybe across. This led to the in depth analysis of the impact of improvised resources on practical training.

2 The study obtained responses from a section of the potential respondents. The interested participants responded actively to the activities of the study and contributed positively to its success.

3 The researcher borrowed money from friends and microfinance organizations in order to be able solve some expenses which were incurred during the study.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1. Introduction

This chapter reports the findings of the study on the improvised training resources in MMF section of JVTI.

4.2 Challenges of practical training in MMF section

The challenges of practical training resources in MMF section were expressed by the stake holders during a future work shop as follows:

Equipment and tools not adequate to match the student population (ratio: 2:40); some machine tools were not in working conditions, and these include shaper, slotter and lathe machines. On the issue of safety, all emergency switches were non-functional; practical training was accorded less time compared to theory; inadequate training resource for practical; some cables had got their insulation torn; some machines had no accessories; machine tools required regular servicing; instructors gave no feedback to learners; library was too small for the student population; library was not equipped with relevant books for instance only three copies of a workshop technology book by Chapman were available; internet was not stable; no adequate working space in the work shop; timetables needed to be reviewed; classrooms were congested during lessons; computers were not enough (ratio 5:1) learning was not effective; syllabus was not completed in time; instructors did not attend regularly; administration was not friendly to learners; there was no class rooms for preparation after super.

The challenges were then clustered into five categories as: i) Equipment and tools, ii) Training, iii) Training materials, iv) Infrastructure, and v) Administration. A democratic process was carried out to choose the critical challenge and the results were as follows: Equipment & tools 26 votes; Training 3 votes; Training materials 3 votes; Infrastructure 0 votes and Administration 0 votes. The challenges were further scrutinized and it was agreed that training and training materials be merged and regarded as training resource thus leaving only four categories namely, Equipment & tools, Training resource, Infrastructure, and Administration.

The researcher asked the stake holders to choose that category which could be handled within their means and the time available. This eventually led to that category of training resource.

However, the major problem which the participants identified which could be solved within their means and available time was training resource. Therefore it was agreed by the participants that using alternative training resources to enhance practical training in metal machining and fitting section was the major problem that needed investigation. The improvisation was achieved by ensuring that the resources to be used as alternatives for the actual metallic practical training materials was easily available free of charge within the institute premises. The wood off cuts would be easily collected from the carpentry workshop. The plastic off cuts would be picked from the plumbing workshop. The metal scraps would be gathered from the metal machining fitting and welding workshops. The past

examination practical materials would be got from the metal machining and fitting material stores.

4.3 Identification of resources that can be improvised for practical training in MMF section.

In the fantasy phase, brainstorming using VIP cards enabled participants to suggest possible resources which could be used for practical training. Participation involves working with a partner, or in a small group, and brainstorming in order to create a stimulating learning environment Cooke (2001). The suggested resources were clustered into five categories and were recommended for experimentation by the participants.

The resources were:

1. Timber off cuts from carpentry workshop should be used for practical training to substitute for the metallic materials.
2. Plastic pipe off cuts from plumbing workshop should be used for practical training instead of metallic materials.
3. Metal scraps from MMF and Welding workshops should be used as practical training materials.
4. Past examination practical materials should be used as training materials, during practical lessons.

The wood and plastic materials which were improvised for the practical training during the study had the advantage of not causing corrosion on machine slides.

Figure 2: Shows the researcher guiding the session during a future workshop to suggest possible resources for practical training in MMF section.

4.4 Experimentation of the improvised resources practical training.

Here the resources that were agreed upon by the participants were put in place following the simple implementation plan that had been generated.

Students were assigned responsibilities according to the different resources under a leader for each .Each group was assigned to collect the suggested resources from the respective sources and store them in the MMF workshop. Participation is affected by the appropriate and relevancy of training resource used, such as metal scraps, plastic pipe off cuts, timber off cuts, and past examination practical materials Armstein (2004).

4.4.1 Storage of the improvised training resources

Resources from the different suggested sources were kept in different containers in particular areas of the work shop and labeled for easy access by the participants on instruction by the instructors. Strict instructions were communicated to the participants not to pick any materials unless they had been authorized by the instructors. According to Obanya (2001), training resource are didactic materials things which are supposed to make learning and teaching possible. While in views of Abdullahi (2003) they are materials or tools locally made or imported that could make tremendous improvement of a lesson if intelligently used. In the same vein, Isola (2010), referred to training resource as objects or devices, which help the teacher to make a lesson much clearer to the learner. In support of these views, Agina (2005), describe training resource as concrete or physical objects which provide sound, visual or both to the sense Organs during teaching. According to Sasson (2009), the quantity of materials depends on the number of learners using them, organization of the Materials, group arrangement, time management, and records management be learner centered instead of teachers centered and therefore motivate learners.

Accessibility depends upon your available storage and upon your own usage habits Abdullah (2009). Consider how much space you have for storing relevant training resource for the activity to be carried out in participation in practical lessons, and the location(s).The improvised resources were stored in separate containers in the workshop and labeled for easy access when they were to be issued to the students. Wood and plastic material containers were provided with

top covers as these are not easily affected by moisture. The metal scraps and past examination practical materials containers were not provided with the covers as the metals are easily affected by moisture which cause them to rust badly.

4.4.2 Issue of the improvised training resources to the participants.

An issue book was put in place where every participant was to sign when being allocated the materials of his or her choice..This was intended to avoid waste of any of the organized materials. Resources like hand tools and tools used on the machine tools were also issued out to the participants after signing for them in the issue book accordingly. According to Savory (2003), a well planned use of training resource in lessons should do much to banish apathy. In addition, he said that selection of training resources which are related to the basic activity of a lesson helps in in-depth understanding of such a lesson by the learners, in that it makes the lesson attractive to them, thereby arresting their attention and thus, motivating them to learn and participate. Participation helps teachers to discover their learners' potential, to realize their talents and raise their self-esteem. In turn this can help them to question their boundaries and explore issues, voice aspirations, identify needs and facilitate their learning and personal development Clark (2005).

4.4.3 Practicing the improvised training resources.

Working drawings were made by the practical subject instructors and the students were provided with copies of the drawings refer to (Appendix 9). Each student was given chance to choose the materials from which to make the components in the working drawings

It then shows that, if there must be an effective demonstration and practical training activity, utilization of training resource will be necessary Kibe (2011).

Ema (2004) assert that, practical training resources have changed over the years, not only to facilitate practical training situation but also to address the instructional needs of individuals and groups. Training resources are made up of objects such as printed, audio, visual that aid in the successful delivery of lesson Chuba (2000). Joof (2005) explained that, "the concept of practical training resources has gone through several evolutionary stages from the simple, instructional technology and media to communication and educational technology". This however, tells us that practical training resources are not just objects or equipments used during demonstration and practical training process but there those objects improvised by the instructor to make conceptual abstraction more concrete and practical to the learners. Training resources are the relevant materials utilized by an instructor during instructional process for the purpose of making the contents of the instructions more practical and less vague Chuba (2000).

Ajayi (2006) opined that, "without the instructor who is knowledgeable, training resources cannot create change and progress, the only time it begins to make

impact is when the instructor begins to make use of it and allows it to take over its values". This portrays the professional attributes of the instructor and general knowledge or his creativity selecting, develop and use training resources effectively Esther (2009). Demonstration and practical training Materials design, production and their use facilitate the demonstration and practical training outcomes.

Allen and Hart (2009) states that besides using training resources the instructor must ensure that variety of the same are available in class for effective demonstration and practical training. They say that the materials and equipment presented in early childhood setting should be chosen to provide many and varied opportunities for learners to practice and master familiar skills through a variety of materials.

For example adequacy of training materials means that the instructor should ensure that materials to be used for a particular practical lesson are enough depending on the number of learners using them Jacinta (2003).

According to Preschool handbook (2008), an instructor needs to group trainees according to their different abilities so that they can assist one another. The instructor will also need to be guided by the lesson plan, where less time should be used on introduction and conclusion while most of the time should be left to trainee to do the task at hand. In participation in a practical lesson, training resources can be used.

4.5 Evaluation of the effectiveness of the experimented resources.

After assigning the participants to make the components in the working drawings using the improvised resources, the researcher went further to observe and evaluate if the experimented resources had the capacity to produce the desired effect to enhance practical training in MMF Section.

Evaluation was done purposively to ascertain whether the participants were able to improve on their practical learning abilities and also establish areas which needed further improvements.

Institutional training should aim to equip trainees with useful skills and to improve their knowledge and capabilities in their participation in practical lesson. Awobodu (2001) has noted that availability and adequacy of practical training resources facilitates practical training and enhances pupil achievement because every trainee is involved in the activity given. Aromolaran (2003) noted that participation in practical lessons are expected to provide knowledge and training that satisfies the trainees' demands of the nation and the nation's economy (Mayindo, 2008).

The following observations were made basing on the individual students' preference of the improvised resources for making the components in the working drawing.

4.5.1. Students preference of the improvised resources to make the components in the working drawing

Table 4: The table shows the students" preference of using different improvised resources to perform plain turning on the lathe machine.

Operation	Wood off cuts	Plastic off cuts	Metal scraps	Past examination materials	Total participants
Plain turning	15	0	2	3	20

These results show that the majority of the participants preferred to use the wood off cuts to perform the plain turning operations to make the components in the working drawing. No participant used plastic off cuts to make the components.

Table 5: The table shows the students" preference of using different improvised resources to perform reboring on the lathe machine.

Operation	Wood off cuts	Plastic off cuts	Metal scraps	Store materials	Past examination materials	Total participants
Reboring	8	0	3	4	5	20

These results show that the majority of the participants preferred to use wood off cuts to perform reboring operation to make the components in the working drawing. No participant used the plastic off cuts to make the components.

Table 6: The table shows students' preference of using different improvised resources to perform knurling operation on the lathe machine

Operation	Wood off cuts	Plastic off cuts	Metal scraps	Past examination materials	Total participants
Knurling	0	4	11	5	20

These results show that the majority of the participants preferred to use metal scraps to perform knurling operation to make the components in the working drawing. No participants used wood off cuts to make the components.

Table 7: The students' preference of using different improvised resources to perform step milling operation on the horizontal milling machine

Operation	Wood off cuts	Plastic off cuts	Metal scraps	Past examination materials	Total participant
Step milling	13	0	4	3	20

These results show that the majority of the participants preferred to use wood off cuts to perform step turning operation to make the components in the working drawing. No participants used the plastic off cuts to make the components.

Table 8: The table shows students' preference of using different improvised resources to perform slot milling operation on the horizontal milling machine

Operation	Wood off cuts	Plastic off cuts	Metal scraps	Past examination materials	Total participants
Slot milling	6	0	3	11	20

The results show that the majority of the participants preferred to use past examination materials to perform slot milling operation to make the component in the working drawing. No participants used plastic off cuts to make the components.

Table 9: The table shows students' preference of using different improvised resources to perform gear cutting operations on the horizontal milling machine

Operation	Wood off cuts	Plastic off cuts	Metal scraps	Past examination materials	Total participants
Gear cutting	6	0	11	3	20

These results show that the majority of the participants preferred to use metal scraps to perform gear cutting operation to make the components in the working drawing. No participants used the plastic off cuts to make the components.

Table 10: The table shows students' preference of using different improvised resources to perform drilling operation on the pillar drilling machine.

Operation	Wood off cuts	Plastic off cuts	Metal scraps	Past examination materials	Total participants
Drilling holes	12	4	2	2	20

These results show that the majority the participants preferred to use the wood off cut materials to perform drilling operation to make the components in the working drawing. Other participants preferred to use other training resources to perform the drilling operations to make the components in the working drawing.

Table 11: The table shows students' preference of using different improvised resources to perform shaping of flat surfaces on the shaping machine

Operation	Wood off cuts	Plastic off cuts	Metal scraps	Past examination materials	Total participants
Shaping flat surface	0	0	5	15	20

These results show that the majority of the participants preferred to use past examination material to perform flat shaping operation to make the components in the working drawing. No participants preferred to use wood off cuts and plastic off cuts to make the components

Table 12: The table shows students' preference of using different improvised resources to perform shaping of angular surfaces on the shaping machine

Operation	Wood off cuts	Plastic off cuts	Metal scraps	Past examination materials	Total participants
Shaping angular surface	0	0	13	07	20

These results show that the majority of the participants preferred to use metal scraps to perform angular shaping operation to make the components in the working drawing. No participants preferred to use wood off cuts and plastic off cuts to make the components

Table 13: The table shows students' preference of using different improvised resources to perform filing operation on the fitters" bench.

Operation	Wood off cuts	Plastic off cuts	Metal scraps	Past examination materials	Total participants
Filing	0	0	16	04	20

These results show that the majority of the participants preferred to use metal scraps to perform filing operation to make the components in the working drawing. No participants used wood off cuts and plastic off cuts to make the components.

CHAPTER FIVE

DISCUSSION CONCLUSION AND RECOMMENDATION

5.1. Introduction

This chapter discusses and analyzes the results which basically depended on my interpretation and description of the processes based on the researcher's experience, observation and reflection upon the situation as it happened in the process of research and also on the perceptions and views from the participants of this research This chapter discusses and analyzes the results according to the story of actions and the practical training processes presented in chapter four of this report. After discussing and analyzing the results, the researcher also put down conclusions based on his practical training and understanding acquired through the research process and the recommendations which would reveal the way forward for this research study. In the previous chapter, the researcher presented the story of practical training following the objectives of this research. In this chapter, the researcher further discussed and analyzed key results following the order used in chapter four. The key results are those that are related to the questions of this research.

5.2 Discussion

This study showed that there was significant relationship between the improvised resources and practical training because in chapter four, tables.3,5,6,9,and10 showed that most trainees preferred to use metal scraps to perform several operations such as knurling, filing, angular shaping and milling flat surfaces. This

was real evidence that the improvised resources had impact on practical training because since the metal scraps was preferred by most trainees to perform several operations, several skills were learnt.

The study also showed that in chapter four, Tables.1and 12 most trainees preferred to use wood off cuts to perform operations such as plain turning and drilling, this was evidence that the trainees learnt the skills of using different resources which were metallic and non metallic to make different components. The study further showed in chapter four that for all the operations performed, as indicated in all the ten Tables, all the trainees were engaged in practical training. The study in chapter four showed that a requisition book was put in place to avoid extravagant use of the improvised resources refer to (A ppendix10). This was to ensure that there was no wastage of the resources. This gave chance for the trainees to have adequate practical training resources whenever they wanted to do the practical training.

5.2.1 Identification of resources for practical training.

Pre-school handbook (2008) defines training resource as available means or assets which contain required information for the learner. They also play the role of facilitation of self expression and creativity through experimenting with materials and promotion of self discovery and identification of special gifts and talents. More so, they assist in meeting socio-emotional needs on children and making learning more exciting. Equally, they enhance visual and auditory perception through manipulation of various learning skills. The study revealed in chapter four that the participants identified four materials that can could be improvised for

practical training which were: wood off cuts, plastic off cuts, metal scraps and past examination materials. These materials were preferred because they could easily be got from the carpentry, plumbing, welding and metal machining and fitting workshops free of charge. This meant that incase the accumulated materials got used up in the MMF workshop, any students who wanted to do any practical exercise could just move to any of the mentioned workshops and collect the materials he or she wished to use as shown in the ten tables in chapter four. Awobodu (2001) has noted that availability and adequacy of training resources in participation facilitates learning and enhances pupil achievement because every learner is involved in the activity given. This is related to the study because the improvised resources motivated the learners to the extent that they made the training resources available for all the time they wished to do the practical training. With this kind of practice the practical training of the trainees was enhanced tremendously.

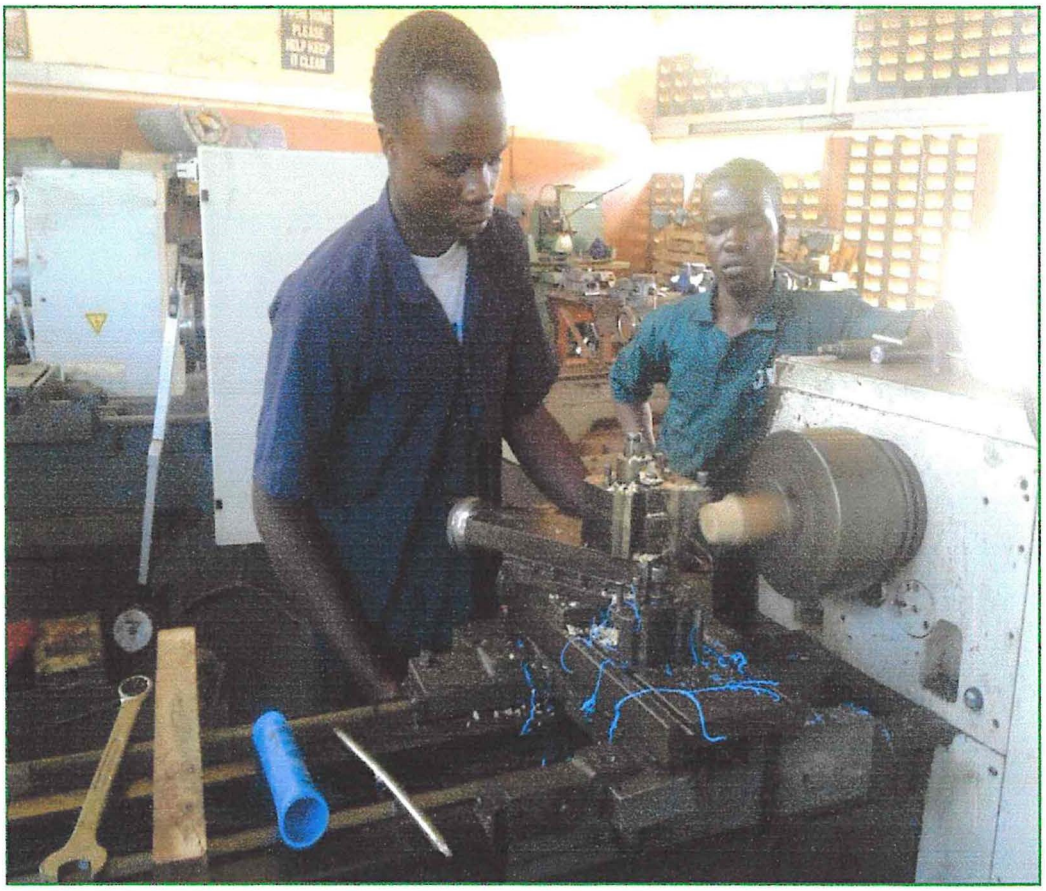


Figure 3: The students performing practical exercises using the plastic and wood off cut materials which were identified as some of the resources to improve practical training.

5.2.2. Practicing the improvised resources

In reference to chapter four, the instructors experimented the improvised resources by demonstrating to the learners how the use of varying spindle speeds and tool grinding should be done for different metallic and non metallic materials. According to Margaret (2010, motivation is important in participation as trainees who are motivated participate more effectively. It directs and regulates behavior for example motivated trainees work hard and focus in achieving their goals.

Motivation energizes and sustains behavior. This is related to the study because in chapter four, in table 3, twelve trainees preferred to use wood off cuts to perform reboring operation on the lathe machine. In table 10, also twelve trainees preferred to use wood off cuts to perform drilling operation on the pillar drilling machine. In table 7, thirteen trainees preferred to use wood off cuts to perform milling operation on the horizontal milling machine. These findings revealed that the trainees having been taught by the instructors on how to vary spindle speeds and tool settings and grinding for the different metallic and non metallic materials were motivated and learnt how to use wood off cuts to practice different operations on different machine tools. All these are positive impacts of the improvised resources on practical training.

The study also revealed in chapter four that the trainees were provided with working drawings for every components they were to make during workshop practice refer to (Appendix 10). This showed that the trainees also learnt the skills of interpreting of working drawings which is an important means of communication in the engineering work.

5.3. CONCLUSION

Basing on the findings: The identified resources included wood off cuts, plastic off cuts, metal scraps and passed examination practical materials. The identified resources were utilized by experimenting them on the different machine tools to make components using different materials according to working drawing made by the instructors. The identified resources had positive impact on practical training because students were engaged in the workshop practice with different

materials of their choices. The skills learnt by the students were: interpreting the working drawings for the part to be made, setting the right machine spindle speeds for materials to be used and determining the right surface finish for the materials used. Furthermore the participants learnt that improvised resources especially non metallic materials like wood and plastics promote the life of the cutting tools since there is no regular regrinding of the tools during the machining operations. And this enables constant training to take place therefore enhancing learning.

5.4. RECOMMENDATIONS

On the basis of the conclusions, the following recommendations were made: The researcher and the participants urged the MMF section to continuously use improvised resources so that the participants get enough chance of practicing the skills of manufacture of mechanical parts using locally available materials rather than relying on only metallic materials. Also the use of improvised resources to enhance practical training should be adopted by other sections in the institute such as Plumbing, Tailoring and cutting garments, Electrical and Motor vehicle mechanics.

Technical institutions should also use the results of this study to improvise resources for practical training in order to enable their trainees to get enough skills that are required in the world of work.

Evaluation of the impact of the improvised resources on practical training should be done regularly by the instructors to find out which materials are not yielding good results and how they can be substituted.

REFERENCES

Abadzi, H., (2002). *India: Education Sector Development in the 1990s, OED Country Assistance Evaluation, Operations Evaluation Department*, Washington, and D.C: World Bank

Allen, K.E. and Hart, B. (2008). *The Early Years Arrangement for learning* Pretence Hall N.J.

Angelo, T. A. & Cross, K. P. (2005). Classroom assessment techniques, 2nd Ed. San Francisco: Jossey-Bass.

Ayot, H.O. and Patel, M.M. (2002).*Instructional Methods Nairobi Education Research Publication*

Bertram, A.D. (2001). *Effective early childhood Educators, developing a Methodology; For Improvement* United Kingdom Coventry University.

Boissiere, M., Knight, J.B. and Sabot, R.H., (2005). *"Earnings, Schooling, Ability and Cognitive Skills."* American Economic Review 75(5):1016-30.

Chickering, A. W. & Gamson, A. F. (2005). Seven Principles for Good Practice in Education. Racine, WI: The Johnson Foundation, Inc/Wingspread.

Chief Secretary to the Treasury (2003) *Every Child Matters: Change for Children*, Cm 5860. London: TSO.

Christensen, P., and James, A. (eds) (2000) *Research with Children: Perspectives and Practices*. London: Routledge Falmer.

Clark, A., Kjørholt, A T, and Moss, P. (eds) (2005) *Beyond Listening: Children's Perspectives on Early Childhood Services*. Cambridge: Polity.

Cooke, B., and Kothari, U. (eds) (2001) *Participation: the New Tyranny?* London: Zed Books.

Education Research Journal Vol. 1(3), pp. 46-52, August 2011. ISSN: 2026 - 6332 ©2011 International Research Journals.

Enister, N. (1990). *Handbook of Educational Ideas and Practice*. Routeldges London

Etsey, K., Amedahe, F. K. & Edjah, K. (2005). *"Do Private Primary Schools Perform Better than Public Sschools in Ghana?"* Unpublished paper: Department of Educational Foundations, University of Cape Coast, Cape Coast.

European Journal of Humanities and Social Sciences Vol. 2, No.1 (2011)

Glewwe, Paul (2002). "Schools and Skills in Developing Countries: Education Policies and Socioeconomic Outcomes." Journal of Economic Literature 40:436-482.

Goodhand, J.K. (2000). *Early Schooling in the United States*, New York McGraw Hill Book Company.

Government of Kenya, Ministry of Education, Science and Technology (2001) *Early Childhood Education*. Kenya Institute of Education Syllabus

Hanushek, E., (2007). *"Interpreting Recent Research on Schooling in Developing Countries,"* World Bank Research Observer 10:2, pp.227-46.

Harbison, Ralph, and Eric H., (2006). *Educational Performance of the Poor: Lessons from Rural Northeast Brazil,* London: Oxford U. Press for the World Bank.

Heyneman, Stephen, and William L., (2008). *"The Effect of Primary of Primary School Quality on Academic Achievement across Twenty-Nine High and Low Income Countries."* American Journal of Sociology, May 1983, 88, pp. 2262-94.

Independent Evaluation Group. World Bank.

IPAR (2008). *Radical Reform for Kenya's Education Sector: Implementing Policies Responsive to Vision 2030*. Policy Review, Issue (4)

Jacinta, M. and Regina, M. (2001).*Primary Methods Handbook*, Hodder and Soughton ; London

Kenya Institute of Education (2001) *Guidelines for Early Childhood Department*. National Centre for Early Childhood Education.

Kenya Institute of Education (2002). *Kenya Preschool Teacher activities Guide Series* Book 3 Nairobi Kenya.

Kenya Institute of Education (2009). *Learn as you play*, Nairobi Kenya.

Kingdon, G., (2006). *"The Quality and Efficiency of Private and Public Education: A Case Study of Urban India."* Oxford Bulletin of Economic Statistics 58(1), pp. 57-82.

Koontz H. and Weihrich H., (2001). *Essentials of Management.* New Delhi: Tata McGraw-Hill.

Kothari, R.C., (2004). *Research Methodology: Methods and Techniques,* 2nd ed. Delhi: New Age International.

Mason, J. Emanuel and Bramble, S. William (2001) *Research in Education and Behavioral sciences concepts and methods*

McMillan, J. H. & Forsyth, D. R. (2003). What theories of motivation say about why learners learn. In R. J. Menges and M. D. Svinicki, Teaching from Theory to Practice. New Directions for Teaching and Learning. No. 45 (pp. 39-51). San Francisco: Jossey Bass.

Ministry of Education and Beinard Van Leer Foundation (2001). *Education of DACECE Program, Research Findings and Recommendations* Nairobi Kenya.

Narayan, S. (2000). *Audio Visual Aids for Preschool and Primary; School children Paris*, UNESCO press.

National Centre for Early Childhood (2006) *Kenya Pre-school Teachers Activities Guide Series 3.Mathematical and Environmental activities.*

National Centre for Early Childhood Education (2001). *A guide for Early Childhood Development in Kenya, Nairobi Kenya Institute of Education*

Neagley, R. l. and Evans, N. D., (2001). *Handbook for Effective Supervision of Instruction*. Englewood Cliffs, NY: Prentice-Hall Inc.

Odhiambo, G., (2008). *"Elusive search for quality education: The case of quality assurance and teacher accountability",* International Journal of Educational Management, Vol. 22 Iss: 5, pp.417 – 431.

Onsomu, N. *et al* (2004). *Community Schools in Kenya: Case Study on Community Participation in Funding and Managing Schools*: Paris. UNESCO.

Owana, A. (2003). *Pre-School Education in Kenya; study of facilities Parents Attitudes and Benefits.*

Pandey, R.S. (2000). *"Going to Scale with Education Reform: India's District Primary Education Program, 1995-99,"* Country Studies in Education Reform and Management Publication Series, World Bank.

Patel, M.M. (2004). *Instructional Materials for Educational and Technology*, Nairobi, Kenya, Kenyatta University.

Plomp, T. and Pelgrum, J., (2003). *Implementation of Innovation in 21 Educations Systems the Study of Computers in Education*. New York: Pergamon Press.

Republic of Kenya (2005). Kenya Education Sector Support Programme. 2005 - 2010: Delivering quality education and training to all Kenyans. Ministry of Education Science and Technology.

Rhem, J. (2001). Deep/surface approaches to learning: An introduction. The National Teaching and Learning Forum, 5(1), 1-3.

Verspoor, A., (2003). *"The Challenge of Learning: Improving the Quality of Basic Education."* Newsletter of the Association for the Development of Education in Africa 15(4): 4 -7.

White, H., (2004). *"Books, Buildings, and Learning Outcomes: An Impact Evaluation of World Bank Support to Basic Education in Ghana."* OED World Bank.

World Bank (2000). *Primary Education.* A World Bank Policy Paper.

World Bank (2006). *Schooling Access to Learning Outcomes: An Unfinished Agenda: An Evaluation of World Bank Support to Primary Education.*

APPENDIX 1: Respondent's interview guide for students, teachers and administrators.

Dear respondent,

I am Owor Peter, a student of Kyambogo University, Department of Art and industrial design conducting research on the Topic: improvising training resources to enhance practical training in Jinja Vocational Training Institute in Jinja district. You have been identified as a respondent: Please give your opinion on reservation on the topic under study. The information provided is for academic purpose and will remain confidential. So I kindly request you to support me by responding to the interview guide. Thank you.

Questions

1. In your opinion what are the factors that affect practical training in Jinja Vocational Training Institute Jinja district?

2. Do you think there are possible strategies that can be used to improve practical training at Jinja Vocational Training Institute?

3. If yes, what are the possible strategies that can be used to improvise training resources at Jinja Vocational Training Institute??

4. In your view in which ways can the implementation of identified strategies to improvise training resources to enhance practical training in Metal Machining and Fitting Section at Jinja Vocational Training Institute be done?

5. What are the impacts of intervention strategies used to improvise training resources?

Thank you.

APPENDIX 2: Focus Group discussion guide for students, teachers and administrators

Dear respondent,

I am Owor Peter, a student of Kyambogo University, Department of Art and industrial design conducting research on the Topic: improvising training resources to enhance practical training in Jinja Vocational Training Institute in Jinja district.You have been identified as a respondent: Please give your opinion on reservation on the topic under study. The information provided is for academic purpose and will remain confidential. So I kindly request you to support me by responding to the interview guide.

Questions

1. In your opinion what are the factors that affect practical training in Jinja Vocational Training Institute?

2. Do you think there possible strategies that can be used to improvise training resources at Jinja Vocational Training Institute?

3. If yes, what are the possible strategies that can be used to improvise training resources at Jinja Training Institute?

4. In your view in which ways can the implementation of identified strategies to improvise training resources to enhance practical training in Metal Machining and Fitting Section at Jinja Vocational Training Institute be done?

5. What are the impacts of intervention strategies used to improvise training resources?

Thank you.

APPENDIX 3: Action Work Plan

The proposed intervention measures of this study as per the previous FW will be as shown in table below.

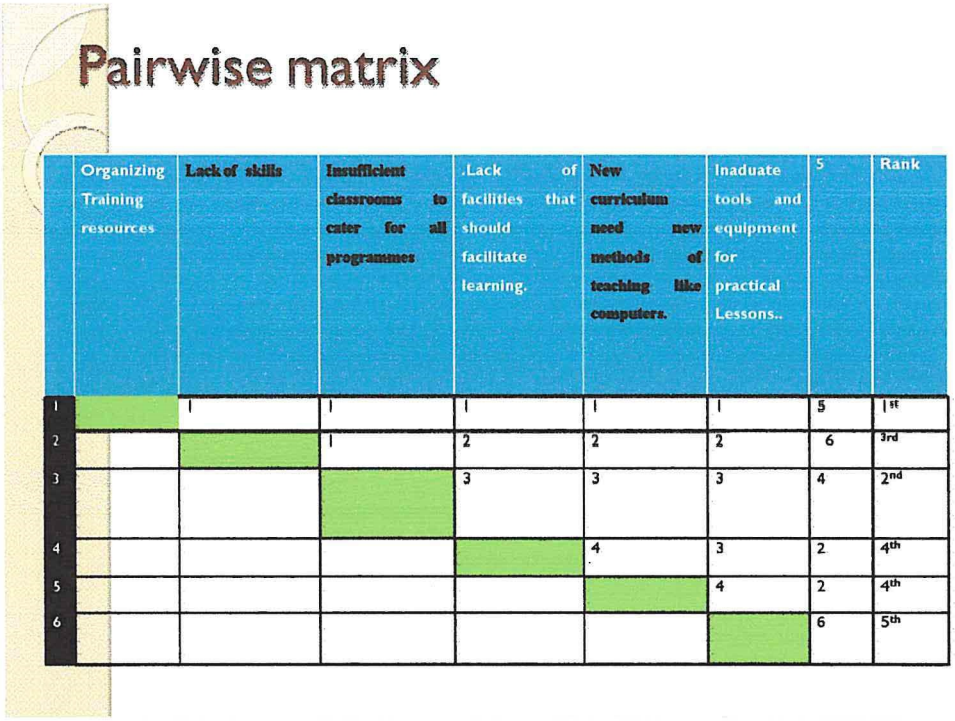
Implementation work plan

Activity	Responsible personnel	Duration	Remark
Identifying the materials that can be improvised for practical training	Students, instructors and Administration	1Month	
Implementation of the improvised training resources	Students, instructors and researcher	1Month	
Evaluation of the impact of the improvised training resources on improving practical training	Students, Administration and researcher	1 Months	

APPENDIX 4: Budget for the research activities

ITEM		**AMOUNT**
Transport		100,000
Accommodation		800,000
Workshop		1,500,000
Others		2,000,000
Total		**4,400,000**

APPENDIX 5: Identification of the most pressing challenge using pair wise matrix



Pairwise matrix

	Organizing Training resources	Lack of skills	Insufficient classrooms to cater for all programmes	.Lack of facilities that should facilitate learning.	New curriculum need new methods of teaching like computers.	Inaduate tools and equipment for practical Lessons..	5	Rank
1		1	1	1	1	1	5	1st
2			1	2	2	2	6	3rd
3				3	3	3	4	2nd
4					4	3	2	4th
5						4	2	4th
6							6	5th

APPENDIX 6: Focus group discussion meeting held in Jinja vocational training institute dining hall to discuss the factors affecting practical training in metal machining and fitting section and on 15/03/2017

Members present

1 Sempala Sabastian - Researcher
2 Owor Peter- Researcher
3 Muzito Moses- Researcher
4 Katusiime Fortunate
5 Hidorori Mathunotu
6 Ereng Patrick
7 Turiyo Gabriel
8 Halima Musa
9 Twesirikire Phinehas
10 Bamusibule Charles

Agenda

1 Prayer
2 Introduction
3 Communication from the researcher
4 Matters arising
5 Reaction/way forward
6 Closure

ITEM	DETAILS	ACTION PERSON
Min no1prayer	Prayer was said by one of the members	Ereng Patrick
Min no2 introduction	One researcher introduced the purpose of the meeting as for discussing the factors which affect	Sempala

and communication from the researchers	teaching and learning in Jinja vocational training Institution. He went further to inform members that the identified problems if solved will enable the stake holders to collaboratively improve the teaching and learning practices in the institution. Another researcher informed the stake holders that there was need for a collaborative effort of all the stake holders in solving the identified problems in order to improve the performance in skills acquisitions	Sabastian Owor Peter
Min no3 Matters arising	All the different stake holders gave the different problems which hinder the teaching and learning practices in the institute. This was done by the use of VIP CARDS.	Stake holders
Min no3 Reactions/way forward	The views given by the stake holders were grouped the problems which were identified to be within what could be handled by the researchers were analyzed by the help of the problem tree. The route causes and the solutions to the problems were exhaustively discussed.	All stake holders
Min no4 closure	The identified problem which was within the means of the researchers was inadequate training materials.	Researchers

CHAIRMAN: Mr. Owor Peter/Researcher SECRETARY: Mr. Mukisa Fred

SIGN: ..... SIGN: .....

APPENDIX 7: future work shop to identify the possible strategies of improvising the training resources to enhance practical training in MMF workshop at JVTI held on 15/05/2017 in the dining hall.

Members present

1	Oketcho Godfrey	7	Mukisa Ivan
2	Kassaja Fred	8	Ekuriei Denis
3	Namwagwe Jackline	9	Mpyangu Rolland
4	Tenywa Joshua	10	Odongo Alex
5	Makoma Ayubu	11	Ngolobe
6	Akwach David	12	Madoi Sharif

AGENDA:

1. Prayer
2. Communication from the researcher
3. Suggestions for improvision of training resources by the participants
4. Implementation plan for the accepted suggestions
5. Closure

MINUTE NUMBER		ACTION
Min no.1 2017 prayer	Prayer was said by one of the members	Ngolobe Axopher
Min no.2 2017. communication from the researcher	The researcher welcomed the participants to the Future workshop meeting and read the rules governing the future workshop, He assured members of that whatever ideas that would be contributed by the members would be kept confidential. He reminded the participants about the previous future workshop in which the identified problem was lack of training resources for practical training. He therefore requested members to freely suggest possible ways of improvising resources for practical training the section.	Researcher.
Minute no. 3 .2017 Suggestions for improvising resources for practical training	The members through brainstorming suggested the following strategies for improvising resources for practical training: Timber off cuts from carpentry workshop, plastic off cuts from plumbing workshop,	Participants.

	metal scraps from MMF and W/F workshops and past practical examination materials.	
Minute no 4. 2017. Implementation plan for the suggested strategies.	The participants formed groups for each strategy which was headed by a lead to spear head the activities of each group.	Participants.
Minute no .5. 2017. Closure.	There being no other business the researcher adjourned the meeting at 5.30 pm	Researcher.

CHAIMAN: Mr. Owor Peter/Researcher Denis

SIGN: .....

SECRETARY: Mr. Ekuriei

SIGN: .....

APPENDIX 8: Evaluation meeting held to ascertain the effectiveness of the improvised training resources on practical training held on 15/06/2017 in the section class room.

Members Present:

1. Makoma Ayubu
2. Akwach Tom
3. Mukisa Ivan
4. Namwagwe Jackline
5. Kasaja Fred
6. Oketcho Godfrey
7. Ekuriei Denis.
8. Maddoi Sharif
9. Ngolobe Axopher
.10.Wambeo Julius

Agenda:

.1.Prayer

2. Communication from the researcher
3. Comments from the participants.
4. Suggestions to overcome the identified challenges.
5. Implementation of the accepted interventions
6. Closure

Minute number		Action
Min no.1.2017 Prayer	Prayer was said by one of the participants	Oketcho Godfrey
Min.no.2. 2017 Communication from the researcher	The researcher welcomed all the participants to the evaluation meeting and addressed them about the purpose of the meeting. He then asked	Researcher

	the participants to comment on the effectiveness of the improvised training resources on practical training.	
Min no 3.2017 Comments from the participants	The members in their comments said that some improvised training resources were not suitable for some operations for example wood off cuts could not be threaded, plastic off cuts could not be rebored since they already had holes in them.	Participants.
Min no.4. 2017. Suggestions to overcome the identified challenges.	Participants suggested that hard wood should be selected and tried for the operation of threading. Also solid	Participants

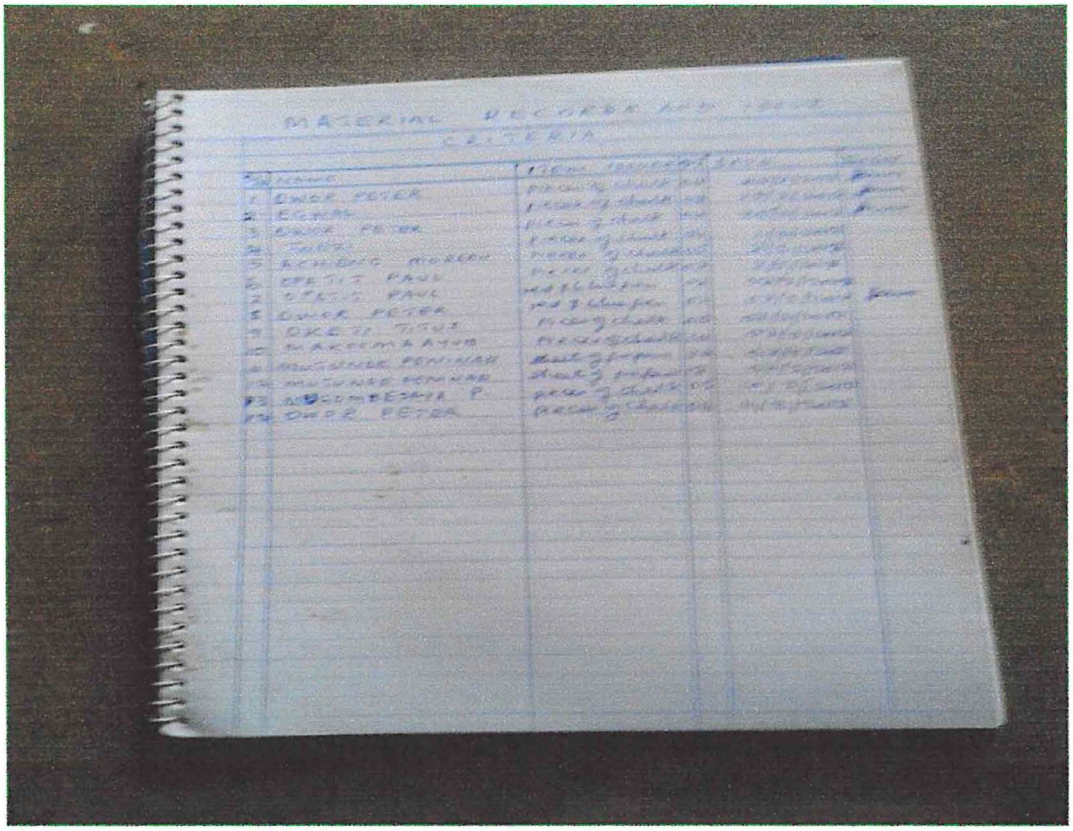
	plastic pipes scraps should be requested from plastic factories and be used for practicing the boring operations.	
Min no .5.2017.Implementation pf the accepted interventions.	Participants were deployed to search for hard timber off cuts from the carpentry work shop and solid plastic off cuts Nile agro industries for practical training on threading and reboring.	Participants
Min no.6.2017. Closure	There being no other business the researcher adjourned the meeting at 5.15 pm	Researcher

CHAIRMAN: Mr. OWORI PETER ISAAC SECRETARY: KIDYE DYE

SIGN: ..... SIGN: .....

APPENDIX 9: Working drawings and components made from improvised training resources.

APPENDIX 10: Issue book for the improvised training resources



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

6th November 2015

To: THE PRINCIPAL
JINJA VOCATIONAL TRAINING INSTITUTE
P.O.BOX 1078 JINJA

Dear Sir/Madam,

RE: REQUEST FOR OUR MASTERS IN VOCATIONAL PEDAGOGY STUDENTS TO UNDERTAKE A RESEARCH EXCURSION IN YOUR INSTITUTION/ORGANIZATION

The purpose of this communication is to request you allow our student together with his/her mentor carry out a baseline discussion to ascertain competency related needs, in doing this include "Future workshop" and "Analysis of work processes" in the different Department/Section in your Institution/Organization.

The Masters in Vocational Pedagogy is offered by Kyambogo University in collaboration with Oslo and Akershus University College in Norway and University of Western Cape in South Africa. It aims at developing capacity in terms of human resource that is urgently needed in the area of vocational and practical skills for both vocational schools and workplaces training.

As part of the study programme, the Master students in this programme undertake Action Research Expedition both in Industry and Vocational Training Institutes/schools through which prevailing competency related needs are identified and an attempt to solve them is done.

Your positive response will be of great benefit to the nation in the area of Vocational Education and Training.

Thank you,

pp
Serwaniko Chris
Coordinator, Masters in Vocational Pedagogy
NORHED MVP Project

KYAMBOGO UNIVERSITY
A/C No. .....
Date. 6/11/2015
MASTERS IN VOCATIONAL PEDAGOGY

KYAMBOGO UNIVERSITY
P. O. Box 1 Kyambogo, Phone: 041-285001/2 Fax: 041-220464
www.kyambogo.ac.ug
FACULTY OF VOCATIONAL STUDIES
Masters in Vocational Pedagogy Programme

RESEARCH SUPERVISION TEMPLATE

Date: 15/5/17

Candidate Information

Student Name:	OWOR PETER
Reg. No.	15/U/14596/GMVP/PE
Phone No.(s)	0776421341
Email:	Oworpeter@gmail.com

Workplace/Institutional Supervisor's contact details	
Name: Dr. Ouello Benon	Phone no. 0776857445
Email Address: benonouello2012@gmail.com	

Mentor's contact details	
Name: Kyakulumbye. Ali. K	Phone no. 0772617576
Email Address: kyakulumbyealik@gmail.com	

Venue for meeting ...JINJA VTI... Scheduled time of meeting 19/5/17 8:30 a.m

Research Area under discussion (Topic of focus)

Implemention — (Data Collection)

Progress from previous discussion
- Implementation W/shop for stakeholders held.
- Suggested solutions/intervention in implementation (with it has evidence)

Way forward
- Increase on Documentation of Stakeholders' involvement
- Send a write up of chapter four.

Date for next meeting: 19/5/17

Name of Supervisor a)..... Signature:.....
b)..... Signature:.....

Name of Mentor/s a) Kyakulumbye. A.K Signature: K.A.
b)..... Signature:.....

Student's Signatures: Owor