INFLUENCE OF TECHNOLOGY ON TEACHING AND LEARNING IN VOCATIONAL EDUCATION AND TRAINING IN RELATION TO THE WORLD OF WORK:

A Case of Weaving as a Skill at Selected Formal Training Institutions and Work places in Uganda

TITO MUJUNI

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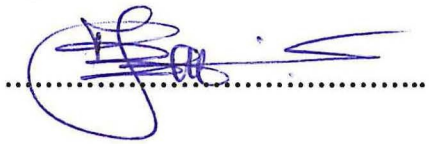
A DISSERTATION SUBMITTED TO THE GRADUATE SCHOOL IN FULFILLMENT OF THE REQUIREMENT FOR AN AWARD OF THE DEGREE OF MASTERS IN VOCATIONAL PEDAGOGY OF KYAMBOGO UNIVERSITY

FEBRUARY, 2014

DECLARATION

I, Mujuni, Tito, declare that this research thesis is my original product and has not been presented to any other institution for any award.

Signed:



Tito Mujuni

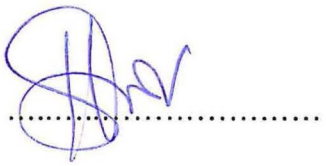
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APPROVAL

This research thesis has been submitted for assessment with our approval as supervisors and we confirm the work has been compiled by the candidate under our supervision.

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DEDICATION

I dedicated this work to all my beloved family members and friends. Your unremitting resolute support, encouragement and perseverance during the time when I was away have made me what I am.

ACKNOWLEDGEMENT

I wish to acknowledge the almighty God for giving me life, strength, protection, wisdom and guidance. My gratitude goes to the Norwegian Government through the Norwegian Masters Abroad (NOMA) programme for granting me the sponsorship to undertake this study.

My thanks go to my supervisors: Assoc. Prof. Dr. Gombe, Catherine and Mr. Sserwaniko, Chris for their time, advice and guidance they rendered to me. I would like to extend my appreciation to all mentors on the Masters in Vocational Pedagogy (MVP) programme at Kyambogo University, for the adequate, devoted and inspiring guidance offered to me.

I extend my gratitude to all my course mates, who from time to time shared with me, offered assistance, guidance and support. Your input to this study is so much valuable. In a similar manner, I thank all the administrators and respondents from the training institutions and work places where this study was carried out. Without their cordial cooperation, this study would not be successful.

Finally, I am thankful to all my family members for all the support, encouragement, guidance, and prayers. May the almighty God reward all of you ceaselessly.

ABSTRACT

This study investigated whether the technology in terms of tools and equipment used in the teaching and learning of a weaving skill in selected training institutions has a bearing to the world of work in Uganda. More of a qualitative than a quantitative approach was employed, following a descriptive design on a sample size of 49 respondents who were selected purposively from a population of students, graduates and lecturers of weaving of the two formal training institutions; Kyambogo and Makerere Universities. The study was guided by three objectives. Findings revealed that manual weaving technology employed for small scale production was used in the process of teaching and learning a weaving skill in training institutions in Uganda. Electricity run equipment used for mass production weaving in the world of work was not available in training institutions. I concluded that learners were equipped with skills to only operate manual weaving technology for small scale production and not with skills to manipulate electricity run equipment for industrial mass production in the world of work. I recommended that training institutions should continuously upgrade and maintain in good working conditions the technology they use in the teaching and learning of a weaving skill, to match that used in the world of work, so as to enhance equipping learners with appropriate skills required in the world of work.

LIST OF ACRONYMS AND ABBREVIATIONS

BAID	Bachelor of Art and Industrial Design
BIFA	Bachelor of Industrial and Fine Arts
BTVET	Business, Technical Vocational Education and Training
BVAD	Bachelor of Vocational studies in Art and Design with Education
ICT	Information Communication Technology
KyU	Kyambogo University
Mak	Makerere University
MVP	Masters in Vocational Pedagogy
NYTIL	Nyanza Textile Industries Limited
PLUL	Phenix Logistics Uganda Limited
TEXDA	Textile Development Agency
TVET	Technical Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEVOC	UNESCO's International Centre for Technical and Vocational Education Training
UPSTPCBP	Uganda Private Sector Trade Policy Capacity Building Project
VET	Vocational Education and Training
VP	Vocational Pedagogy

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CHAPTER ONE: INTRODUCTION

In this chapter, I explain the background of the study which was sub-divided into historical and contextual, statement of the problem, purpose, specific objectives, research questions, significance, justification and theoretical frame work of the study. The scope which deals with content, geographical and time are also explained.

1.1 Background to the study

The background of the study is divided into historical and the contextual. The historical background explains the development of weaving practice in a) Africa as a whole, b) East Africa, c) Uganda and d) modern cloth making industry, while the contextual background and motivation give circumstances on which the study was based.

1.1.1 Historical background of the study

Woven products are made for utilitarian and aesthetic purposes, for either domestic or economic reasons. For utilitarian purpose, woven products are made purposely for their functional reasons, to be put to use, while aesthetic woven products are made for purposes of showing their artistic beauty (Olaoye 1989, pp.1-4). On the utilitarian purposes, Olaoye (ibid) maintains that woven cloth has always been used as protective material for the body, reflects the identity and status of men and women all over the world, and describes far more vividly the history and culture of people.

1.1.1.1 Weaving in Africa

In Africa, weaving can be traced way back many centuries. Obonyo and Orchardson (1999, p.80) observe that in Africa, weaving dates back many centuries, when cloth was woven for both household use and for commercial purposes. Cited in Olaoye (1989, p.3),

Afigbo and Okeke assert that in Nigeria, the evolution of weaving was traced through archaeological discoveries over a thousand years old, woven from leaf fibers. In many African countries, hand woven cloth was and still is considered very valuable. Obonyo and Orchardson (1999, p.80) maintain that, in Ghana, a cloth known as *kente* was designed and woven exclusively for the Ashanti kings and their households while in Sierra Leone, a cloth of a certain size was used for paying fines.

1.1.1.2 Weaving in East Africa

In East Africa, Obonyo and Orchardson (1999, p.80), note that cloth hand weaving was not practiced to the same extent as it was in West Africa. Obonyo and Orchardson continue to contend that Uganda and Kenya were not known for hand woven cloth. However, they were known for mat weaving and basketry which are still being practiced by various ethnic groups. Nzita and Mbaga (1995) maintain that Batoro women, for example, were very good in basket weaving, producing a wide assortment of basketry such as winnowing trays, plate baskets, bags, harvesting baskets and several baskets for routine home work.

1.1.1.3 Weaving in Uganda

Formal teaching and learning of textile weaving in Uganda started at Kyambogo University in the year 2000, in the Department of Art and Industrial Design, Faculty of Vocational studies, which offers courses of Vocational Education and Training (VET). VET is where knowledge acquired is oriented towards trades, competences, occupations and professions related to the world of work. The mode of delivery of VET is known as Vocational Pedagogy (VP), where hands-on training is emphasized as explained under the sub- section of contextual background. At Makerere University, weaving started in

1998, in the Department of Industrial Arts and Applied Design, Margaret Trowell School of Industrial and Fine Arts, College of Engineering, Design, Art and Technology.

In both institutions, Kyambogo and Makerere Universities, manual tools like shuttles and spindles, fringe twisters, heddles, beaters and combs, reeds and temples, and manual equipment like cardboard looms, frame looms, rigid heddle looms, inkle looms and flow looms were and are still being used, despite of the global rapid technological changes of tools and equipment. The teaching and learning of a weaving skill in the two training institutions in Uganda seems to have maintained the use of basic tools and equipment, which I believe, cannot equip learners with skills and competences required on the national and global labour market, where technology is constantly changing.

1.1.1.4 Modern weaving industry

In the cloth making industry all over the world, technology has considerably brought on board ideas that have increased on productivity. In support of the foregoing, the Uganda Private Sector Trade Policy Capacity Building Project (UPSTPCBP) (2001, pp11- 12) maintains that in the 1970s, a number of innovative technologies such as open-end spinning and shuttleless looms emerged, which drastically changed the efficiency of the industry. The introduction of electronic and computer aided tools in the weaving industry over the world has greatly improved the quality and quantity of fabric production in the industry.

According to Vonwiller (2012, p.1)[1], the latest technology in textile weaving allows weavers creativity, flexibility and versatility in creating value-added products. It is therefore important that such technological innovations be integrated in the activity based

[1] Eric Vonwiller is a senior technical editor of the textile news: *Weaving Into The Future*. Billian publishing Inc.

teaching and learning of a weaving skill in order to equip learners with appropriate skills and competences applicable in the national and global world of work.

1.1.2 Contextual background

In this section, Vocational Education and Training and Vocational Pedagogy, the context on which the study is based, are explained in order to bring out clear understanding.

1.1.2.1 Vocational Education and Training (VET)

Vocational education and training (VET) is a system of education that focuses on teaching, learning and acquisition of specific practical skills, applicable to the world of work[2]. Aarkrog cited in Mjelde and Daly (2006, pp 27-35) asserts that vocational training both at work places and in training institutions should aim at giving learners relevant practical skills for work. To be practical, technology is employed in the process of skills acquisition and skills application during the training and the practice sessions respectively. Dike (2005, p.1) stresses that VET gives individuals the skills to "live, learn and work as a productive citizen" in a global society. Vocational education and training prepares learners for careers that are based on practical activities related to a specific trade, occupation or vocation, designed to develop occupational skills. (Dike ibid). From Dike's contention, it is evident that VET is meant to equip learners with lifelong skills and competences required by the world of work in the local and global labour market.

1.1.2.2 Vocational Pedagogy (VP)

Vocational Pedagogy (VP) is a learner centered approach to teaching and learning, in which the relationship between the learner and the task is central, and work is the revolving point for learning (Mjelde, Koski and Weil 2009, p. 125). VP emphasizes use

[2] Group plenary discussion on *understanding vocational education and training*, Masters in Vocational Pedagogy, cohort 3, 2011

of appropriate methods of learning and teaching (mentoring), use of proper tools and equipment, and use of relevant curriculum be it formal or informal, to equip learners with appropriate skills and competences relevant to the demands of the global labour market. The Programme for Masters in Vocational Pedagogy (MVP) (2009, p.5) defines VP as a field of knowledge oriented towards trades, occupations and professions where there is interplay between working life and the education system such that studies of work-based activities in technical and vocational education content, methods and the social context in which it takes place are attracting attention. "VP mainly focuses on new profiles for vocational trainers with an emphasis on work and business processes in vocational disciplines, combining theoretical and practical aspects of teaching in learning situations that have real life or real work experience" (Markovic and Axmann, Mjelde and Daly 2006 cited in Okello (2011)[3]

The Deputy Vice Chancellor of Kyambogo University, cited in the Programme book for MVP degree (2009, p.3), points out that MVP was a collaborative initiative between Akershus University College, Norway in the North, Kyambogo University in Uganda and Upper Nile University, Malakal in South Sudan. He added that the introduction of MVP programme to Uganda was as a response to the argument that Vocational Education and Training (VET) would focus the country's education system on the needs of the learners in their working life in order to register desired outcomes.

MVP promotes action - oriented and interactive research for change and creation of collective knowledge of hands-on and the world of work. The programme gives an understanding of the relationship between learning in school life and learning in work

[3] Paper presentation by Dr.Okello Benson on: Vocational pedagogy in the African context: A presentation made to students of masters of vocational pedagogy, Kyambogo University, 2011.

life. (Mjelde, Kyakulumbye , cited in Mjelde 2008, P.6). It gives an understanding of human learning and of the integration of "hand, mind and heart" in any learning situation including a deeper grip of learning in relation to work and the acquisition of sound research tools. (Mjelde 2008, P.6).

1.1.3 Motivation

After completing my training in weaving in the year 2007 from Kyambogo University, Department of Art and Industrial Design, I failed to be employed in weaving industries because I lacked a weaving skill of operating electrical tools and equipment in use in the world of work. I only had a skill of operating manual tools and equipment that I used during my training. That was when I noted that graduates of weaving from training institutions have limited employable skills in the electronic world of work. The foregoing gave me an impression that there was a knowledge gap in the technology used in training institutions and that used in the world of work. In addition, there was and still is a growing criticism that the training at higher institutions of learning does not equip graduates with relevant skills in any given field to enable them to meet the labour market requirements in Uganda.

After joining the MVP study programme and carrying out study expeditions to different training institutions and work places, I appreciated the significance of relating training tasks to the world of work. The aforementioned appreciation motivated me to carry out a study investigating whether weaving training in institutions in Uganda relates to the world of work. My motivation constitutes the theoretical frame work of this study.

1.2. Statement of the problem

I submit that the teaching and learning of a weaving skill in training institutions, Kyambogo and Makerere universities in particular are not appropriate in equipping learners with skills required in the world of work. I base the foregoing submission on my previous experiences as both a student taking an option of weaving as an elective at KyU, Department of Art and Industrial Design between the academic years 2004/2005 and 2006/2007 and a freelance weaver in the world of work in Uganda between the years 2007 and 2011. From my experience as one of weaving students, we used manual tools that included wooden shuttles and spindles, fringe twisters, heddles, beaters and combs, raddles, reeds and temples, while equipment included serrated cardboard looms, frame looms, rigid heddle looms and inkle looms, without exposure to what was used in the world of work.

Joining the world of work, I could not be employed in weaving industries because I lacked a weaving skill of operating electrical tools and equipment, thus lacking the technology.

The programme of MVP which I am under taking has made me realize that tools and equipment used in the teaching and learning in training institutions should have a relationship with the world of work. The foregoing realization attracted me to investigate whether training institutions have put into consideration weaving tools and equipment used in the world of work into their training programmes since 2007 when I completed my training in weaving.

1.3 Purpose of the study

The purpose of the study is to investigate whether the technology in terms of tools and equipment used in the teaching and learning of a weaving skill in training institutions has a bearing to the world of work in Uganda.

1.4 Specific objectives

The following three specific objectives which were derived from the purpose guided the study:

i. To identify the type of technology used in the teaching and learning of a weaving skill in training institutions in relation to that used in the world of work in Uganda
ii. To investigate whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda
iii. To establish challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda.

1.5 Research questions

The following research questions were derived from the specific objectives of the study:

i. What type of technology is used in the teaching and learning of a weaving skill in training institutions in relation to that used in the world of work in Uganda?
ii. Does the type of technology used in the teaching and learning of a weaving skill in training institutions relate to the world of work in Uganda?
iii. What challenges are faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda?

1.6 Significance of the study

When the results of this study are published through holding public talks and presentations in seminars, they will be of benefit in the following ways:

Policy makers and implementers especially in the Ministry of Education and Sports, will find out the influence of technology on teaching and learning a skill in general and weaving in particular, so as to put up strategies to deal with technological gap affecting the teaching and learning in training institutions.

Literature of reference as a basis for further research in the related field of study will be provided.

The results of this study will act as a resource from which strategies to improve on any activity based teaching and learning technology can be taken.

The study has helped me to develop knowledge, research skills and to acquire the Master's degree in Vocational Pedagogy at the end of the course, as it is a partial requirement for the award.

1.7 Justification

VET, under which weaving lies, aims at equipping learners with appropriate skills required in the world of work. This is achievable through the use of appropriate tools and equipment both in training institutions and at workplaces where learning is through practice and experiencing by trying and failing and through action (Mjelde 2006, pp 23-25). Apparently, in Uganda the teaching and learning processes of a weaving skill in training institutions seem to have not integrated the use of new technology being used in the world of work, despite of the global rapid technological changes as regards to tools and equipment. This may as a result, not be equipping learners with appropriate skills

required on the national and global labour market and thus, affecting the learners in accessing employment after graduation. Bhyat, cited in Mjelde and Daly (2006, p.40) asserts that there is need to integrate the technology in use within the prevailing workplace context in the learning processes. I therefore considered it justifiable to carry out this study, to find out the type of technology in regard to tools and equipment used in the teaching and learning of a weaving skill in training institutions, in relation to the world of work.

1.8 Conceptual framework

The conceptual frame work is important in showing the relationship between the variables of the study and how they may influence one another. According to this study, training institutions are the dependent variable, while the world of work is the independent variable. Concepts used in this study which are related to the conceptual frame work are explained after the conceptual frame work for clearity.

The conceptual framework in Figure 1.1 was drawn basing on the socioculturalism theoretical point of view of education and the activity theory of learning as explained in Mjeld and Daly's work to explain the different variables of the study and how they influence one another. The socioculturalism theory reveals that 'learning is enculturation', where learners mutually become together to make functional products by common practices, use of tools, values and beliefs (Brown, Collins & Duguid, Engestrom, Lave & Wenger, Rogoff, Wertsch and Wenger, cited in Grosjean in Mjelde and Daly 2006, p.87). In addition, Mjeld and Daly put it that according to the socioculturalists, the goal of learning is to promote practices and making meanings which are appropriate in the professional culture (Grosjean cited in Mjelde and Daly 2006,

p.87). Activity theory is concerned with practice, that is doing an activity, which significantly involves the mastery of external devices and tools for labour activities (Grosjean cited in Mjelde and Daly 2006, p.88).

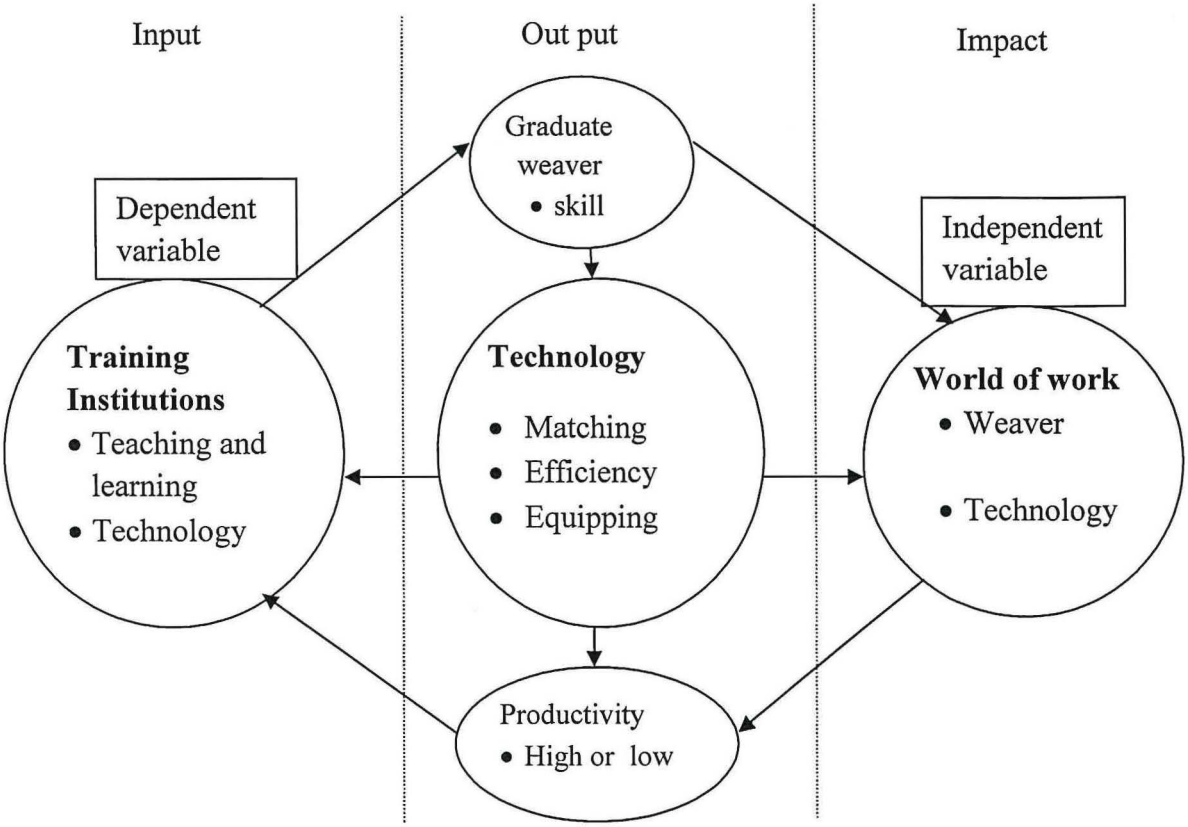


Figure 1. 1: Conceptual Framework

The conceptual frame work Figure 1.1, shows the training institutions as the dependent variables, where the teaching and learning using appropriate technology to gain a skill takes place. The world of work where the acquired skill from training institutions is employed by the weaver using the technology for productivity is the independent variable. Technology is central in the conceptual frame work because it relates training institutions to the world of work in terms of matching, efficiency and equipping. Matching relationship is indicative of the technology (tools and equipment) in training institutions being the same as that in the world of work. Efficiency relationship is

reflective of the state of technology in training institutions and whether it is enough and well organised for the process of teaching and learning of a weaving skill in relation to the world of work. Equipping relationship is to whether the technology in terms of tools and equipment in training institutions provides learners with skills required in the world of work.

The teaching and learning is conducted using the technology in terms of tools and equipment in training institutions to equip the learners (graduate weaver) with skills of using the technology required in the world of work. On joining the world of work the graduate (weaver) uses the technology in the work place to be productive.

If the weavers' productivity in the world of work is high, indicated by exhibiting the required skills and competence at work, then the teaching and learning using the technology in training institutions the weaver went through is credited. If the weaver's productivity in the world of work is low, indicated by exhibiting lack of required skills and competence at work, then the teaching and learning using the technology in terms of tools and equipment the weaver went through in the training institution is questioned and need to change the way how training is conducted is called for. The world of work therefore influences the training in institutions. Explained below are concepts which are related to the conceptual framework.

1.8.1 Concepts

For the clarity of this study, the relationships of the following concepts which are related to the conceptual framework are explained.

- Technology and learning
- Technology and Vocational Education and Training

- Technology and a weaving skill
- Technology in relation to activity based learning productivity.

1.8.1.1 Technology and learning.

In this study, the term technology is used to mean tools and equipment used in activity based teaching and learning process, with a particular reference to weaving. Learning, on the other hand, is a gradual process of acquiring knowledge, skills and competence. Nilsson (2007)[4] asserts that learning is about creation of dynamic relations in a certain time with intention to achieve progression, which contributes to creation of professional competence possible to be used in specific contexts.

As technology changes all over the world, it brings with it modern tools and equipment into the labour market, which ought to be used in the teaching and learning processes to help trainers in equipping learners with appropriate skills relevant to the labour market demands. The United Nations Education, Social and Cultural Organisation (UNESCO) (1985)[5] defines technology as the know-how and creative processes that may assist people to utilize tools, resources and systems to solve problems and to enhance control over the natural and made environment in an endeavour to improve the human condition. The use of technology has become more applicable in everyday life. Both in training institutions and places of work, technology is critical for improving the level of output. Technology integrated in the teaching and learning processes helps both teachers and learners to be more creative and productive. UNESCO (1985) contends that the process of designing, making and appraising is central to technology which supports

[4] Paper presentation by Dr. Professor Lennart Nilsson on: *How to enrich Vocational Learning and its consequences for Vocational Teacher Training.* Institute of Education and Didactics, University college of Goteborg. Sweden.
[5] *Accessed* from www.pa.ash.org.au/tefa/wite.html *on 10th November 2012*

students to be productive, innovative and enterprising through generating ideas and taking actions, as well as developing techniques and products that satisfy human needs.

Embracing new technology is therefore very important in teaching and learning situations, of which weaving is part. Technology influences activity based teaching and learning processes which include planning, doing and controlling. Nilsson (2008)[6] maintains that the content for manufacturing a task can be organised in three functions; planning,doing and controlling functions. It is my observation that the three stages are important in activity based learning of which weaving is not exceptional, where use of technology plays an important part.

Skilling Uganda, BTVET strategic plan 2011-2020 (2011, p.3), points out that the Ugandan BTVET system can be considered relevant if it equips Ugandans with the right set of skills required by domestic, and international labour markets, or by individuals to successfully make a living through self-employment. VET that does not support creation of wanted skills and competences required in the global world of work is therefore worth being considered irrelevant. For learners to be equipped with the right sets of required skills to successfully compete in the local and global labour market, technology has to be incorporated in the training experiences.

1.8.1.2 Technology and Vocational Education and Training

VET is where knowledge acquired is oriented towards trades, occupations and professions related to the world of work. Technology takes a central stage in VET. Siecke, cited in Aarkrog and Jorgensen (2008, p.421), stresses that learning processes in VET have been subjected to many changes in recent years in Germany as a result of

[6] Paper presentation by Dr. Professor Lennart Nilsson on: *Vocational Didactics*. The Page (*productive tasks and the learning process in frame of vocational training*) is part of a manuscript on; *vocational didactics (Nilsson, L. 2008)*

challenges due to new conditions in the economy, in the area of new technological developments and the strong international competition. This means that in Germany, VET learning processes are dynamic and are kept changing depending on the technological changes and the world of work labour merket requirements to prepare learners for the strong international labour market competition.

This appears not to be the case with VET in Uganda and weaving in particular. VET learning activities in Uganda, seem not to be changing with the global technological changes, implying that the learners might be trained in skills that are not demanded and cannot compete on the global labour market. Miller, cited in Barabasch, in Mjelde and Daly (2006, p.147) observes that under technological change and the circumstances of globalization, some of the traditional ocupations are now becoming absolute and that new occupations mostly related to computer technology (soft skills) are continually merging. This therefore calls for VET learning activities to be flexible enough and keep changing with the global technological changes so that learners in training institutions can always be equiped with relevant skills applicable in the global world of work.

1.8.1.3 Technology and a weaving skill

Weaving is a process of making a fabric by interlacing a set of horizontal and vertical threads, a skill which is usually achieved with a hand or power operate loom.

In Uganda, technology seems to have not gained much ground in the weaving teaching and learning activities in training institutions. The existing little technology appears to be relatively obsolete. There is therefore need to integrate new technology in the training offered to the learners so that they are helped to gain skills that are relevant to the global labour market requirements. In support of this, the Human Resources

Development Canada, cited in UNESCO's Institute for Information Technologies in Education (IITE) (2003, p.24) maintains that technology-enhanced learning plays a crucial role in the development of a lifelong learning culture and has the capacity to empower learners by providing them with multiple pathways that offer choices and channels to meet their education and training needs.

1.8.1.4 Technology and activity based learning Productivity

Cited in Wei-Fangm and Sangps (1990, p.5), Fuller defines productivity as the measure of the efficiency of production, which is determined by the available technology or know-how for converting resources into outputs desired in an economy and the way in which resources are organised to produce goods and services.

Productivity in activity based training can therefore be improved through the proper use of appropriate technology and the organisation of both human and material resources. Training institutions ought to adapt, and absorb the existing technology in the world of work if they are to improve on their activity based learning productivity. As pointed out by Ramanathan (2011, p.5), high quality productivity can be achieved based on transfer, absorption, and adaptation of new technology. In relation to Ramanathan, Schlaikjer, Springut, & Chen (2011, p.20) assert that Chinese view technological development as the key to meeting the economic demands of its 1.3 billion citizens as the world faces a crisis of sustainability.

1.9 Scope

This section explains the geographical location of the study, content and the time in which the study was conducted.

1.9.1 Geographical

The study was carried out in two training institutions and three work places. Training institutions were the Department of Art and Industrial Design, Faculty of Vocational studies of Kyambogo University and Department of Industrial Arts and Applied Design, Margaret Trowell School of Industrial and Fine Arts, College of Engineering, Design, Art and Technology of Makerere University, both found in Kampala District, Uganda. Work places included Nyanza Textile Industries Limited, located in Buikwe District, Phenix Logistics Uganda Limited and Textile Development Agency, both found in Kampala district. (Appendix IVA)

1.9.2 Content

The study focused on the type of technology used in the teaching and learning of a weaving skill in training institutions and how it relates to the world of work in Uganda. Three research questions that were derived from three specific objectives were used to address the purpose of the study, which was to investigate whether the technology in terms of tools and equipment used in the teaching and learning of a weaving skill in training institutions has a bearing to the world of work in Uganda.

Research question one required information regarding to the type of technology used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda. Sought information for research question one was obtained from two training institutions; Kyambogo and Makerere Universities and three work places; Nyanza Textile Industries Limited, Phenix Logistics Uganda Limited and Textile Development Agency.

Kyambogo and Makerere Universities were selected as sample training institutions from where content on the type of technology used in the teaching and learning of a weaving skill were obtained because the two training institutions are old higher institutions of learning in Uganda, where weaving is one of the courses offered.

Work places of Nyanza Textile Industries Limited, Phenix Logistics Uganda Limited and Textile Development Agency were used to provide content on the type of technology used in the world of work in Uganda. Nyanza Textile Industries Limited and Phenix Logistics Uganda Limited were selected because the two institutions practice weaving at a big scale production of fabrics while Textile Development Agency was selected because it is an old work place institution practicing weaving at small scale production of fabrics in the world of work in Uganda.

Research question two sought information regarding to whether the type of technology used in the teaching and learning of a weaving skill in training institutions has a relationship to the world of work in Uganda. The relationship was in terms of matching, efficiency and equipping.

Research question three needed information about the challenges faced in using the weaving technology in training institutions in relation to the world of work in Uganda. Attention was also focused towards suggesting strategies of improving on the technology used in the teaching and learning of a weaving skill in training institutions, which is likely to improve on the learners' acquisition of a weaving kills required on the national and global labour markets.

Information seeking to provide answers to research questions two and three were was sought from graduates and lectures of weaving from Kyambogo and Makerere Universities.

1.9.3 Time

The study considered the period between the year 2000 when Kyambogo University started the teaching of a weaving skill, to March 2013 when data collection for the study ended.

1.10 Definition of operational terms

In this section, key terms are defined in the context of the study.

Equipment is an item needed for a particular function. In the case of weaving, it includes looms of various types which include but not limited to cardboard looms, frame looms, rigid heddle looms, inkle looms and power looms.

Influence is the effect of technology on the teaching and learning of a weaving skill and on the application of the acquired skill in the world of work

Learning is a gradual process of acquiring knowledge, skills and competence.

Teaching is a programmed process or activity of giving learners information about a particular subject (weaving) to acquire knowledge and skills.

Technology implies to tools and equipment used in activity based teaching and learning process and in the world of work.

Tools are devices used to carry out a particular task. In weaving, they include but not limited to shuttles, spindles, fringe twisters, heddles, beaters and combs, raddles, reeds and temples.

Skill is the ability to perform a task well.

Weaving is a process of making a fabric by interlacing a set of horizontal (weft) and vertical (warp) threads, so that they cross each other, normally at right angles, usually achieved with a hand or power operated loom. In this study, weaving includes the processes of yarn preparation (spinning) fabric making and fabric processing (seizing and dying)

World of work are work places where a weaving skill is practiced, by individuals or group of people, as self or company employed.

1.11. Outline of the study

The study is in five chapters; Chapter one is an introduction to the study; chapter two is reviewed literature from different publications related to the study and contains my personal experiences, chapter three outlines the methods used to collect needed data and its organisation, chapter four presents analysis and interpretation of findings. Discussion, conclusion and recommendations are given in chapter five.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter, I review literature related to the study guided by the three research questions that were derived from specific objectives, in line with the the purpose of the study. The approach is intended to bring out a detailed explanation, leading to the understanding of the bearing, the technology in regard to tools and equipment used in the teaching and learning of a weaving skill in training institutions has to the world of work in Uganda.

2.2 What type of technology is used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda?

Technology manipulates the teaching and learning in a number of ways. Schacter, cited in Summak and Samancıoğlu (2011, p.1), maintains that, technology accelerates, enriches, and deepens basic skills, motivates and engages students learning, helps relate academics to the practices of today's workforce, strengthens teaching, increases the economic viability of tomorrow's workers, and connects schools to the real world. For learners to be motivated in their skills development, the technology they use in training institutions should help them to relate their learning activities to the world of work. This relationship is possible when the technology in training institutions is the same as that in the world of work. Relating learning activities to the world of work helps the learners to acquire skills relevant and the world of work.

This study assumed that the technology used in the teaching and learning of a weaving skill in training institutions does not match with that in the world of work, where

technology is constantly changing. However, technology used in training institutions should be the same as that in the world of work to help learners acquire skills relevant to the world of work, because it is that technology that facilitates both the training and skills acquisition through practice. As advocated by the activity theory, practice leads to mastery of devices and tools of the labour market (Vygotsky cited in Grosjean in Mjelde and Daly 2006, p.88). Mastery of devices and tools of the labour market, equips learners with skills required on the labour market.

Cited in Al-Bataineh and Leanne (2003, p.9), Zenger anticipated that technology in the twenty-first century, would be the impetus in determining how and what a teacher will choose for instruction in the teaching and learning situations. This means that technology in training institutions plays an important role in determining how and what the learners should be trained.

Amoiridis (2011, p.2), asserts that technology has given rise to new patterns of networking that are changing the way in which knowledge is created, diffused and applied. Technology therefore is very useful for the acquisition and growth of a skill in training institutions, and in application of the acquired and developed skill in the world of work. Technology used in the training process in training institutions should thus be in position to equip trainees with appropriate skills and competences to deal with the ever changing technology in the world of work.

Integrating technology which is in the world of work into training programmes in training institutions helps learners to acquire relevant skills, applicable in the word of work where technology is ever changing. Donahoo and Whitney, cited in Summak and Samancıoğlu (2011, p. 1), put it that schools cannot truly prepare students to function

within society if they fail to cover the equipment and skills which are actually used in the real world, and that they cannot hope to improve the overall value of their programs without sufficiently integrating new technology in their programmes. If technology is not well integrated in the training programmes, learners will continuously be trained in fields and for jobs that do not exist in the world of work. In accord, Miller, cited in Barabasch, in Mjelde and Daly (2006, p.147) asserts that in manual labour trades, thousands of apprentices are being trained for jobs that have already disappeared. This, therefore means that learners will get the training but will not be absorbed in the labour market because the skills they will have acquired will not be relevant and applicable in the world of work.

Miller, in Summak and Samancıoğlu (2011, p.1) comments that students must be able to use technology if they are going to live and work successfully in an increasingly complex and information-driven society. In relation to Miller's comment, Griffin cited in Summak and Samancıoğlu (2011, p.1) also adds that students must be technology literate in order to excel in future jobs and to be productive citizens. From Miller and Griffin's comments, it is evident that failure to expose students to and use appropriate technology in training institutions affects their performance and productivity while on their jobs in the world of work where the society is constantly changing, and technological advances are changing the ways of working.

Technology used in training institutions greatly affects productivity of graduates in the world of work. Brynjolfsson and Shinkyu (1996, p.10) assert that productivity is the fundamental measure of a technology's contribution. This means that technology contributes a lot to productivity. The higher the technology used, the higher the

productivity. Chinien and Kotsik (2003, p.20) argue that, advances in technology have helped to reduce on mass production, reduce economies of scale and boost industrial productivity. For graduates to be productive at their places of work, they need to be well versed with the technology in the world of work, which should therefore be integrated in the learning programmes in training institutions.

Mjelde, (2006, p 33) asserts that there is computer revolution and therefore students should be equipped with skills in use of modern technology not only as an element in the curriculum, but also as a tool to ease performance of work so as to catch up with technological trends. Because of lack of skills in computer, learners find it hard to perform certain computer based tasks even after graduating and are in their places of work. It is therefore important that training institutions keep their tools and equipment used in training of professional up to dated to match with the technology used in the world of work. This enables graduates to easily cope up with their productive tasks in work places using the technology they find in place.

Bayraktaroglu and Kutanis (2000, p.2) assert that the new wave of training is based on 'new training technologies' and this is related to the development path. From Bayraktaroglu & Kutanis' assertion, it is evident that training using new technology is vital if one is to develop skills and competences required on the labour market. Trainers should see the introduction of new technology in their training programmes as vital to their businesses, as they hope that the technology will make training more efficient. Therefore, it is of great importance that training institutions embrace new technology in their training workshops if they are to produce graduates who are ready for global employment opportunities in the world of work.

With new technology, even trainers find it easy to give their learners instructions and learners are able to learn from different sources and to share information. In this case, the trainer is not seen as the only source of knowledge, but as a facilitator to students' learning. In such situations, learners own their learning, understand better and easily acquire the intended knowledge, skills and competences required in the world of work. Carlson (2002, p.1) notes that experience around the world in developing and industrialized countries has shown that teacher training in the use and application of new technology is the key determining factor for improved students' performance in terms of both knowledge acquisition and skills development enabled by technology. Carlson (2002, p.2) maintains that technology promotes effective instruction that is more student-centered, inter-disciplinary and more closely related to real-life. Such instruction encourages development of skills among learners. This ability of technology to improve instructions should be integrated into training programs in training institutions. With the rapid technological developments, traditional methods are increasingly becoming incapable to meet the universal labour market demands. The rapid developments in technology thus call for rapid response to modern technology embracing in training programmes.

2.3 Does the type of technology used in the teaching and learning of a weaving skill in training institutions relate to the world of work in Uganda?

To this research objective, I assumed that the basic technology used in the teaching and learning of a weaving skill in training institutions in Uganda does not equip learners with the skill required in the world of work where technology has changed. Because of the

mismatch in technology graduates from training institutions may be joining the world of work without the skills required.

According to Shensky (2009), technology has changed where we work today. With advanced technology in the work places, methods of work and work output have changed. Advanced technology makes work easier and increases on productivity. For learners to be productive in the world of work where they finally join to apply their skills after training, they have to be well versed with the type of technology used in the production process, which should be exposed to them during their training in training institutions.

In the process of teaching and learning, training technology aids the learners in acquiring skills required in the world of work. Technology helps to provide students with the necessary knowledge and skills to access the labour market or to retrain people so that they can adapt to evolving jobs. Herremans (1995, p.1) maintains that training technologies contribute to a large extent to the development of both the necessary attitudes and educational opportunities for lifelong learning. This shows that technology is essential both in the world of work and in the teaching and learning processes in training institutions. If learners are to acquire skills and competence required in the world of work, they need to be exposed to and work with the technology that is in place in the world of work in their learning activities, which prepares them to access the labour market.

Streitwieser, McGuckin and Doms (1996, p.2) assert that, establishments that use advanced technologies exhibit higher productivity. They maintain that, the relationship between productivity and advanced technology use is observed both in the extent of

technologies used and the intensity of their use. This indicates that the more the use of advanced technologies in the teaching and learning processes in training institutions, the higher the productivity of both the learners and the institutions in their activity based teaching and learning and the higher.

Miller, cited in Barabasch, in Mjelde and Daly (2006, p. 147), asserts that technology and globalization have rendered some of the traditional occupations that were developed long ago obsolete. He adds that this is due to new occupations which are continually emerging in the world of work mostly related to computer technology. Therefore, the technology used in training institutions should be kept up to date to match with that in the world of work, where graduates are finally absorbed to perform productive tasks. From my experience as an Art and Crafts teacher and from the research expeditions I carried out to training institutions and work places while on the MVP study programme, I noted with concern that many learners are trained using old technology that no longer exists in the world of work. This affects the learners' productivity when they eventually join the world of work where they find themselves not in position to handle the technology they find in use.

The National Development Plan [2010/11 –2014/15] (2009, p.30) attributes low productivity in agriculture sector to relative lack of skills and advanced technology in the sector. It is therefore important that training institutions adopt and use technologies similar to those in the world of work in overcoming their productive task so as to realize high productivity and to equip learners with relevant skills and competences required in the world of work, where technology is ever changing.

2.4 What challenges are faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work?

The assumption I made to this research objective is that there are challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda.

As argued by Chinien and Kotsik (2003, p.74), one of the major challenges facing training institutions is to stay abreast of technological developments occurring in business and industry in order to ensure that all graduates are workplace-ready. Training institutions have to keep watch of the new technology relevant to their fields of study that comes up in workplaces, so as to adopt and integrate that new technology in the teaching and learning processes. As learners use the technology similar to that in work places, the skills they acquire are likely to be relevant to the needs of the world of work.

Use of technology in training institutions can be challenging to those both in teaching and in learning positions. Sometimes trainers need to be retrained on how to use technology in teaching of a skill. Al-Bataineh and Leanne (2003, p.5) uphold that it is critical for teachers to get varied opportunities and training to increase their professional skills in order to efficiently use technology in their places of work. Continuous use of advancing technology in training institutions calls for recurrent education of the trainers to be equipped with skills of using new technology that is ever emerging in the world of work and has to be integrated in the teaching and learning processes.

Trainers have a challenge of being ready for lifelong learning with every technology that appears in the world of work, so that they are continuously equipped with the knowledge and professional skills of helping learners to acquire skills and

competences required to work with the ever changing technology in the world of work. Cited in Chinien and Kotsik (2003, p.23), Pritchett argues that lifelong learning is the only way to prevent obsolescence and remain competitive in a job market where work is becoming increasingly knowledge-intensive. For that matter, trainers have to be kept updated with the skills of handling new technology, making it possible for them to also help learners acquire competence required in using that technology in the world of work.

2.5 Summary of reviewed literature

Reviewed literature supports that technology is important in the process of teaching and learning and in the world of work. Scholars bring to light that training institutions need to integrate and use the technology similar to that used in the world of work if they are to prepare learners to function in the world of work and to improve the value of training programmes. If training institutions fail to integrate the technology in the world of work in training programmes, learners are likely to be trained in fields and jobs that no longer exist in the real world of work situation.

However, there was no available literature differentiating the type of technology as regards to the manual and automated technology used in the teaching and learning in training institutions in relation to the world of work. In addition, local literature on technology and weaving was not available and as such, much of the literature was obtained from the internet. Obtained literature was generalizing technology and teaching and learning, but not particular to technology and the teaching and learning of a weaving skill.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

In this chapter, I present how the research was conducted to gather the needed information to answer the research questions, which were derived from the objectives of this study. The focus was put on the research design used, population, sample size, sampling technique, data collection methods, instruments, procedures, validity and reliability, data organisation and ethical consideration.

3.2 Research design

A more of qualitative than quantitative approach was employed in the study, following a descriptive design. The concern of the study was to investigate whether the technology in terms of tools and equipment, used in the teaching and learning of a weaving skill in training institutions has a bearing to the world of work in Uganda, and in doing so, the instruments for collecting, processing and analysis were narrative to describe each variable in the study. A quantitative approach was used in identifying statistical relationships between the variables in the study. Descriptive design was used because it gives an understanding between variables under investigation. Amin (2005, p.212) notes that the descriptive research design aims at providing a systematic explanation that is factual and giving an in depth understanding of the problem and making qualitative interpretation. Mette[7] asserts that a descriptive design gives a holistic understanding of a specific relationship taking into account reliability and validity of information.

[7] A presentation on: "*Research Approaches*" to MVP students, Cohort III, by Professor Mette Hoie on 17th Nov, 2011

3.3 Population

The population in gender categories included students, graduates and lecturers of weaving, of Kyambogo and Makerere Universities as shown in Table 3.1. The population of students was comprised of second and third years who were offering weaving as an elective in Bachelor of Art and Industrial Design (BAID), Bachelor of Vocational Studies in Art and Industrial Design (with education) (BVAD), at Kyambogo University and Bachelor of Industrial and Fine Arts (BIFA) of Makerere University during 2012/2013 academic year. Graduates of weaving were those who left Kyambogo and Makerere Universities and had joined the world of work. The exact population of graduates was not easily accessible from the two training institutions as it was contained in the files which were considered confidential and not accessible to research students. Because of the foregoing explanation, the population size of graduates is not reflected in Table 3.1. The population of lecturers shown in Table 3.1 was of those teaching the course of weaving at Kyambogo and Makerere Universities.

Table 3.1: *Population*

Population		Population size				
		Kyambogo University		Makerere University		Total
		Males	Females	Males	Females	
Yr II students	BAID	03	04	00	00	07
	BVAD	05	11	00	00	16
	BIFA	00	00	07	05	12
Yr III students	BAID	08	09	00	00	17
	BVAD	09	08	00	00	17
	BIFA	00	00	04	16	20
Graduates		Was not easily accessible				
Lecturers		01	01	02	01	05
Total population size		26	33	13	22	94

Key: BAID : Bachelor of Art and Industrial Design of Kyambogo University

BVAD : Bachelor of Vocational Studies in Art and Industrial Design (with education) of Kyambogo University.

BIFA: Bachelor of Industrial and Fine Arts of Makerere University

Yr: Year

3.4 Sample size

The sample size was selected from the population of BAID, BVAD and BIFA second and third year students of weaving, graduates and lecturers of weaving, at Kyambogo and Makerere Universities. The sample size included both males and females for gender balance. The MVP programme from which I am pursuing this degree emphasises gender

balance. (Programme book for MVP degree, 2009, pp.6 - 8). The sample size was as shown in Table 3.2.

Table 3.2*: Sample size*

Sample		Sample size				
		Kyambogo University		Makerere University		Total
		Males	Females	Males	Females	
Yr II students	BAID	02	02	00	00	04
	BVAD	02	02	00	00	04
	BIFA	00	00	04	04	08
Yr III students	BAID	02	02	00	00	04
	BVAD	02	02	00	00	04
	BIFA	00	00	04	04	08
Graduates		03	03	03	03	12
Lecturers		01	01	02	01	05
Total sample size		12	12	13	12	49

Key: BAID : Bachelor of Art and Industrial Design of Kyambogo University
BVAD : Bachelor of Vocational Studies in Art and Industrial Design (with education) of Kyambogo University.
BIFA: Bachelor of Industrial and Fine Arts of Makerere University.
Yr: Year.

3.5 Sampling technique

The population of students, graduates and lecturers involved in this study had experience and knowledge of weaving but varied in numbers, and as such, different sampling techniques were used.

In order to get the needed sample size of students out of the total population of BAID, BVAD and BIFA second and third year students of weaving at Kyambogo and Makerere Universities, a stratified random sampling technique was used. This involved first to get lists of students in second and third years who opted for weaving as an elective in each of the two sample institutions. Secondly, lists of students separated into gender categories and arranged in alphabetical order were generated from the already acquired lists. The third step was to write names of students in each category on small papers, folded them, put them into a container, shook the container to mix the content, picked that number of the sample size needed, unfolded and highlighted those names on the original list of gender category. The highlighted names were for students who constituted the sample size.

Snow ball technique, where one identified person leads to the identification of another, was used to select a sample size of graduates of weaving who were in the world of work. This technique was used because it was difficult to have the sample of graduates all at once in a group due to their work schedules and distance from each other. I identified few graduates of weaving from each of the two sample institutions under study, who helped to identify other graduates. Katebire (2007, pp.42-43) asserts that snowball sampling allows the researcher to identify a few respondents to participate in the study, who then help to identify yet other potential respondents.

With regard to the sample size of lecturers of weaving, a purposive sampling technique was used. Due to the small number of the lecturers of weaving at both Kyambogo and Makerere Universities, their total population was considered.

3.6 Data collection methods

A number of data collection methods out lined below, were used to gather the needed information for this study in relation to the research questions.

- Observation
- Focus group discussion
- One to one interview
- Questionnaire administration
- Documentary analysis

3.6.1 Observation

The observation method was used to collect needed data through seeing and taking notes to identify the type of technology used in the teaching and learning of a weaving skill in the two selected training institutions and those used in weaving in the three selected work places. Kumar cited in Odiya (2009, p.168) defines an observation as a purposeful, systematic and selective way of watching and listening to an event as it takes place and taking record of observations as accurately and as objectively as possible. I used a non-participant observation method, with an aid of a structured observation guide (Appendix IA) to gather the information about research question one of the study. Dey (1993) notes that when conducting a qualitative research, we have to compare observations between different bits of data, and classify these observations according to their distinctive characteristics. Photographing using a camera was used to enhance the observations by

taking photographs of the tools and equipment used in the teaching and learning of a weaving skill in the two selected training institutions and those used in weaving in the three selected work places. Photographs taken were used to affirm data collected using an observation guide.

3.6.2 Focus group discussion

This is a participative data collection method involving a group of respondents in the discussion of issues of common concern through a mediator. I held focus group discussions with BAID, BVAD and BIFA second and third year students of weaving of Kyambogo and Makerere Universities on whether the technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work, and the challenges faced in using the technology in training institutions in relation to the world of work in Uganda. Focus groups of BAID and BVAD second and third year students of weaving of Kyambogo University were each in groups of four while those of BIFA second and third year students of weaving of Makerere University were in groups of eight. I used a focus group discussion guide (Appendix IB), to conduct discussions, a notebook to take discussion notes and a recorder to enhance data recording.

3.6.3 One to one interviews

The one to one interviews were used on graduates of weaving in the world of work, where snow ball sampling technique was applied. This was a person to person interaction between the researcher and the respondents with the purpose of obtaining information about the study. Kvale and Brinkmann (2009, p.3) describe a one to one interview as a conversation that has a structure and purpose and involves questioning and listening approaches with the aim of obtaining knowledge and information. A one to one interview

guide (Appendix IC), a recorder and a notebook, were used in the process of collecting data on whether the technology, in regard to tools and equipment, used in the teaching and learning of a weaving skill in training institutions relates to the world of work, and the challenges faced in using the technology in training institutions in relation to the world of work in Uganda. The one to one interviews were done orally.

3.6.4 Questionnaire administration

The questionnaire was administered to lecturers of weaving in the two sample training institutions under study. The instrument had both open and closed ended questions that were relevant to the study. Odiya (2009, p.188) defines a questionnaire as a form consisting of a list of questions or statements calling for information about the characteristics the researcher wishes to measure. Copies of a questionnaire (Appendix I D) were distributed to lecturers of weaving at Kyambogo and Makerere Universities who filled them at their convenient time because of the busy schedules they had. Filled questionnaires were later on collected from the respondents on an agreed date. The questionnaire was used to gather data about the technology used in the teaching and learning of a weaving skill in training institutions and its relationship with the world of work in Uganda. It also focused on the challenges faced in using the weaving technology in training institutions in relation to the world of work in Uganda.

3.6.5 Documentary analysis.

Document analysis was used to collect data through carefully studying written documents. Libraries were visited to gather literature related to the study from documents which included, but not limited to, text books, articles, newspapers, journals, academic papers, reports and others. Lists of BAID, BVAD and BIFA students in second and third years of

study who opted for weaving as an elective at Kyambogo and Makerere Universities were also analyzed, from which the needed sample size of students was determined.

Documentary analysis helps to analyze findings, facts and records of other people. Ian (1993 p.105)[8] asserts that in documentary analysis, the criteria for selecting documents, or for focusing on particular extracts, should reflect the issues on which the researcher is seeking evidence.

3.7 Instruments

The following instruments that were used to collect data are given and explained under the direction of each research question, although some such as a note book and a recorder were applied to more than one research question:

- Observation guide
- Focus group discussion guide
- One to one interview guide
- Questionnaire
- Documentary analysis check list

3.7.1 Observation guide

The observation guide was used to gather data for research question one. A structured observation guide (Appendix IA) which I constructed was used to record information on the identification of the type of technology in terms of tools and equipment used in the teaching and learning of a weaving skill in the two training institutions; Kyambogo and Makerere Universities and three work places; Nyanza Textile Industries Limited, Phenix Logistics Uganda Limited and Textile Development Agency. The observation guide was

[8]Retrieved from www.BingEbook.com on 22nd May 2012.

having two questions. Question one was seeking for the identification of the type of technology used in the two sample training institutions while question two recorded the types of technology used in the three sample work places. Each question had two sections; (a) and (b). Section (a) was containing a list of possible weaving tools from which to tick what was available in a given place and a sub-section of "others" to include any other tool not listed in (a). Section (b) contained a list of possible weaving equipment from which to tick what was available in a given place and a sub-section of "others" to include any other equipment not listed in (b). A camera was used to take photographs in affirmation of the availability of the tools and equipment recorded in the selected training institutions and work places.

3.7.2 Focus group discussion guide

A focus group discussion guide (Appendix IB) was used to gather information through participative group discussions with BAID, BIFA and BVAD second and third year students of weaving of Kyambogo and Makerere Universities who opted for weaving as an elective. The focus group discussion guide had two questions. Question one sought to gather data to answer research question two, which required information about whether the type of technology, tools and equipment used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda. Question two sought to collect information for research question three, regarding to the challenges faced in using the technology in terms of tools and equipment in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda. A note book was used in taking notes while a recorder was used to record verbal

responses from the respondents. The recorded information was used in checking the accuracy of the notes taken during interactions with the respondents.

3.7.3 One to one interview guide

A one to one interview guide, (Appendix IC) was used to collect information from graduates of weaving from the two selected training institutions; Kyambogo and Makerere Universities through conducting one to one oral interviews. The guide had two questions. Question one sought to gather data to answer research question two, while question two required collecting data for research question three. Research question two required information about whether the type of technology in terms of tools and equipment used in the teaching and learning of a weaving skill in training institutions relates to the world of work Uganda, while research question three sought for information regarding to the challenges faced in using the technology in terms of tools and equipment in training institutions, during the teaching and learning of a weaving skill in relation to the world of work in Uganda. Responses to the questions were noted on the interview guide.

3.7.4 Questionnaire

A questionnaire (Appendix ID) was used to gather information from lecturers of weaving at the two selected training institutions; Kyambogo and Makerere Universities. The instrument had two questions. Question one sought to gather information to answer research question two, which required data about whether the type of technology in terms of tools and equipment used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda. Question two required to collect data for research question three, concerning the challenges faced in using the technology in

terms of tools and equipment in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda. The questionnaires were filled by the respondents.

3.7.5 Documentary analysis check list

A documentary analysis check list was used to gather information related to the study. The instrument was used to gather literature related to the study from text books, articles, newspapers, journals, academic papers, reports and others. Lists of BAID, BVAD and BIFA students in second and third years of study who selected weaving as an elective at Kyambogo and Makerere Universities were also analyzed, in the process of determining the needed sample size of students.

3.8 Validity and reliability of instruments

In order to manage the quality of instrument in terms of truthfulness and ability to collect the needed information, I discussed the developed instruments with my supervisors and colleagues on MVP programme to check on consistency, clarity and understandability of the questions in relation to needed information for each research question. In addition, each instrument was tested on a few respondents. Adjustments on each instrument were carried out according to the inputs of the supervisors, colleagues and tested respondents before I finally used them for data collection. Odiya (2009, pp196-199) defines validity of an instrument as its ability to collect truthful data, and reliability of an instrument as its ability to collect the same data consistently under similar condition

For clarity and easy reference to the instruments used for each research question to collect the needed data from the respondents, Table 3.3 which contains the foregoing is presented.

Table 3.3: *Summary of data that was needed against each research question, respondents and instruments*

Research Question	Data needed	Respondents	Instruments to use
i. What type of technology is used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda?	Type of technology; tools and equipment, used in the teaching and learning of a weaving skill in training institutions, in relation to the world of work in Uganda. • Tools • Equipment		• A structured observation guide (Appendix IA), questions 1 and 2. • A camera
ii. Does the type of technology used in the teaching and learning of a weaving skill in training institutions relate to the world of work in Uganda?	Whether the type of technology; tools and equipment, used in the teaching and learning of a weaving skill in training institutions: • Is efficient for training in relation to the world of work in Uganda. • Equips learners with skills required in the world of work in Uganda. • Matches with that used in the world of work in Uganda.	• BAID, BVAD and BIFA second and third year students of weaving.	• Focus group discussion guide (Appendix IB), question 1. • Recorder
		• Graduates of weaving.	• One to one interview guide (Appendix IC), question 1. • Recorder
		• Lecturers of weaving.	• Questionnaire (Appendix ID), question 1.
iii. What challenges are faced in using the technology in training institution during the teaching and learning of a weaving skill in relation to the world of work in Uganda?	What makes it hard to acquire weaving skills required in the world of work using the technology in training institutions in Uganda. • Challenges faced in using weaving tools and equipment in training institutions • How the challenges were overcome • Suggested measures to improve on tools and equipment used in weaving training institutions in Uganda.	• BAID, BVAD and BIFA second and third year students of weaving.	• Focus group discussion guide (Appendix IB), question 2. • Recorder
		• Graduates of weaving.	• One to one interview guide (Appendix IC), question 2. • Recorder
		• Lecturers of weaving.	• Questionnaire (Appendix ID), question 2.

3.9 Procedure for collecting data

Before commencing the data collection exercise, I obtained an introduction letter from the head of Art and Industrial Design Department of Kyambogo University, under which my programme of study lies. I used the introduction letter to identify, introduce myself and ask to be granted permission from administrators of the selected training institutions and work places to conduct research from their organisations. After obtaining permission, different procedures were followed to collect data depending on the method that was used in relation to each research question. Data for research questions two and three were concurrently collected because same instruments and procedures were used.

3.9.1 Research question one

In order to collect the needed data for research question one which sought information regarding the type of technology used in the teaching and learning of a weaving skill in training institutions in relation to the world of work on Uganda, I got access to weaving studios of both selected training institutions and work places, with a structured observation guide (Appendix IA). With the help of a technician at each weaving studio, I gathered the required information through observing, making notes on a structured observation guide, and taking photographs of weaving tools and equipment in each selected training institution and each selected work place.

3.9.2 Research question two

The needed data for research question two were collected from BAID, BVAD and BIFA second and third year students of weaving, graduates of weaving and lecturers of weaving at Kyambogo and Makerere Universities. The needed data was obtained from each group of the students, graduates and lecturers separately as follows:

Students: To collect the needed information from students of weaving, a sample size was obtained, which involved first to get a list of BAID, BVAD and BIFA second and third year students of weaving of Kyambogo and Makerere Universities. Secondly, the acquired lists of students were separated into gender categories and arranged in alphabetical order. The third step was to write names of students in each category on small pieces of paper, fold and put them into a container, shake the container to mix the content, pick that number of the sample size needed, unfold and highlight those names on the list of gender category. Students whose names were highlighted on the list constituted the sample size to provide the needed information from each training institution. Selected students from each training institution were contacted differently according to their years and programmes of study to fix a date and venue to hold focus group discussions. I conducted six focus group discussions; one focus group discussion of each group of BAID and BVAD, second and third year students of weaving of Kyambogo University and one focus group discussion of each group of BIFA, second and third years students of weaving of Makerere University. Each focus group discussion took an average of thirty minutes. During the focus group discussions, I used a guide (Appendix IB) and recorded responses in a notebook according to each question. A recorder that was on throughout the discussion was used to enhance data recording.

Graduates: In order to gather needed data from graduates of weaving, one graduate from each of the two training institutions was first identified. I introduced myself to each of the identified weaving graduate and asked for help in identifying other graduates till a needed sample size was covered. A one to one interview guide (Appendix IC) was used to conduct oral interviews with each of the identified graduate of weaving

to collect the needed data. Each interview took an average of ten minutes. In the process of carrying out the interviews, I recorded the responses in a note book and a recorder was used to supplement data recording.

Lecturers: The required data from lecturers of weaving at the two selected training institutions were collected using a questionnaire (Appendix ID). To gather the needed data, I first identified each lecturer of weaving at the two training institutions and introduced myself to them. Secondly, I provided a questionnaire to each of the lecture of weaving at the two training institutions. The lecturers were left to fill the questionnaires at their convenient time because of the busy schedules they had. Filled questionnaires were collected from each lecturer later on an agreed date.

Question one of the focus group discussion guide for discussions with weaving students, one to one interview guide for one to one interviews with weaving graduates and a questionnaire for lecturers were used to seek information leading to answer research question two.

3.9.3 Research question three

BAID, BVAD and BIFA second and third year students of weaving, graduates of weaving and lecturers of weaving from Kyambogo and Makerere Universities were consulted in order to gather needed data for research question three.

As discussed at the beginning of section 3.9, the procedure that was followed to gather the needed data for research question two explained in section 3.9.2 was applied in collecting the required information for research question three, because same instruments were used.

Question two of each of the focus group discussion guide (appendix IB) for discussions with weaving students, one to one interview guide (Appendix IC) for one to one interviews with weaving graduates and a questionnaire (Appendix ID) for lecturers was used to seek information leading to answer research question three.

3.10 Organisation of raw data

Responses collected from respondents using the various methods and instruments were raw, which needed to be organised according to each of the three research questions of each specific objective. The organisation according to each research question involved making observable corrections and arranging the observations and responses collected according to each question in each instruments. The three research questions under which raw data was organised are:

3.10.1 What type of technology is used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda?

3.10.2 Does the type of technology used in the teaching and learning of a weaving skill in training institutions relate to the world of work in Uganda?

3.10.3 What challenges are faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda?

3.10.1 What type of technology is used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda?

In order to organize the observed and photographed information related to research question one which sought information regarding the type of technology, tools and equipment, used in the teaching and learning of a weaving skill in training

institutions in relation to the world of work in Uganda, two Tables 3.4 and 3.5 were used. Table 3.4 contains weaving tools, while Table 3.5 contains weaving equipment. For a systematic flow and easy understanding of the organised data for this research question, tools and equipment were separately organised in different tables. Pictures and functions of each tool and equipment were also included in Tables 3.4 and 3.5 respectively, to facilitate easy and better understanding of the organised data.

The information was obtained from two selected training institutions and three selected work places. The two selected training institutions were the Department of Art and Industrial Design, Faculty of Vocational Studies of Kyambogo University (KyU), and Department of Industrial Arts and Applied Design, Margaret Trowell School of Industrial and Fine Arts, College of Engineering, Design and Technology of Makerere University (Mak), where weaving is one of the courses offered. They are both located in Kampala District. The three work places were Nyanza Textile Industries Limited (NYTIL) located in Njeru Town Council in Buikwe District, Phenix Logistics Uganda Limited (PLUL) located in Nakawa industrial area, and Textile Development Agency (TEXDA) located in Bukoto, both in Kampala District (Appendix IVA).

Table 3.4 shows pictures, names and functions of weaving tools which were observed, photographed and recorded in the two training institutions, KyU and Mak and one work place TEXDA. NYTIL and PLUL were not included in Table 3.4 due to the difficulty to set apart the tools and equipment of weaving for recording purpose. I recognized that the weaving tools and equipment used in the two training institutions; KyU and Mak, and one work place; TEXDA, were manually operated whereas those of the other two work places were electrically operated. To create order in arrangement,

tools in Tables 3.4 are not organised as presented on the observation guide (Appendix IA). They are organised in the order of those that were observed and recorded in both; the two training institutions and the work places, followed by those that were only in the training institutions, those that were only in the work places and lastly, those that were neither observed in training institutions nor in the work places, but were on the observation guide.

Table 3.1: *Weaving tools used in training institutions and one work place*

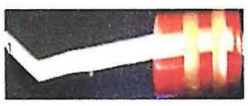
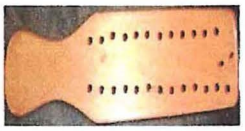
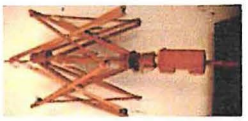
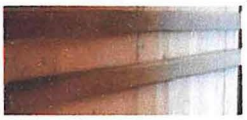
Serial No.	**Weaving Tools**		**Training institutions**		**Work place**	**Function of each tool**
	Picture	Name	KyU	Mak	TEXDA	N=16
1.		Hand shuttles	✓	✓	✓	To pass the weft through a shade
2.		Heddles for flow looms	✓	✓	✓	Lift warps to create a shade in flow looms
3.		Heddles for table looms	✓	✓	✓	Lift warps to create a shade in table looms
4.		Reed	✓	✓	✓	Seperates warp and packs when weaving
5.		Raddle	×	✓	✓	Separates the warp when warp beaming
6.		Heddle for rigid heddle looms	×	✓	×	To create a shade and to pack in rigid hedle looms.
7.		Denting hook	×	×	✓	To dent hedles

Table 3.4 continued

Serial No.	Weaving Tools		Training institutions		Work place	Function of each tool
	Picture	Name	KyU	Mak	TEXDA	
8.		Flying shuttle bobbin	×	×	✓	Holds yarn in a flying shattle
9.		Flying shuttle	×	×	✓	Passes weft through a shade
10.		Paddle	×	×	✓	Separetes yarn when warping
11.		Reed hook	×	×	✓	To dent reeds
12.		Umbrella swift	×	×	✓	holding yarn under even tension and length for warping
13.		Warping sticks	×	×	✓	Support warps on a warp beam to give a uniform stretch
14.		Combs	×	×	×	Soften cotton lint and make it wool like
15.		Drop spindle	×	×	×	Manual yarn spinning
16.		Temple	×	×	×	maintains the warp width when weaving

Source: Field data.

Key: × : Represents unavailability of a corresponding tool

✓ : **Represents availability of a corresponding tool.**

N : Total number of tools

Table 3.5 presents pictures, names and function of weaving equipment which were observed, photographed and recorded in the two training institutions; KyU and

Mak, and three work places; TEXDA, NYTIL and PLUL. As it was explained in reference to Table 3.4 that it was difficult to set apart tools and equipment for recording purposes in NYTIL and PLUL, the weaving equipment presented in 3.5 that was observed and recorded in both NYTIL and PLUL is a fusion of tools and equipment. In order to create a flow in arrangement, the equipment in Table 3.5 is organised following the arrangement of those that appeared to be in both the two training institutions and the work places, followed by those that were only in the training institutions, those that were only in the work places and those that were not observed in either training institutions or in the work places.

Table 3.2: *Weaving equipment in training institutions and those in work places*

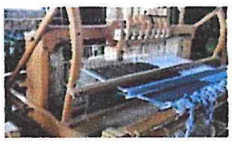
Serial No.	**Weaving equipment**		**Training institutions**		**Work places**			**Function of an equipment**
	Picture	Name	KYU	Mak	TEXDA	NYTIL	PLUL	N= 37
1		Frame loom	✓	✓	✓	×	×	Manual weaving
2		Table loom	✓	✓	✓	×	×	Manual weaving
3		Spinning wheel	×	✓	✓	×	×	Manual yarn spinning
4		Warping mill	×	✓	✓	×	×	Preparing/ stretching warp for beaming.

Table 3.5 continued

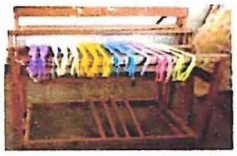
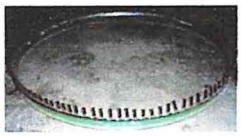
Serial No.	Weaving equipment		Training institutions		Work places			Function of an equipment
	Picture	Name	KYU	Mak	TEXDA	NYTIL	PLUL	N= 37
5		Comb looms	✓	✓	×	×	×	Making narrow weaves.
6		Inkle loom	✓	✓	×	×	×	Making narrow weaves
7		Flow loom	✓	×	×	×	×	Manual weaving
8		Jack loom	✓	×	×	×	×	Manual weaving
9		Circular loom	×	✓	×	×	×	Making circular weaves.
10		Rigid heddle loom	×	✓	×	×	×	Mannual plain weaving
11		Flying shuttle loom	×	×	✓	×	×	Manual weaving
12		Blowing machine	×	×	×	✓	✓	Cleans and mixes cotton lint.
13		Carding machine	×	×	×	✓	✓	Alligns cotton fibres on yarn wires.

Table 3.5 continued

Serial No.	Weaving equipment		Training institutions		Work places			Function of an equipment
	Picture	Name	KYU	Mak	TEXDA	NYTIL	PLUL	N= 37
14		Combing machine	×	×	×	✓	✓	Softens and makes cotton lint wool like.
15		Dying machine	×	×	×	✓	✓	Colours the woven fabric.
16		Hammel	×	×	×	✓	✓	Twists four strands to create one for making heavy fabrics like canvases.
17		Inspecting machine	×	×	×	✓	✓	Checking for damages on a woven fabric
18		Lap former	×	×	×	✓	✓	Makes rounds of cotton wool
19		Lessone	×	×	×	✓	✓	Rewinds smaller cones and jons yarn on bigger cones
20		Ring frame	×	×	×	✓	✓	Finalises Spinning track and winds yarn on bobbins
21		Roving machine	×	×	×	✓	✓	Twists bigger strads to reduce to required size.
22		Yarn tester	×	×	×	✓	✓	Computeriesd testing of strenght and quality of yarn.

Table 3.5 continued

Serial No.	Weaving equipment		Training institutions		Work places			Function of an equipment
	Picture	Name	KYU	Mak	TEXDA	NYTIL	PLUL	N= 37
23		Yarn twister	×	×	×	✓	✓	Twists two strands for strengthening
24		Air jet loom	×	×	×	✓	×	Computerised weaving
25		Ben tonic creel	×	×	×	✓	×	Computerized yarn seperation for warp beaming.
26		Ben tonic machine	×	×	×	✓	×	Computerised polyster yarn warpping and beaming.
27		Reverse osmosis machine	×	×	×	✓	×	Treats water used by water jet equipment
28		Schlafhorst creel	×	×	×	✓	×	Seperates and streches yarn for warp beaming.
29		Schlafhorst machine	×	×	×	✓	×	Winding yarn on the warper beam
30		Sulzer Projectile	×	×	×	✓	×	Plain weaving
31		Water jet loom	×	×	×	✓	×	Computerised weaving

Table 3.5 continued

Serial No.	Weaving equipment		Training institutions		Work places			Function of an equipment
	Picture	Name	KYU	Mak	TEXDA	NYTIL	PLUL	N= 37
32		Zell head stock	×	×	×	✓	×	Adds starch to woven fabrics to strengthen them.
33		Zell Kettle	×	×	×	✓	×	Prepares starch to add to woven fabrics to strengthen them
34		Collar machine	×	×	×	×	✓	Making hard, flat weaves.
35		Comber machine	×	×	×	×	✓	Computerised tubular / circular weaving.
36		Compacter machine	×	×	×	×	✓	Presses the woven fabric for strenghening.
37		Relanite machine	×	×	×	×	✓	Computerised tubular / circular weaving

Source: Field data.

Key: × : Represents unavailability of a corresponding equipment.

✓ : Represents availability of corresponding equipment.

N : Number of equipment

3.10.2 Does the type of technology used in the teaching and learning of a weaving skill in training institutions relate to the world of work in Uganda?

Responses providing answers to research question two which sought information on whether the type of technology used in the teaching and learning of a weaving skill in

training institutions has a relationship with the world of work in Uganda, were gathered using three instruments, namely; a focus group discussion guide (Appendix I B) for students, a one to one interview guide (Appendix I C) for graduates and a questionnaire (Appendix I D) for lecturers.

The relationship was in terms of matching, efficiency and equipping. The indicator of matching was whether the weaving tools and equipment in training institutions are the same as those in the world of work. Efficiency meant the state of weaving tools and equipment in training institutions and whether they are enough and well organised for the process of teaching and learning of a skill. Equipping referred to giving required skills which are applicable in the world of work to learners.

Respondents included BAID and BVAD of KyU and BIFA of Mak, second and third year students who opted for weaving as an elective. Graduates and lecturers of weaving at KyU and Mak were also respondents. Responses from the three categories of respondents, to each question of each instrument for research question two were organised differently (Appendix IIA) and then merged according to the relationship (matching, efficiency and equipping) explained above. Students responded to efficiency and equipping while graduates responded to matching, efficiency and equipping.

Merging of responses according to the relationships sought for in research question two which were matching, efficiency and equipping is presented in Tables 3.6, 3.7, 3.8, 3.9, 3.10 and 3.11. Each table shows the questions, respondents, responses, frequency and total of frequencies. The key to the tables is as follows:

M : Represents male respondents

F : Represents female respondents

(f) : Represents frequency of responses

N : Number of respondents

Matching:

The responses for matching were provided by graduates and lecturers and have been merged from Tables AIIA.5, AIIA.6, AIIA.11 and AIIA.12 (Appendix IIA) and presented in two Tables (3.6 and 3.7). Table 3.6 is a union of Tables AIIA.5 and AIIA.11 while Table 3.7 is a merger of Tables AIIA.6 and AIIA.12. Responses regarding to whether weaving tools and equipment used in the teaching and learning process in the two training institutions match those used in the world of work in Uganda, were as organised in Table 3.6, whose content has been explained.

Table 3.6: *The matching of weaving tools and equipment in training institutions against those in the world of work in Uganda.*

Question: Do the weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions match those used in the world of work in Uganda?

Respondents	**Responses**					**N = 17**				
	Yes					No				
	KyU		Mak		(f)	KyU		Mak		(f)
	M	F	M	F		M	F	M	F	
Graduates of weaving (face to face)	01	00	00	00	01	02	03	03	03	11
Lecturers of weaving (questionnaire)	00	00	01	00	01	01	01	01	01	04
Total of responses	**01**	**00**	**01**	**00**	**02**	**03**	**04**	**04**	**04**	**15**

Source: Field data.

Graduates and lecturers gave reasons to support their "Yes" and "No" responses which are reflected in Table 3.6. The reasons to why some graduates and lecturers considered weaving tools and equipment used in training institutions to match or not to match those used in the world of work in Uganda were organised in Table 3.7.

Table 3.7: *Reasons for the matching and mismatching of institutional weaving tools and equipment against those in the world of work in Uganda*

Question: Give reason for your answer ('Yes' or 'No')

Reasons for 'yes'	**Frequency of a reason**							
	Graduates (N= 12)				Lecturers (N= 5)			
	KyU		Mak		KyU		Mak	
	M	F	M	F	M	F	M	F
• Tools and equipment both in training institutions and those in the world of work can all be used to create fabrics of different designs.	01	00	0	00	00	00	00	00
• Training institutions have tried to procure and install tools and equipment that match with those in the world of work but depending on the ever increasing technology, much more is still required.	00	00	00	00	00	00	01	00
Total number of respondents	**01**	**00**	**00**	**00**	**00**	**00**	**01**	**00**
Reasons for 'No'.								
• Equipment in training institutions is manually operated and is in poor working conditions. The world of work uses modern and automated equipment.	02	01	01	01	00	00	00	01
• Tools and equipment provided in training institutions give the students the basic skills in weaving. The industrial equipment is not available.	00	01	00	00	00	01	00	00
• Institutions have not upgraded their equipment to match modern industrial standards.	00	00	01	01	00	00	01	00
• Tools and equipment in training institutions is simple for learning purposes, not like the heavy equipment in the world of work for mass production	00	01	00	00	00	00	00	00
• The tools and equipment we use in training institutions are old fashioned and cannot match the ones used in the industries.	00	00	01	01	01	00	00	00
Total responses	**02**	**03**	**03**	**03**	**01**	**01**	**01**	**01**

Source: Field data

Efficiency:

Responses for efficiency were given by students, graduates and lecturers, and were merged from six Tables: AIIA.1, AIIA.2, AII.7, AIIA.8, AIIA, 13 and AIIA.14 (Appendix IIA) and presented in two Tables: 3.8 and 3.9. Table 3.8 is a combination of Tables AIIA.1, AII.7, and AIIA.13. Table 3.9 is a merger of Tables AIIA.2, AIIA.8, and AIIA.14. Table 3.8 represents the responses to whether the weaving technology in training institutions is enough and well organised for use in the process of teaching and learning a weaving skill in relation to the world of work in Uganda.

Table 3.8: *Whether the technology in training institutions is efficient for use in the teaching and learning a weaving skill in relation to the world of work in Uganda*

Question: Are the weaving tools and equipment in training institutions efficient for use in the process of learning a weaving skill in relation to the world of work in Uganda?

Respondents	**Responses**					**N = 49**				
	Yes					No				
	KyU		Mak		(f)	KyU		Mak		(f)
	M	F	M	F		M	F	M	F	
Students of weaving	02	00	01	02	05	06	08	07	06	27
Graduates of weaving	00	01	01	00	02	03	02	02	03	10
Lecturers of weaving	00	00	01	00	01	01	01	01	01	04
Total	**02**	**01**	**03**	**02**	**08**	**10**	**11**	**10**	**10**	**41**

Source: Field data

Students, graduates and lecturers who were the respondents, gave reasons in support of why some of them believed that the weaving technology in training institutions was efficient or inefficient for use in the process of teaching and learning a weaving skill in relation to the world of work in Uganda. The responses were organised

in Table 3.9 on the next page, which represents the processed responses from Tables AIIA.2, AIIA.8, and AIIA.14 (Appendix IIA) as earlier explained.

Table 3.9: *Reasons for weaving tools and equipment in training institutions being and not being efficient for use in relation to the world of work in Uganda*

Question: Give reason for your answer ('Yes' or 'No'												
Reason for 'Yes'	**Frequency of a reason**											
	Students (N=32)				Graduates (N=12)				Lecturers (N=5)			
	KyU		Mak		KyU		Mak		KyU		Mak	
	M	F	M	F	M	F	M	F	M	F	M	F
• Using tools and equipment in training institutions helps one to learn basic skills of weaving, and more can be learnt from the world of work.	01	00	00	02	00	01	01	00	00	00	00	00
• Tools and equipment in training institutions are efficient for demonstration in learning a number of weave types for application in the world of work.	01	00	01	00	00	00	00	00	00	00	00	00
• Yes they are because existing textile design projects are using them already.	00	00	00	00	00	00	00	00	00	00	01	00
Total frequency of reasons.	**02**	**00**	**01**	**02**	**00**	**01**	**01**	**00**	**00**	**00**	**01**	**00**
Reasons for 'No'												
• Many of the tools and equipment in training institutions are broken down, not serviced and miss component parts.	01	02	00	03	00	01	0	02	01	00	00	00
• Tools and equipment in training institutions need to be upgraded to produce larger pieces of work as required in the world of work.	01	01	03	02	02	00	01	00	00	00	00	01
• Tools and equipment in training institutions are very few compared to the number of students, making it difficult for all to learn through making practice	01	05	01	01	01	00	00	00	00	00	00	00
• There is need to evolve to computer generated designs and use of power controlled looms	00	00	00	00	00	00	00	00	00	01	01	00
• Tools and equipment in training institutions do not equip learners with industrial production skills required in the world of work	03	00	03	00	00	01	01	01	00	00	00	00
Total frequency of reasons.	**06**	**08**	**07**	**06**	**03**	**02**	**02**	**03**	**01**	**01**	**01**	**01**

Source: Field data

Equipping:

The responses for equipping were provided by students, graduates and lecturers. The merged responses are from six Tables; AIIA.3, AIIA.4, AIIA.9, AIIA.10, AIIA.15 and AIIA.16 (Appendix IIA) and presented in two Tables; 3.10 and 3.11. Table 3.10 represents merged responses from Tables AIIA.3, AIIA.9, and AIIA.15, while Table 3.11 represents merged responses from Tables AIIA.4, AIIA.10, and AIIA.16. Responses from students, graduates and lecturers regarding to whether weaving tools and equipment used in training institutions equip learners with skills required in the world of work in Uganda were organised in Table 3.10.

Table 3.10: *Whether weaving tools and equipment in training institutions equip learners with skills required in the world of work in Uganda*

Question: Do weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions equip learners with skills required in the world of work in Uganda?

Respondents	**Responses (N = 49)**														
	Yes					No					Not sure				
	KyU		Mak		(f)	KyU		Mak		(f)	KyU		Mak		(f)
	M	F	M	F		M	F	M	F		M	F	M	F	
Students of weaving	02	00	01	02	05	06	08	06	04	24	00	00	01	02	03
Graduates of weaving	00	01	02	00	03	03	02	01	03	09	00	00	00	00	00
Lecturers of weaving	00	01	02	00	03	01	00	00	01	02	00	00	00	00	00
Total	**02**	**02**	**05**	**02**	**11**	**10**	**10**	**07**	**08**	**35**	**00**	**00**	**01**	**02**	**03**

Source: Field data

Table 3.11 is divided into three sections to contain reasons for 'Yes' or 'No' or 'Not sure' responses from students, graduates and lecturers which were merged and organised in Table 3.10. In addition, the table contains frequency of each reason, the respondents and total of responses

Table 3.11: *Reasons for "Yes", "No" and "Not sure" responses to whether weaving tools and equipment in training institutions equip learners with skills required in the world of work in Uganda*

Question: Give reason for your answer ('Yes', 'No' or 'Not sure')												
Reasons for 'Yes'.	**Frequency of a reason**											
	Students (N=32)				Graduates (N=12)				Lecturers (N=5)			
	KyU		Mak		KyU		Mak		KyU		Mak	
	M	F	M	F	M	F	M	F	M	F	M	F
• Tools and equipment in training institutions help learners to acquire basic skill, which does not require the use of sophisticated equipment	01	00	00	01	00	00	01	00	00	00	01	00
• Students need to have zeal and creativity. Tools and equipment themselves are okay, though may require repairs from time to time.	00	00	00	00	00	00	00	00	00	00	01	00
• Skills given to the learners can enable them to transform fiber to fabric and be able to manipulate simple equipment to produce a woven fabric	00	00	01	01	00	01	00	00	00	01	00	00
• The skill acquired by learners using tools and equipment in training institutions helps them to produce fabrics on small scale which also compete on the market	01	00	00	00	00	00	01	00	00	00	00	00
Total frequency of reasons.	**02**	**00**	**01**	**02**	**00**	**01**	**02**	**00**	**00**	**01**	**02**	**00**
Reasons for 'No'												
• Use of modern weaving tools and equipment in the world of work disadvantages learners who are not used to operate them for high quality production.	01	04	04	01	02	00	00	00	01	00	00	01
• Tools and equipment in training institutions help to equip learners with basic skills, but not the expertise of the skill appropriate to the world of work requirements	03	02	00	00	00	02	00	02	00	00	00	00
• The world of work requires industrial mass production skills, which are not acquired in training institutions using the available tools and equipment	01	01	01	00	01	00	01	01	00	00	00	00
• Because tools and equipment in training institutions are few, learners do not get chance to practice and perfect their skill to the expectations of the world of work.	01	01	01	03	00	00	00	00	00	00	00	00
Total frequency of reasons.	**06**	**08**	**06**	**04**	**03**	**02**	**01**	**03**	**01**	**00**	**00**	**01**
Reasons for 'Not sure'												
• Do not know what skills the world of work requires.	00	00	01	02	00	00	00	00	00	00	00	00
Total frequency of reasons.	**00**	**00**	**01**	**02**	**00**	**00**	**00**	**00**	**00**	**00**	**00**	**00**

Source: Field data

3.10.3 What challenges are faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda?

Responses providing answers to research question three, which sought information regarding the challenges faced in using the technology in terms of tools and equipment in training institutions in relation to the world of work were gathered using three instruments. The instruments were: a focus group discussion guide (Appendix I B) for students, a one to one interview guide (Appendix I C) for graduates and a questionnaire (Appendix I D) for lecturers. Sought responses included how challenges faced were overcome and suggestions on how to improve on the weaving technology in training institutions in relation to the world of work.

Responses from the three groups of respondents, to each question of each instrument for research question three were organised differently (Appendix IIB) and then collated according to each question in the instruments. Collated responses according to each question were from seven Tables: AIIB.1, AIIB.2, AIIB.3, AIIB.4, AIIB.5, AIIB.6 and AIIB.7 (Appendix IIB) and are presented in three Tables: 3.12, 3.13 and 3.14 each of which shows the questions, respondents, responses, frequency and total of frequencies. Table 3.12 is a merger of Tables AIIB.17, AIIB.19 and AIIB.21. Table 3.13 gives a summary of responses presented in Table 3.12, whereas Table 3.14 is a union of Tables AIIB.18, AIIB.20 and AIIB.22. The key to the tables is:

M : Representing male respondents

F : Representing female respondents

(f) : Representing frequency of responses

N : Number of respondents

Table 3.12 shows the challenges faced by the respondents in using the weaving technology during the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda and how they overcame the faced challenges.

Table 3.12: *Challenges faced in using weaving technology in terms of tools and equipment in training institutions in relation to the world of work in Uganda and how faced challenges were overcome.*

Question: What challenges do you face in the process of teaching and learning a weaving skill, using the weaving tools and equipment in training institutions in relation to the world of work?

Responses	**Frequency of a response**											
	Students (N=32)				Graduates (N=12)				Lecturers (N=5)			
	KyU		Mak		KyU		Mak		KyU		Mak	
	M	F	M	F	M	F	M	F	M	F	M	F
• Lack of enough working space	01	02	01	00	00	00	00	00	00	00	00	00
• Less weaving equipment compared to the number of students	01	05	00	06	01	02	02	00	01	01	02	00
• Poor working conditions of the equipment – they are broken, missing parts and not repaired.	02	01	04	00	01	01	00	01	00	00	00	00
• Lack of modern tools and equipment to equip learners with modern skills of weaving.	00	00	03	01	01	00	00	02	00	00	00	01
• Some weaving equipment is lacking in training institutions leading to theoretical teaching and learning of some concepts	04	00	00	01	00	00	01	00	00	00	00	00
Total frequency of challenges.	**08**	**08**	**08**	**08**	**03**	**03**	**03**	**03**	**01**	**01**	**02**	**01**
Question: How do you overcome the challenges?												
• Use the available space in small groups	00	01	01	00	00	00	00	00	00	00	00	00
• Sharing of tools and equipment	01	02	02	04	01	02	00	01	00	00	00	01
• We use group method of training	00	00	00	00	00	00	00	00	00	00	02	00
• Improvising for tools and equipment	01	02	00	02	01	01	01	00	00	00	00	00
• Making research to learn more	01	00	00	00	01	00	00	00	00	00	00	00
• Buy finished pieces of work to present for assignments	01	00	01	01	00	00	00	00	00	00	00	00
• Reduce the number of learning tasks given to students.	00	00	00	00	00	00	00	00	00	01	00	00
• Wait to undergo on job training to acquire the required skills in the world of work	00	00	02	00	00	00	00	00	00	00	00	00
• Simply do some small pieces of work to pass examinations.	00	02	01	01	00	00	02	02	00	00	00	00
• Learning some concepts theoretically	02	01	01	00	00	00	00	00	00	00	00	00
• Using workshops outside the institutions to do work	02	00	00	00	00	00	00	00	01	00	00	00
Total frequency of responses.	**08**	**08**	**08**	**08**	**03**	**03**	**03**	**03**	**01**	**01**	**02**	**01**

Table 3.13 presents each challenge respondents faced during the teaching and learning of a weaving skill in training institutions against how each challenge was overcome.

Table 3.13: *Challenges faced in using weaving tools and equipment in training institutions in relation to the world of work in Uganda against how each was overcome.*

Challenge	How a challenge was overcome
• Lack of enough working space	• Use the available space in small groups
• Less weaving equipment compared to the number of students	• Reduce the number of learning tasks given to students. • Sharing of tools and equipment • We use group method of training • Using workshops outside the institutions to do work • Simply do some small pieces of work to pass examinations • Buy finished pieces of work to present for assignments
• Poor working conditions of the equipment – they are broken, missing parts and not repaired	• Improvising for tools and equipment
• Lack of modern tools and equipment to equip learners with modern skills of weaving.	• Wait to undergo on job-training to acquire the required skills in the world of work
• Some weaving equipment is lacking in training institutions leading to theoretical teaching and learning of some concepts	• Making research to learn more • Learning and teaching some concepts theoretically

Source: Field data

Responses giving suggestions on how to improve the technology used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda were organised in Table 3.14. The table includes the question, suggested

measures to challenges, frequency of each suggestion according to gender of respondents and the total frequency of the suggested measures.

Table 3.14: *Suggestions on how to improve on institutional weaving technology in relation to the world of work in Uganda*

Question: Suggest measures that should be taken to improve on the technology used in the teaching and learning of a weaving skill in training institutions in Uganda, in relation to the world of work.

Suggested measures to challenges	**Frequency of measures**											
	Students (N=32)				Graduates (N=12)				Lecturers (N=5)			
	KyU		Mak		KyU		Mak		KyU		Mak	
	M	F	M	F	M	F	M	F	M	F	M	F
• Where possible, institutions should acquire equipment from the world market that will serve through time.	00	00	00	00	00	00	00	00	00	00	01	00
• Procure advanced machinery that will motivate learners, teachers and make competitive labour output.	00	00	02	00	00	00	00	00	00	01	01	00
• We need to advocate for apprenticeship as a way to bridge the gap between learning at school and work life.	00	00	00	00	00	00	01	00	01	00	00	00
• Repair and maintain good working conditions of the weaving equipment in place	01	04	01	00	00	00	00	00	00	00	00	00
• Increase the number of weaving equipment to cater for the big number of students	02	02	00	03	01	00	01	00	00	00	00	00
• Procure and install new weaving equipment of modern technology similar to that in the world of work.	04	02	04	03	01	03	00	03	00	00	00	01
• Increase on the working space	01	00	00	00	00	00	00	00	00	00	00	00
• Exposing learners to weaving industries with modern equipment	00	00	01	02	01	00	01	00	00	00	00	00
Total frequency of measures	**08**	**08**	**08**	**08**	**03**	**03**	**03**	**03**	**01**	**01**	**02**	**01**

Source: Field data

3.11 Data quality control

In order to manage the quality of data obtained, I ensure validity and reliability of instruments as discussed under section 3.8. In addition, I used different instruments to collect data related to each specific objective which increased on the dependability of the collected information.

3.12 Ethical consideration

When conducting research for the study ethical issues such as consent from administrators and respondents were put into consideration and thought of before interviews. I explained the purpose of the study to the respondents before data was collected from them. Keeping confidentiality and identities of the research participants protected and maintaining a cordial relationship in the field was vital. In respect of the foregoing, list of names of the respondents were not included in the appendices. In addition, other people's contributions to the study were acknowledged.

CHAPTER FOUR: PRESENTATION OF THE ANALYSIS AND INTERPRETATION OF DATA

4.1 Introduction

In this chapter, I present the analysis and interpretation of the organised data. For clarity and systematic flow of this chapter, the presentation of the analysis and interpretation of findings are in light of the three specific objectives that were derived from the purpose of the study in relation to the problem the research intended to investigate. Analysis and interpretation are simultaneously carried out for each research question of each research specific objective. Data are descriptively analyzed using figures derived from the tables of organised raw data. The figures are in form of coloured bar graphs as illustrations to support the descriptive explanations. Following are the three specific research objectives:

4.2. To identify the type of technology used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda

4.3. To investigate whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda

4.4. To establish challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda.

4.2 Type of technology used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda

The first specific objective of this research sought to identify the type of technology used in the teaching and learning of weaving skills in training institutions in relation to the

world of work in Uganda. The information needed was obtained through observation and photographing of the tools and equipment used in the two training institutions, KyU and Mak, and the three work places; NYTIL, PLUL and TEXDA of the world of work. The reason of identifying the technology, tools and equipment, used in training institutions in relation to the world of work in Uganda was to detect if learners can be in position of using the tools and equipment in the world of work after completion of training from training institutions. The observations were organised in a table and reflected in a figure for analysis.

4.2.1 Analysis

Raw data organised in chapter three were based on the type of tools and equipment identified in training institutions; KyU and Mak and the work places; NYTIL, PLUL and TEXDA in Uganda, in order to answer the first research question. The organised data was summarized and presented in Figures 4.1 and 4.2 in respect of Tables 3.4 and 3.5 respectively for easy analysis and interpretation. The figures are representing weaving tools and equipment respectively, used in the training institutions and in the work places. Each colour in Figures 4.1and 4.2 represents a tool and equipment respectively as were observed in the two training institutions and three work places. However, as it was noted earlier, the departure in the operation method of the tools and equipment at the two training institutions; KyU and Mak and one work place; TEXDA and those at the other two work places; NYTIL and PLUL, caused the difficulty to itemize weaving tools from equipment for recording and comparison purposes. Consequently Figure 4.1 showing weaving tools in training institutions and work places does not contain weaving tools used at the two work places; NYTIL and PLUL.

Tools (Tls) 1, 2, 3 and 4, which are hand shuttles, heddles for flow looms, heddles for table looms and a reed respectively were found in both training institutions and in one work place; TEXDA. Tl 5 which is a heddle for rigid heddle looms was found in one training institution; Mak and at a work place; TEXDA, while Tl 6 was only found at Mak. Tls 7, 8, 9,10,11,12 and 13 which are a denting hook, a flying shuttle bobbin, a flying shuttle, a paddle, a reed hook, umbrella swift and warping sticks respectively, were only found at a work place, which was TEXDA and were missing in the two training institutions. Tls 14, 15 and 16 which are combs, a drop spindle and a temple respectively were not found in either the training institutions; KyU and Mak and the work place, TEXDA. The foregoing description is illustrated in Figure 4.1.

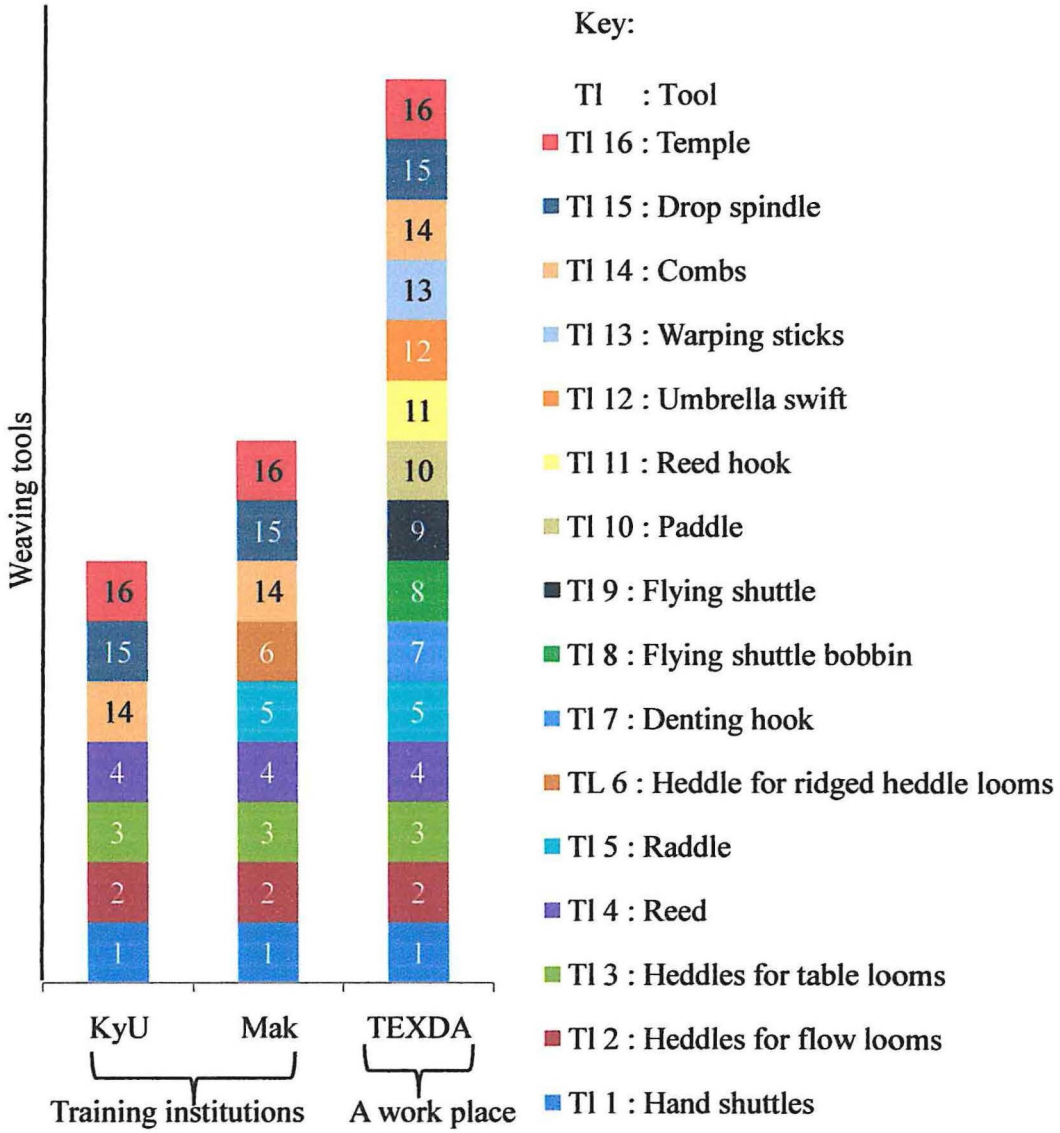


Figure 4. 1: Weaving tools used in training institutions and one work place (TEXDA).

Equipment (Eq) 1 and 2 which is a frame loom and a table loom respectively were found in the two training institutions; KyU and Mak and one work place; TEXDA. Eq 3 and 4 is a spinning wheel and a warping mill respectively. The two were found in one training institution; Mak and one work place; TEXDA, while Eq 5 and 6 which is a comb loom and an inkle loom was only found in the two training institutions. Eq 7 and 8 which is a flow loom and a jack loom was found at one training institution; KyU while

Eq 9 and 10 which is a circular loom and a rigid heddle loom was found at the other training institution; Mak. Eq 11; a flying shuttle loom was found in only one work place, which was TEXDA. Eq 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23 which is a blowing machine, a carding machine, a combing machine, a dying machine, a hammel, an inspecting machine, a lap former, a lessone, a ring frame, a roving machine, a yarn tester, and a yarn twister respectively was found only in the two work places; NYTIL and PLUL. Eq 24, 25, 26, 27, 28, 29, 30, 31, 32 and 33 is an air jet loom, a ben tonic creel, a ben tonic machine, a reverse osmosis machine, a schlafhorst creel, a schlafhorst machine, a sulzer projectile, a water jet loom, a zell head stock and a zell kettle respectively. It was found only at one work place of NYTIL while Eq 34, 35, 36 and 37 which is a collar machine, a comber machine a compactor and a relanite machine respectively was only at one work place of PLUL. Figure 4.2 on the next page illustrates the abovementioned description.

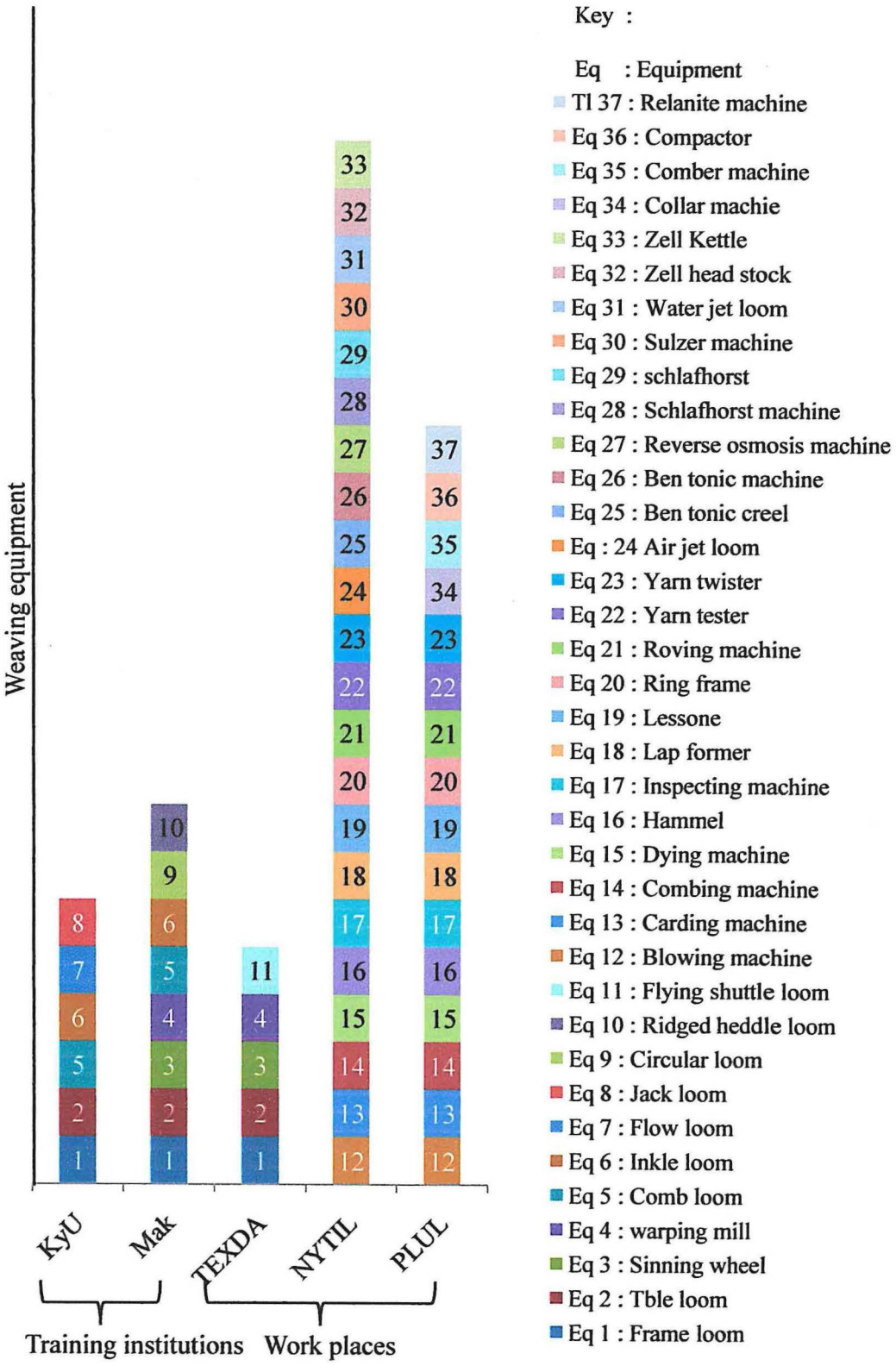


Figure 4. 1: Weaving equipment used in training institutions and in work places.

4.2.2 Interpretation

The analysed data on the type of technology, in terms of tools and equipment, used in the teaching and learning of a weaving skill in the two training institutions in relation to the world of work in Uganda indicated that the two training institutions; KyU and Mak and one work place; TEXDA, used manual technology of tools and equipment, compared to that electric – operated tools and equipment used at the other two work places; NYTIL and PLUL. Tools and equipment at the two training institutions and those at TEXDA, which are more applicable to manual weaving, are for small scale production, than those at NYTIL and PLUL which are run by electricity and used for industrial mass production. Training institutions lacked some of the manually operated weaving tools and equipment such as a denting hook, a flying shuttle bobbin, a flying shuttle, a paddle, a reed hook, umbrella swift, warping sticks and a flying shuttle loom respectively which were in the world of work for small scale production.

The analysis of weaving tools and equipment used in training institutions in relation to the world of work in Uganda could be interpreted that the weaving skill learners got from training institutions enabled them to operate only manual weaving tools and equipment for small scale production and not those electrically run for industrial mass production. This might be advantageous to individual who wish to work with or establish cottage industries where manual weaving skills are applicable for small scale production and to those in rural areas where there is no electric power supply to facilitate the use of electricity operated equipment. However, it turns out to be disadvantageous to those individual who would wish to be employed or could have the means of putting up large scale production units using mass production weaving equipment operated by

electricity. It is therefore in order for training institutions to used both manual and electricity operated equipment in their training programmes so that they equip learners with skills fitting them in all working situations in the world of work.

Lack of some weaving tools and equipment in training institutions that are in use in the world of work could be interpreted that learners left training institutions with a skills gap of manipulating some of the weaving tools and equipment they found in the world of work. Consequently, for graduates of weaving to be absorbed in the world of work as self or company employed, they needed to first undergo a course for further training from the world of work, so as to acquire the skill of using tools and equipment which are in the world of work and missing in training institutions.

4.3 Whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda.

Research question two sought information on whether the type of technology in terms of tools and equipment used in the teaching and learning of a weaving skill in training institutions has a relationship with that used in the world of work in Uganda. The relationship is in terms of matching, efficiency in use and ability of tools and equipment in training institutions to equip learners with skills required in the world of work in Uganda. Data for this objective was obtained from BAID and BVAD of KyU and BIFA of Mak, second and third year students who opted for weaving as an elective, graduates and lecturers of weaving at KyU and Mak. The respondents' responses were processed in tables and given in figure for analysis.

4.3.1 Analysis

Data that was organised in six Tables (3.6, 3.7, 3.8, 3.9, 3.10 and 3.11) is analyzed using Figure 4.3. The figure shows the respondents' responses on whether the type of technology used in the teaching and learning of a weaving skill in training institutions matches that used in the world of work, is efficient for use in the process of teaching and learning a weaving skill in relation to the world of work and equips learners with skills required in the world of work in Uganda.

Regarding to whether weaving tools and equipment used in the teaching and learning process in the two training institutions match those used in the world of work in Uganda, data that was organised in Tables 3.6 and 3.7 and reflected in Figure 4.3 was obtained from 12 graduates and five lecturers of weaving from the two training institutions; KyU and Mak. Two out of 17 respondents believed that the tools and equipment used in the training of a weaving skill in training institutions match those in the world of work in Uganda, while 15 out of 17 respondents believed that tools and equipment used in the teaching and learning of a weaving skill in training institutions do not match those in the world of work in Uganda. The two respondents who believed that the tools and equipment used in the training of a weaving skill in training institutions match those in the world of work were males; one graduate from KyU and 1 lecturer from Mak. The graduate said that it is because tools and equipment both in training institutions and those in the world of work can all be used to create fabrics of different designs, while the lecturer believed that it is because training institutions have tried to procure and install tools and equipment that match with those in the world of work but depending on the ever increasing technology, much more was still required.

Out of the 15 respondents who believed that tools and equipment used in the teaching and learning of a weaving skill in training institutions do not match those in the world of work in Uganda, seven were males and eight were females. The seven males comprised of two graduates and one lecturer of KyU and three graduates and one lecturer of Mak. Females included three graduates and one lecturer from each of the two training institutions. Six respondents including two males and one female graduates from KyU, one male and one female graduates from Mak and one female lecturer from Mak believed that weaving tools and equipment in training institutions do not match those in the world of work in Uganda because equipment in training institutions is manually operated and is in poor working conditions, unlike that in the world of work which is modern and automated. Three out of the 17 respondents; one male and one female graduates and one male lecturer all from Mak gave a reason that it is because training institutions have not upgraded their equipment to match modern industrial standards which brings about the mismatch between weaving tools and equipment in training institutions and those in the world of work. One male and one female graduates from Mak and one male lecturer from KyU said that the tools and equipment used in training institutions are old fashioned and cannot match the ones used in the industries, while one female graduate and one female lecturer both from KyU said that tools and equipment provided in training institutions give the students the basic knowledge in weaving and that the industrial equipment is not available in training institutions. Only one female graduate from KyU gave a reason of tools and equipment in training institutions being simple for learning purposes, not like the heavy equipment in the world of work for mass production as the reason why

weaving tools and equipment in training institutions do not match those in the world of work in Uganda.

Concerning to whether the weaving tools and equipment in training institutions are efficient for use in the process of teaching and learning a weaving skill in relation to the world of work in Uganda, data organised in Tables 3.8 and 3.9 and reflected in Figure 4.3 was gathered from 49 respondents, who included 32 students, 12 graduates and five lecturers. Eight out of 49 respondents agreed while 41 out of 49 respondents did not agree that weaving tools and equipment in training institutions are efficient for use in the process of teaching and learning a weaving skill in relation to the world of work in Uganda.

The eight respondents who agreed consisted of five students, two graduates and one lecturer. Of the five students, there were two males from KyU and one male and two females from Mak. The two graduates included one female one male from KyU and Mak respectively, while the lecturer was one male from Mak. Five out of eight gave a reason that using tools and equipment in training institutions helps one to learn basic skills of weaving, and more can be learnt from the world of work as a reason for weaving tools and equipment in training institutions being efficient for use in relation to the world of work in Uganda. The five respondents included one male and, two female students from KyU and Mak respectively, and one male and one female graduates from KyU and Mak respectively. Two out of eight respondents said that tools and equipment in training institutions are efficient for demonstration in learning a number of weave types for application in the world of work, while one said that the existing textile design projects in the world of work are using tools and equipment like that in training institutions already,

as reasons why weaving tools and equipment in training institutions are efficient for use in relation to the world of work in Uganda. The two respondents were male students, one from KyU and the other from Mak, while the one was a male lecturer from Mak.

Out of the 41 respondents who said that weaving tools and equipment in training institutions are not efficient for use in the process of teaching and learning a weaving skill in relation to the world of work in Uganda, 27 were students, 10 were graduates and four were lecturers of weaving, all of KyU and Mak. Students comprised of six males and 8 females from KyU and seven males and six females from Mak, while graduates comprised of three males and two females from KyU and two males and two females from Mak. Lecturers were one male and one female from each institution; KyU and Mak. Eleven out of 41 respondents including one male, and one female students and three male and two female students form KyU and Mak respectively, two male and one male graduates from KyU and Mak respectively and one female lecturer from Mak, gave a reason that tools and equipment in training institutions need to be upgraded to produce larger pieces of work as required in the world of work.

Ten respondents believed that weaving tools and equipment in training institutions were not efficient for use in relation to the world of work in Uganda because many of the tools and equipment in training institutions are broken down, not serviced and miss component parts. This was forwarded by one male and two female students, one female graduate and one male lecturer from KyU and three female students, and two female graduates from Mak. Another reason was that tools and equipment in training institutions are very few compared to the number of students, making it difficult for all to learn through making practice. This was given by nine respondents who included one

male and five female students from KyU, male and one female students from Mak and one male graduate from KyU. Also given by nine respondents was a reason that tools and equipment in training institutions do not equip learners with industrial production skills required in the world of work. This was given by six male students, three from each training institution, one female graduate from KyU, one male and one female graduates from Mak. Two respondents; one female and one male lecturers from KyU and Mak respectively said that weaving tools and equipment in training institutions are not efficient for use in relation to the world of work in Uganda because there is need to evolve to computer generated designs and use of power controlled looms in training institutions.

Pertaining to whether weaving tools and equipment used in training institutions equip learners with skills required in the world of work in Uganda, gathered data were organised in Tables 3.10 and 3.11which are reflected in Figure 4.3. The data were obtained from 49 respondents; 32 students, 12 graduates and five lecturers of weaving from the two training institutions; KyU and Mak. Out of 49 respondents, 11, including five students (two males from KyU and one female and one male from Mak), three graduates (one female and two male from KyU and Mak respectively) and three lecturers (one female and two males from KyU and Mak respectively) believed that the weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions equip learners with skills required in the world of work in Uganda. Thirty five respondents; 24 students (six males and eight females from KyU and six males and four females from Mak), nine graduates (three males and two females from KyU and one male and three females from Mak) and two lecturers (one male and one female from KyU and

Mak respectively) admitted that weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions do not equip learners with skills required in the world of work in Uganda. Three respondents, including one male and two female students made it clear that they were not sure of whether the weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions equip or do not equip learners with skills required in the world of work in Uganda.

Out of the 11respondents who agreed that the weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions equip learners with skills required in the world of work in Uganda, four supported their answer with a reason that it is because tools and equipment in training institutions help learners to acquire basic skill, which does not require the use of sophisticated equipment. They included one male and one female students from KyU and Mak respectively, one male graduate and one male lecturer from Mak. One male lecturer form Mak said that tools and equipment themselves are okay, though may require repairs from time to time and that students need to have zeal and creativity, while one female graduate and one female lecturer from KyU, one male and one female students from Mak said that knowledge given to the learners can enable them to transform fiber to fabric and be able to manipulate simple equipment to produce a woven fabric. One student and one graduate, both males from KyU and Mak respectively said that skill acquired by learners using tools and equipment in training institutions helps them to produce fabrics on small scale which also compete on the market.

Of the 35 respondents who admitted that weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions do not equip learners

with skills required in the world of work in Uganda, 14 gave a reason that the use of modern weaving tools and equipment in the world of work disadvantages learners who are not used to operate them for high quality production, while nine put forward tools and equipment in training institutions equipping learners with basic skills, but not the expertise of the skill appropriate to the world of work requirements as the reasons why institutional weaving tools and equipment do not equip learners with skills required in the world of work in Uganda. The 14 respondents included five male students; one from KyU and four from Mak, five female students; four from KyU and one from Mak, two male graduates from KyU and two lecturers; one male and one female from KyU and Mak respectively, While the nine were made up of three male and two female students from KyU and four female graduates; two from KyU and two from Mak. Six respondents,(three students; one male and one female from KyU and one male from Mak, two male graduates; one from KyU and the other from Mak and one female graduate from Mak) articulated that the world of work requires industrial mass production skills, which are not acquired in training institutions using the available tools and equipment. The other six respondents, including two male students; one from KyU and the other from Mak and four female graduates; one from KyU and three from Mak sounded that it is because tools and equipment in training institutions are few and learners do not get chance to practice and perfect their skill to the expectations of the world of work, as the reasons why weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions do not equip learners with appropriate skills required in the world of work in Uganda. The above descriptive analysis of data for research question two which sought information on whether the type of technology used in the teaching and

learning of a weaving skill in training institutions has a relationship with that used in the world of work in Uganda is illustrated by figure 4.3.

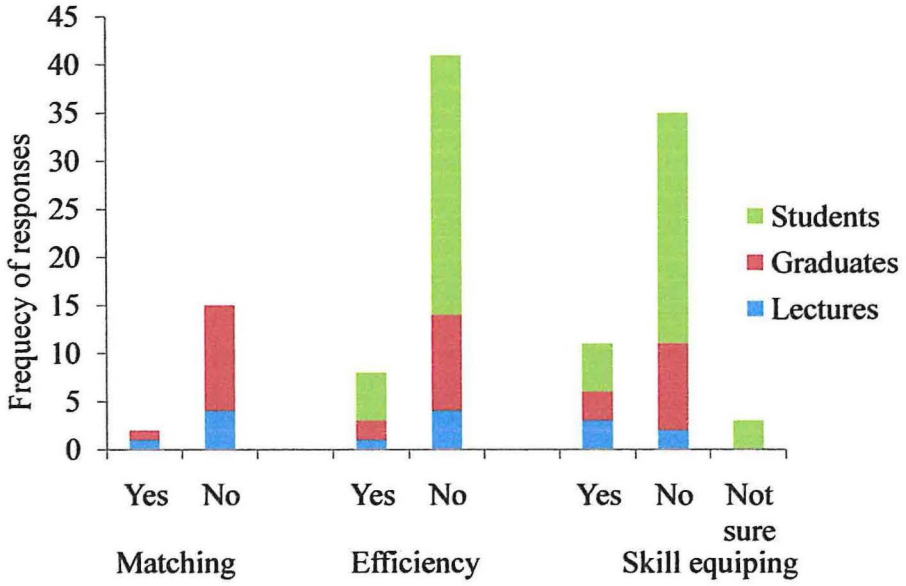


Figure 4. 1: Relationship of weaving technology in training institutions with the world of work in Uganda.

4.3.2 Interpretation

The analysed data on whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda indicated that there was a relationship gap between the tools and equipment in training institutions and the world of work. Tools and equipment in training institutions did not fully match those in the world of work and were not efficient for use in relation to the world of work in Uganda. The tools and equipment in training institutions equipped learners with the basics and not the mastery of the weaving skill.

The analysed data on the relationship of the type of technology in terms of tools and equipment, used in the teaching and learning of a weaving skill in training

institutions and the world of work in Uganda could be interpreted that learners did not fully acquire a weaving skill required in the world of work using weaving tools and equipment in training institutions. This is because the weaving tools and equipment used in training institutions are for small scale production, different from that applied for industrial mass production in the world of work where electric operated equipment is used. Therefore the skill learners got from training institutions does not totally match that needed and applied in the world of work, implying that there was need for training institutions to upgrade the technology used in the teaching and learning of a weaving skill to match it with that in the world of work, so as to fully equip learners with a skill relevant to the world of work requirements.

4.4 Challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda

Information sought by research question three was on challenges faced in using weaving technology in terms of tools and equipment in training institutions in relation to the world of work in Uganda. The sought information included how the challenges faced were overcome and suggested measures to improve on weaving tools and equipment used in training institutions in Uganda. Related data was gathered from 32 students, 12 graduates and 5 lecturers of weaving from the two training institutions; KyU and Mak.

4.4.1 Analysis

Data that were organised in three Tables (3.12, 3.13 and 3.14) is analyzed using Figure 4.4 showing the respondents, responses on the challenges faced and the frequency of the responses.

Four out of 49 respondents pointed out lack of enough working space as a challenge faced in the process of teaching and learning of a weaving skill using the tools and equipment in training institutions in relation to the world of work in Uganda. The four included two male students; from KyU and the other from Mak and two female students from KyU. Twenty one respondents, including 12 students (one male from KyU and 11 females; five from KyU and six from Mak), five graduates (three males; one from KyU and two from Mak, and two females from KyU) and four lecturers (three males; one from KyU and two from Mak, and one female from KyU.) said that the challenge faced is that of less weaving equipment in training institutions compared to the number of students of weaving. Ten respondents, made up of seven students (six males; two from KyU and four from Mak and one female from KyU) and three graduates (one male and one female from KyU and one female from Mak) gave poor working conditions of the equipment in training institutions as the challenge faced in the process of teaching and learning of a weaving skill using the tools and equipment in training institutions in relation to the world of work in Uganda, while eight respondents (four students; three males and one female from Mak, three graduates; one male and two females from KyU and Mak respectively and one female lecturer from Mak) forwarded lack of modern tools and equipment to equip learners in training institutions with modern skills of weaving as the challenge they faced. Lack of some weaving tools and equipment in training

institutions leading to theoretical teaching and learning of some concepts was also given as one of the challenges faced in the process of teaching and learning of a weaving skill, using the tools and equipment in training institutions in relation to the world of work in Uganda. This was given by five respondents, including four male students from KyU and one graduate from Mak.

As regards to how respondents overcame challenges faced in the process of teaching and learning a weaving skill using institutional tools and equipment in relation to the world of work in Uganda, one female student from Mak said that they used the available space in small groups to carry out their weaving activities, in order to overcome the challenge of lack of enough working space. For the challenge of less weaving equipment compared to the number of students, 14 respondents, including 9 students (one male and one female from KyU and two males and four females from Mak), four graduates (one male and two females from KyU and one female from Mak) and one female lecturer from Mak said that they shared the tools and equipment, one female lecturer from KyU said that she reduces the number of learning tasks given to students, while two male lecturers from Mak said that they use group method of training. Two male students and one male lecturer from KyU said that they use workshops outside the institutions to do work, three students; one male from KyU and one male and a female from Mak said that some students buy finished pieces of work to present for assignments, while four students (two males from KyU and one male and a female from Mak) and four graduates (two males and two females from Mak) said that they simply do some small pieces of work to pass examinations. As far as the challenge of poor working conditions of the equipment is concerned, five students; one male and two females from KyU and

two females from Mak, and three graduates; one male and one female from KyU and one female from Mak improvised for tools and equipment. For lack of modern tools and equipment to equip learners with modern skills of weaving, two male graduates from KyU said that they waited to undergo on job training to acquire the required skills in the world of work, while for the challenge of lacking some equipment in training institutions leading to theoretical teaching and learning of some concepts, one male student and one male graduate from KyU made research to learn more while four students; two males and one female from KyU and one male from Mak said that they leant some concepts theoretically.

In response to the measures that should be taken to improve the technology used in the teaching and learning of a weaving skill in training institutions in Uganda, in relation to the world of work, 21 respondents including 13 students (four males and two females from KyU and four males and three females from Mak), seven graduates (one male from KyU and three females from each training institution; KyU and Mak) and one female lecturer from Mak cited procuring and installing new weaving equipment of modern technology similar to that in the world of work, as a measure to be taken in order to improve the technology used in the teaching and learning of a weaving skill in training institutions, in relation to the world of work in Uganda. This was followed by nine respondents who said that training institutions should increase the number of weaving equipment to cater for the big number of students. The nine included seven students (two male from each training institution; KyU and Mak and one female from Mak) and two male graduates; one from each training institution. Six respondents, all of whom were students (two males; one from each training institution and four females from KyU),

believed that repairing and maintaining good working conditions of the equipment in place would be a measure to improve the technology used in the teaching and learning of a weaving skill in training institutions in Uganda. Exposing learners to weaving industries with modern equipment was another measure that was suggested by five respondents, who included 3 students (a male and two females from Mak) and 2 male graduates; one from each training institution. Four respondents (2 male students from Mak and one female and one male lecturers from KyU and Mak respectively) forwarded Procuring advanced machinery that will motivate learners, teachers and make competitive labour output, while the other two respondents; male lecturers from KyU and Mak respectively talked of the need to advocate for apprenticeship as a way to bridge the gap between learning at school and work life and training institutions, where possible to acquire equipment from the world market that will serve through time as measures to take towards improving technology used in the teaching and learning of a weaving skill in training institutions in Uganda. Figure 4.4 illustrates the foregoing description of the challenges faced in using the weaving technology in training institutions in relation to the world of work in Uganda.

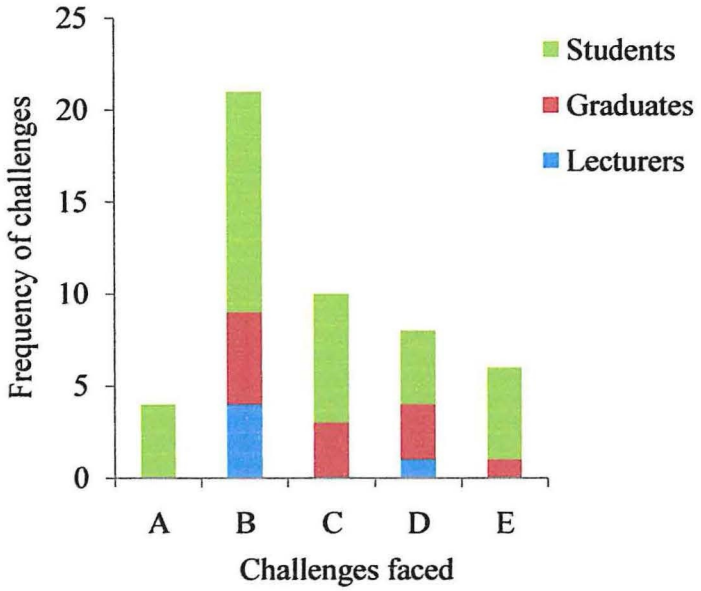


Figure 4. 1: Challenges faced in the process of teaching and learning a weaving skill using institutional tools and equipment in relation to the world of work in Uganda.

Key:

A- Lack of enough working space.

B- Less weaving equipment compared to the number of students.

C- Poor conditions of the equipment – they are broken, missing parts and not repaired.

D- Lack of modern tools and equipment to equip learners with modern skills of weaving.

E- Some weaving equipment is lacking in training institutions leading to theoretical teaching and learning of some concepts.

4.4.2 Interpretation

The analysed data on the challenges faced in using weaving tools and equipment in training institutions in relation to the world of work in Uganda indicated that there were a

number of challenges that were faced in the process of teaching and learning a weaving skill using the technology in training institutions. The challenges were lack of enough working space, less weaving equipment compared to the number of students, poor working conditions of the equipment which were broken, missing parts and not repaired, lack of modern tools and equipment to equip learners with modern skills of weaving and lack of some weaving tools and equipment leading to theoretical teaching and learning of some concepts.

The analysis of the challenges faced in using weaving tools and equipment in training institutions in relation to the world of work in Uganda could be interpreted that the learning of a weaving skill in training institutions is faced by a number of challenges which affect the learners' acquisition of a skill.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter, I discuss findings, draw conclusion and make recommendations basing on the objectives and purpose of the study.

5.2 Discussion

Under this section, I discuss findings under each specific objective of the study. The objectives were set to:

5.2.1 identify the type of technology used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda,

5.2.2 investigate whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda and

5.2.3 establish challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda.

Findings are stated, and backed by reviewed scholarly views. My opinions based on my previous experiences from work, training attended to, shared experiences with my colleagues and from my study on the MVP program are also reflected in the discussion.

5.2.1 Type of technology used in the teaching and learning of a weaving skill in training institutions and that in the world of work in Uganda

It was found out that the two training institutions; KyU and Mak and one work place; TEXDA, used tools and equipment of manual technology compared to that used at the other two work places; NYTIL and PLUL. Tools and equipment at the two training institutions and those at TEXDA were manual for small scale production, while those at NYTIL and PLUL were run by electricity and used for industrial mass production.

Learners in training institutions ought to be equipped with skills enabling them to manipulate the existing new technology in the world of work, so that they link what is studied from training institutions to the world of work. Bhyat in Mjelde and Daly (2006, pp.40- 44), asserts that there is need to integrate the technology in use within the prevailing workplace context in the learning process through a process of mediation between facilitator, learner and technology itself. Bhyat affirms that this provides a meaningful link between work and theory. Closely related to Bhyat's assertion, Bayraktaroglu and Kutanis (2000, p.2) argue that the new wave of training is based on 'new training technologies' and this is related to the development path. Bayraktaroglu and Kutanis' argument manifests that training using new technology is vital if learners are to develop skills required in the world of work, where new technology is in use.

In relation to the foregoing argument, Donahoo & Whitney, cited in Summak and Samancıoğlu (2011, p. 1), maintain that schools cannot truly prepare students to function within society if they fail to cover the equipment and skills which are actually used in the real world. Donahoo and Whitney continue to argue that schools cannot improve the overall value of their programmes without sufficiently integrating new technology in

their programmes. This means that for training institutions to truly train students in skills required on the labour market, they should integrate and use the new technology in their training programmes. Sannerud & Sund (2010, p.31) maintain that technology is important in the world of work. They assert that technology has helped in enhancement of creative and independent problem solving in the modern working life. If the new technology in the world of work is not well integrated in the training programmes, learners will continuously be trained in fields and for jobs that are obsolete. This therefore calls for training institutions to integrate the technology used in learning situations with that used in the work place context, which will facilitate learners to acquire a skill that is relevant to the world of work.

Findings also indicated that training institutions lacked some of the manually operated weaving tools and equipment for small scale production that are in the world of work. For learners to acquire and master a skill, they need to make enough practice with tools and equipment during their training. The practice helps learners to relate theory to practice and gives them mastery of the use of tools and equipment. Nilsson (2011)[9] argues that, understanding working tools to be used in training institutions and workplaces is very important. Related to Nilsson's argument, Unwin and Wellington cited in Bhyat in Mjelde and daly (2006 p.45), argue that during vocational training, the theory should be related to more dependable activity to provide more information and understanding for the learners. This, according to Unwin and Wellington is because some students fail to understand the theoretical topics until they carry out more authentic practical activities. For authentic practical activities to take place, tools and equipment have to be provided to learners. Therefore, this calls for training institutions to provide

[9] A verbal presentation by Dr Professor Lennart Nilsson to MVP students at KyU

their learners on training with all the required tools and equipment so that they practice in order to master the tools and equipment to attain skills wanted in the world of work. Practical learning tasks allow learners to freely express themselves and explore their full potential as far as vocational practice and skills development are concerned. Lao-tzu[10] a philosopher, during his lifetime, had this assertion; *"If you tell me, I will listen, if you show me, I will see. But if you let me experience, I will learn"*. This means that learning is through doing or experiencing and for learners to acquire practical skills, they have to be exposed to practical learning tasks, which are possible only if required tools and equipment are available.

5.2.2 Whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda.

Findings on whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda showed that there was a relationship gap between the tools and equipment in training institutions and the world of work. Tools and equipment in training institutions did not fully match those in the world of work and were not efficient for use in relation to the world of work in Uganda. They equipped learners with the basics and not the mastery of the weaving skill. This affects the learners' productivity when they eventually join the world of work. Worker productivity in Uganda is quite low, due to a combination of low starting skills, poor or non-existent training and use of outdated equipment (UPSTPCBP 2001, p.12).

Tools and equipment in training institutions should match these used in the world of work to fully prepare learners with a skill relevant to the world of work requirements.

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[10] Retrieved on 24th November 2012 from: http://www.unevoc.unesco.org/publication

If tools and equipment used by learners in training institutions do not match those in the world of work, learners are likely to be trained in skills, fields and for jobs that do not exist or that are out dated. In support of this, Miller cited in Barabasch in Mjelde and Daly (2006, p. 147), asserts that vocational students are sometimes trained in the fields that do not exist as a result of the technological changes, and as such, those students' training does not match the job market requirements. This therefore calls for training institutions to constantly keep upgrading their training tools and equipment to match those prevailing in the world of work, to avoid training learners in skills that have become obsolete in the world of work due to changes in technology. Related to the aforementioned, learners in training institutions have to master the use of tools and equipment if they are to effectively apply the required skills in the world of work. Nilsson (2008)[11] emphasizes that to master the tools in order to achieve the wanted work results is very important and that there is need to pay attention to that in all Vocational Training Institutions. For that reason, adequate and relevant tools and equipment ought to be provided to learners undertaking training in institutions, so that they constantly make practice to master the skill agreeable to the world of work requirements.

5.2.3 Challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda

Findings showed that there were a number of challenges that were faced in the process of teaching and learning a weaving skill using the technology in training institutions. The challenges, among others included: Less weaving equipment compared to the number of students, lack of modern tools and equipment to equip learners with modern skills of

[11] Paper presentation by Professor Lennart Nilsson on: *Vocational Didactics*. Part of a manuscript on; *vocational didactics (Nilsson, L. 2008)*.

weaving and lack of some weaving equipment leading to theoretical teaching and learning of some concepts.

Enough weaving tools and equipment should be provided to learners in training institutions, so that they get a chance to make enough practice to develop and perfect their skill in preparation for the world of work. This is because vocational education under which weaving lies, is practical oriented and its success is dependent on the availability of teaching tools and equipments. Hampton cited in Chinien and Kotsik (2003 p.50) notes that the teaching of practical skills would always require the support of a range of tools or equipment. Training institutions have to therefore make every effort to acquire enough tools and equipment relevant in training learners and adequately preparing them with a skill applicable in the world of work.

In regard to lack of modern tools and equipment to equip learners with modern skills of weaving, learners in training institutions need to be exposed to modern weaving technology in order for them to acquire modern skills of weaving. This requires training institutions to acquire and install modern tools and equipment in their training workshops or learners to regularly visit workshops in the world of work with modern weaving equipment for practice with those modern weaving tools and equipment. This will equip learners with modern weaving skills required in the world of work. Miller, cited in Summak and Samancıoğlu (2011, p.1) observes that students must be able to use new technology if they are going to live and work successfully in an increasingly complex and information-driven society. In relation to Miller's observation, Griffin cited Summak and Samancıoğlu (2011, p.1) also adds that students must be technology literate in order to excel in future jobs and to be productive citizens. To have technology literacy learners

have to be exposed to new technology prevailing in the world of work which has to be integrated in the teaching and learning programmes in training institutions.

Availability of tools and equipment in training institutions facilitates the teaching and learning of practical work skills. Teaching and learning of some concepts theoretically because some weaving equipment is lacking in training institutions does not equip learners with the masterly of the skill. Nilsson (2008)[12] pointes it out that training is making human competent to master tasks by use of tools. Therefore, training is incomplete without use of tools and equipment and therefore unsuccessful. Tools and equipment facilitate practical training which is essential in vocational education. Nilsson cited in Aarkrog and Jorgensen (2008, pp.248-249) maintains that vocational education is comprised of practical work skills, vocational theory and general theory. From Nilsson's argument, without practical work skills, which are conducted using tools and equipment, vocational education is incomplete, and therefore no practical skills required in the world of work will be acquired by the learners. It is for this reason as to why it is vital for training institutions to make sure that all training tools and equipment necessary for practical work skills are put in place to avoid theoretical teaching and learning of some vocational concepts.

[12] Paper presentation by Professor Lennart Nilsson on: *Vocational Didactics*. Part of a manuscript on; *vocational didactics, chapter 6 (Nilsson, L. 2008).*

5.3 Conclusions

In this section, I draw conclusions basing on the findings, guided by the objectives of the study.

5.3.1 Type of technology used in the teaching and learning of a weaving skill in training institutions and that in the world of work in Uganda.

Manual technology is used in the teaching and learning of a weaving skill in training institutions for small scale production, compared to that used in the world of work in Uganda, where electricity run equipment of modern technology is employed for industrial mass production. Training institutions also lack some of the manually operated basic weaving tools and equipment for small scale production that are believed be to essential in the process of teaching and learning of the basics of a weaving skill.

5.3.2 Whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda.

There exists a relationship gap between the technology in training institutions and the world of work. Tools and equipment in training institutions are not efficient for use in relation to the world of work in Uganda, and they do not equip learners with the mastery of the weaving skill required on the labour market.

5.3.3 Challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda.

A number of challenges are faced when using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in

Uganda. The challenges affect the students' skill acquisition in relation to the world of work.

5.4 Recommendations

In this section, I make recommendations, basing on findings and conclusions on each objective of the study.

In accordance to the type of technology used in the teaching and learning of a weaving skill in training institutions and that in the world of work in Uganda, I recommend that the following be put into consideration:

- Training institutions should continuously upgrade the technology used in the teaching and learning of a weaving skill, to fully match that used in the world of work in Uganda. Modern technological weaving equipment operated by electricity used in the world of work for mass production should be installed in training institutions' workshops to equip students with mass production skills required in the labour market.
- Training institutions should put in place all the essential basic weaving tools and equipment lacking in their training workshops. They are necessary for equipping students with the basic weaving skills.

In regard to whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda, I give the following recommendation:

- Training institutions should liaise with work places to allow students spend much of their training in their workshops, working with the tools and equipment in the world

of work. This will equip students with the required labour market skills applicable in the world of work.

- Training institutions should incorporate apprenticeship in their training programmes as a way to bridge the gap between learning at school and work life.
- The curriculum taught in training institutions should be revised to cater for the change in technology in the world of work.

As far as the challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda are concerned, training institutions should do the following:

- Put in place enough weaving tools and equipment to cater for the number of students who take weaving as an elective. This will allow each student to have enough time to make sufficient practice with the weaving tools and equipment in a bid to develop the learnt skills in preparation for the world of work. The weaving tools and equipment should be maintained in good working conditions, repairing the broken pieces and replacing the missing component of the equipment.
- Avail to students all tools and equipment required in the process of training, to avoid theoretical teaching and learning of some concepts due to lack of some weaving equipment in training institutions. Students and lecturers should also be encouraged to always visit different institutions so that they can always learn using tools and equipment that could be missing in one institution but available in the other.
- Provide students with enough working space. This will enable students to freely experiment and express themselves with the tools and equipment in place.

5.5 Areas for further research

- This study considered a case of weaving skill at selected formal training institutions and work places in Uganda. A similar study should be carried out considering the training of other vocational skills.
- A similar study should also be carried out in training institutions and work places that are in a rural setting in Uganda, where there is no supply of electricity to find out whether the weaving skill learnt from training institutions relates to the rural setting world of work.

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APPENDICES:

Appendix IA: Observation guide for the type of technology in training institutions and in the world of work.

1. What type of technology is used in the teaching and learning of a weaving skill in training institutions in Uganda?

Name of a training institution. .....

a). Tools.

i. Shuttles, ☐
ii. Spindles, ☐
iii. Fringe twisters, ☐
iv. Heddles, ☐
v. Beaters ☐
vi. Combs, ☐
vii. Raddles, ☐
viii. Reeds, ☐

Others.

ix. ..... ☐
x. ..... ☐
xi. ..... ☐

b). Equipment.

i. Cardboard looms, ☐
ii. Frame looms, ☐
iii. Rigid heddle looms, ☐
iv. Inkle looms, ☐
v. Dowel looms ☐

Others

vi. ..... ☐
vii. ..... ☐
viii..... ☐
ix..... ☐
x. ..... ☐
xi. ..... ☐

2. What type of technology is used in weaving in the world of work in Uganda?

Name of a work place. .....

a). Tools.

i. Shuttles, ☐

ii. Spindles, ☐

iii. Fringe twisters, ☐

iv. Heddles, ☐

v. Beaters ☐

vi. Combs, ☐

vii. Raddles, ☐

viii. Reeds, ☐

Others.

ix. ..... ☐

x. ..... ☐

xi. ..... ☐

b). Equipment.

i. Cardboard looms, ☐

ii. Frame looms, ☐

iii. Rigid heddle looms, ☐

iv. Inkle looms, ☐

v. Dowel looms ☐

Others

vi. ..... ☐

vii. ..... ☐

viii..... ☐

ix. ..... ☐

x. ..... ☐

xi. ..... ☐

END

Appendix IB: Focus group discussion guide for students of weaving.

Name of training institution. .....

Dear Students,

I am Mujuni, Tito from Kyambogo University pursuing a Masters Degree in Vocational Pedagogy. I am carrying out a study on: *"Influence of Technology on Teaching and Learning in VET in relation to the World of Work: A case of Weaving as a Skill at Selected Formal Training Institutions and Work places in Uganda".*

Objectives of the study are:

i. To identify the type of technology used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda

ii. To investigate whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda

iii. To establish challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda.

I humbly request you to give sincere information which I will only use for academic purposes in this study. The study findings will be used to suggest ways of improving on the technology used in the teaching and learning of a skill in training institutions in relation to the world of work. The information given will be treated with maximum confidentiality.

1. a) i. Are the weaving tools and equipment in this institution efficient for use in the process of learning a weaving skill in relation to the world of work in Uganda?

   ii.Give reasons for your answer in 1(a) i above

b) i. Do the weaving tools and equipment used in the learning process equip you with skills required in the world of work in Uganda?

ii. Give reasons for your answer in 1(b) i above

2. a) What challenges do you face in the process of learning a weaving skill, using the weaving tools and equipment in this training institution in relation to the world of work?

b) How do you overcome the challenges in 2(a) above?

c) Suggest measures that should be taken to improve on the technology used in the teaching and learning of a weaving skill in training institutions in Uganda, in relation to the world of work.

Thank you very much for your cooperation

Appendix IC: Interview guide for graduates of weaving.

Name of institution. .....

Dear Graduate,

I am Mujuni, Tito from Kyambogo University pursuing a Masters Degree in Vocational Pedagogy. I am carrying out a study on *"Influence of Technology on Teaching and Learning in VET in relation to the World of Work: A case of Weaving as a Skill at Selected Formal Training Institutions and Work places in Uganda"*.

Objectives of the study are:

i. To identify the type of technology used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda

ii. To investigate whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda

iii. To establish challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda.

I humbly request you to give sincere information which I will only use for academic purposes in this study. The study findings will be used to suggest ways of improving on the technology used in the teaching and learning of a skill in training institutions in relation to the world of work. The information given will be treated with maximum confidentiality.

1 a) i. Do the weaving tools and equipment used in the teaching and learning process in training institutions match those used in the world of work in Uganda?

ii. Give reason for your answer in 1(a) i above

b) i. Were the weaving tools and equipment in the institution you went to efficient for use in the process of learning a weaving skill in relation to the world of work in Uganda?

ii. Give reason for your answer in 1 (b) i above)

c) i. Did the weaving tools and equipment used in the learning process in the training institution equip you with skills required in the world of work?

ii Give reason for your answer in 1(c) i above)

2. a) What challenges did you face in using the tools and equipment in training institutions to acquire a weaving skill in relation to the world of work?

c) How did you overcome the challenges in 2(a) above?

d) Suggest measures that should be taken to improve on the technology, used in teaching and learning of a weaving skill in training institutions in Uganda, in relation to the world of work.

Thank you very much for your cooperation.

Appendix ID: Questionnaire for lecturers of weaving.

Name of institution.....

Dear Sir/Madam,

I am Mujuni, Tito from Kyambogo University pursuing a Masters Degree in Vocational Pedagogy. I am carrying out a study on *"Influence of Technology on Teaching and Learning in VET in relation to the World of Work: A case of Weaving as a Skill at Selected Formal Training Institutions and Work places in Uganda"*.

Objectives of the study are:

i. To identify the type of technology used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda

ii. To investigate whether the type of technology used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda

iii. To establish challenges faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda.

I humbly request you to give sincere information which I will only use for academic purposes in this study. The study findings will be used to suggest ways of improving on the technology used in the teaching and learning of a skill in training institutions in relation to the world of work. The information given will be treated with maximum confidentiality.

Instructions: Please state or tick in a box ☑ where appropriate.

1. a) i. Do weaving tools and equipment used in the teaching and learning of a weaving skill in this institution match with those used in the world of work?

   Yes ☐ No ☐

   ii. Give reason for your answer in 1.a) i above

   .....

   b) i. Are the weaving tools and equipment in this training institution efficient for use by students of weaving in relation to the world of work?

   Yes ☐ No ☐ I do not know ☐

   ii. Give reason for your answer in (b i) above

   .....

2. a) i. Do weaving tools and equipment used in the teaching and learning of a weaving skill in this institution equip learners with skills required in the world of work?

   Yes ☐ No ☐

   ii Give reason for your answer in (c i) above

   .....

3. a) What challenges do you face in the process of training learners a weaving skill using the tools and equipment in this institution in relation to the world of work?

   .....

   b). How do you overcome the challenges in 2(a)?

   .....

   c). Suggest measures to be taken to improve the technology used in the teaching and learning of a weaving skill in training institutions in Uganda, in relation to the world of work.

   .....

Thank you very much for your cooperation.

Appendix IIA: Organisation of raw data according to each instrument used for research question two for each category of respondents

Does the type of technology used in the teaching and learning of a weaving skill in training institutions relate to the world of work in Uganda?

Research question two sought information on whether the type of tools and equipment used in the teaching and learning of a weaving skill in training institutions has a relationship with the world of work in Uganda. The relationship was in terms of matching, efficiency and equipping. The responses were gathered using three instruments; a focus group discussion guide (Appendix I B) for students, a one to one interview guide (Appendix I C) for graduates and a questionnaire (Appendix I D) for lecturers. Reponses to research question two from each category of respondents were separately organised in different tables, which contain the questions, respondents, responses, frequency and total of frequencies. The key to the tables is as follows:

M : Represents males

F : Represents females

(f) : Represents frequency

Yr : Represents year

N : Number of respondents

Responses for research question two collected from students using a focus group discussion guide were organised in four Tables (Appendix (A) IIA.1, AIIA.2, AIIA.3), and AIIA.4). Table AIIA.1 represents the responses to whether weaving tools and

equipment used in the teaching and learning process in the two training institutions were efficient for use in relation to the world of work in Uganda.

Table AIIA.1: *Efficiency of weaving tools and equipment in training institutions in relation to the world of work in Uganda*

Question 1 a) i: Are weaving tools and equipment in training institutions efficient for use in the process of learning a weaving skill in relation to the world of work in Uganda?

Respondents (Students)		**Responses (N = 32)**									
		Yes					No				
		KyU		Mak		(f)	KyU		Mak		(f)
		M	F	M	F		M	F	M	F	
	BAID	01	00	00	00	O1	01	02	00	00	03
Yr II	BVAD	00	00	00	00	00	02	02	00	00	04
	BIFA	00	00	01	01	02	00	00	03	03	06
	BAID	01	00	00	00	01	01	02	00	00	03
Yr III	BVAD	00	00	00	00	00	02	02	00	00	04
	BIFA	00	00	00	01	01	00	00	04	03	07
Total of responses and frequencies		**02**	**00**	**01**	**02**	**05**	**06**	**08**	**07**	**06**	**27**

Source: Field data.

Table AIIA.2 shows the organised responses of the reasons given by students for the "Yes" and "No" presented in Table AIIA.1.

Table AIIA.2: *Reasons for "Yes" and "No" in question 1 a) i*

Question 1 a) ii: Give reason for your answer in 1 a) i above.												
Reason for "Yes in 1 a) i above	**Frequency of reasons**											
	Students (N = 32)											
	KyU								Mak			
	Yr II				Yr III				Yr II		Yr III	
	BAID		BVAD		BAID		BVAD		BIFA		BIFA	
	M	F	M	F	M	F	M	F	M	F	M	F
• Using tools and equipment in training institutions helps one to learn basic skills of weaving, and more can be learnt from the world of work.	00	00	00	00	00	00	01	00	00	01	00	01
• Tools and equipment in training institutions are efficient for demonstration in learning a number of weave types for application in the world of work.	01	00	00	00	00	00	00	00	01	00	00	00
Total frequency of reasons	**01**	**00**	**00**	**00**	**00**	**00**	**01**	**00**	**01**	**01**	**00**	**01**
Reason for "No in 1a) i above												
• Many of the tools and equipment in training institutions are broken down, not serviced and miss component parts.	01	00	01	01	00	00	00	01	00	01	01	01
• Tools and equipment in training institutions need to be upgraded to produce larger pieces of work as required in the world of work.	00	00	01	00	00	01	00	00	01	02	01	01
• Tools and equipment in training institutions are very few compared to the number of students, making it difficult for all to learn through making practice	00	02	00	01	00	01	01	01	00	00	01	01
• Tools and equipment in training institutions do not equip learners with industrial production skills required in the world of work	00	00	00	00	01	00	01	00	02	00	01	00
Total frequency of reasons.	**01**	**02**	**02**	**02**	**01**	**02**	**02**	**02**	**03**	**03**	**04**	**03**

Source: Field data.

Regarding to whether weaving tools and equipment in training institutions equip learners with skills required in the world of work in Uganda, students' responses were organised in Table AIIA.3.

Table AIIA.3: *Whether weaving tools and equipment in training institutions equip learners with skills required in the world of work in Uganda, given by students of weaving.*

Question 1 b) i : Do weaving tools and equipment used in the learning process equip you with skills required in the world of work in Uganda?

Respondents		**Responses (N = 32)**														
(Students)		Yes					No					Not sure				
		KyU		Mak		(f)	KyU		Mak		(f)	KyU		Mak		(f)
		M	F	M	F		M	F	M	F		M	F	M	F	
	BAID	01	00	00	00	O1	01	02	00	00	03	00	00	00	00	00
Yr II	BVAD	00	00	00	00	00	02	02	00	00	04	00	00	00	00	00
	BIFA	00	00	01	01	02	00	00	03	03	06	00	00	00	00	00
	BAID	01	00	00	00	01	01	02	00	00	03	00	00	00	00	00
Yr III	BVAD	00	00	00	00	00	02	02	00	00	04	00	00	00	00	00
	BIFA	00	00	00	01	01	00	00	03	01	04	0	00	01	02	03
Total of responses and frequencies		**02**	**00**	**01**	**02**	**05**	**06**	**08**	**06**	**04**	**24**	**00**	**00**	**01**	**02**	**03**

Source: Field data.

Table AIIA.4 is divided in three sections to contain reasons for "Yes", "No" and "Not sure" responses by students which was organised in Table AIIA.3.

Table AIIA.4: *Reasons for "Yes", "No" and "Not sure" to whether weaving tools and equipment in training institutions equip learners with skills required in the world of work in Uganda, given by students of weaving.*

Question 1 b) ii: Give reason for your answer in 1 b) i above.												
Reason for "Yes" in 1 b) i above	**Frequency of reasons**											
	Students (N = 32)											
	KyU								Mak			
	Yr II				Yr III				Yr II		Yr III	
	BAID		BVAD		BAID		BVAD		BIFA		BIFA	
	M	F	M	F	M	F	M	F	M	F	M	F
• Tools and equipment in training institutions help learners to acquire basic skill, which does not require the use of sophisticated equipment	00	00	00	00	01	00	00	00	00	00	00	01
• Skills given to the learners can enable them to transform fiber to fabric and be able to manipulate simple equipment to produce a woven fabric	00	00	00	00	00	00	00	00	01	01	00	00
• The skill acquired by learners using tools and equipment in training institutions helps them to produce fabrics on small scale	01	00	00	00	00	00	00	00	00	00	00	00
Total frequency of reasons.	**01**	**00**	**00**	**00**	**01**	**00**	**00**	**00**	**01**	**01**	**00**	**01**
Reason for "No" in 1 b) i above												
• Use of modern weaving tools and equipment in the world of work disadvantages learners who are not used to operate them for high quality production.	01	00	01	02	00	01	00	00	03	00	01	01
• Tools and equipment in training institutions help to equip learners with basic skills, but not the expertise of the skill appropriate to the world of work requirements	00	01	00	00	01	01	02	00	00	00	00	00
• The world of work requires industrial mass production skills, which are not acquired in training institutions using the available tools and equipment	00	01	01	00	00	00	00	00	00	00	01	00
• Because tools and equipment in training institutions are few, learners do not get chance to practice and perfect their skill to the expectations of the world of work.	00	00	00	00	00	00	00	02	00	03	01	00
• Total frequency of reasons.	01	02	02	02	01	02	02	02	03	03	03	01
Reasons for 'Not sure' in 1 b) i above												
• Not sure of what skills the world of work requires.	00	00	00	00	00	00	00	00	00	00	01	02
Total frequency of reasons	**00**	**00**	**00**	**00**	**00**	**00**	**00**	**00**	**00**	**00**	**01**	**02**

Responses collected from graduates of KyU and Mak for research question two using a one to one interview guide (Appendix IC) were organised in six Tables (AII.5, AIIA.6, AIIA.7, AIIA.8, AIIA.9, and AII.10) according to each question on the instrument. Each of the tables shows the questions, respondents, responses, frequency and total of frequencies.

Responses to whether weaving tools and equipment used in the teaching and learning processes in the two training institutions match those used in the world of work in Uganda were organised in Table AIIA.5.

Table AIIA.5: *The matching of weaving tools and equipment in training institutions against those in the world of work in Uganda, by graduates of weaving.*

Question 1 a) i: Do weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions match those used in the world of work in Uganda?										
Respondents	**Responses (N = 12)**									
	Yes					No				
	KyU		Mak		(f)	KyU		Mak		(f)
	M	F	M	F		M	F	M	F	
Graduates of weaving	01	00	00	00	01	02	03	03	03	11
Total responses	**01**	**00**	**00**	**00**	**01**	**02**	**03**	**03**	**03**	**11**

Source: Field data.

Reasons given by graduates for "Yes" and "No" responses to whether weaving tools and equipment used in the teaching and learning processes in the two training institutions match those used in the world of work in Uganda, were organised in Table AIIA.6.

Table AIIA.6: *Reasons for the matching and mismatching of weaving tools and equipment in training institutions against those in the world of work in Uganda, given by graduates of weaving.*

Question 1 a) ii: Give reason for your answer in 1 a) i above				
Reason for "Yes" in 1 a) i above	**Frequency of reasons**			
	Graduates (N= 12)			
	KyU		Mak	
	M	F	M	F
• Tools and equipment both in training institutions and those in the world of work can all be used to create fabrics of different designs	01	00	00	00
• Total frequency	01	00	00	00
Reasons for 'No' in 1(a) i above.				
• Equipment in training institutions is manually operated and is in poor working conditions. The world of work uses modern and automated equipment.	01	01	01	01
• Tools and equipment provided in training institutions give the students the basic skills in weaving. The industrial equipment is not available.	00	01	00	00
• Institutions have not upgraded their equipment to match modern industrial standards.	00	00	01	01
• Tools and equipment in training institutions is simple for learning purposes, not like the heavy equipment in the world of work for mass production	00	01	00	00
• The tools and equipment we use in training institutions are old fashioned and cannot match the ones used in the industries.	00	00	01	01
Total frequency	**03**	**03**	**03**	**03**

Source: Field data.

In response to whether the weaving tools and equipment in training institutions are efficient for use in the process of teaching and learning in relation to the world of work in Uganda, the graduates gave responses that were organised in Table AIIA.7. The table shows a question, respondents, responses given and the total responses.

Table AIIA.7: *Efficiency of weaving tools and equipment in training institutions in relation to the world of work in Uganda, as reported by graduates*

Question 1 b) i: Were weaving tools and equipment in training institutions efficient for use in the process of learning a weaving skill in relation to the world of work in Uganda?										
Respondents	**Responses (N = 12)**									
	Yes					No				
	KyU		Mak		(f)	KyU		Mak		(f)
	M	F	M	F		M	F	M	F	
Graduates of weaving	00	01	01	00	02	03	02	02	03	10
Total responses	**00**	**01**	**01**	**00**	**02**	**03**	**02**	**02**	**03**	**10**

Source: Field data.

Reasons given by graduates for the "Yes" and "No" responses organised in Table AIIA.7, to whether weaving tools and equipment in training institutions are efficient for use in the teaching and learning processes in relation to the world of work in Uganda are organised in Table AIIA.8.

Table AIIA.8: *Reasons given by graduates for weaving tools and equipment in training institutions being and not being efficient for use in relation to the world of work in Uganda.*

Question 1 b) ii: Give reason for your answer in 1 (b) i above				
Reason for "Yes" in 1 b) i above	**Frequency of reasons**			
	Graduates (N = 12)			
	KyU		Mak	
	M	F	M	F
• Using tools and equipment in training institutions helps one to learn basic skills of weaving, and more can be learnt from the world of work.	00	01	01	00
Total of frequency	**00**	**01**	**01**	**00**
Reasons for 'No' in 1 b) i above.				
• Many of the tools and equipment in training institutions are broken down, not serviced and miss component parts.	00	01	00	02
• Tools and equipment in training institutions need to be upgraded to produce larger pieces of work as required in the world of work.	02	00	01	00
• Tools and equipment in training institutions are very few compared to the number of students, making it difficult for all to learn through making practice	01	00	00	00
• Tools and equipment in training institutions do not equip learners with industrial production skills required in the world of work	00	01	01	01
Total of frequency	**03**	**02**	**02**	**03**

Source: Field data.

In response to whether weaving tools and equipment in training institutions equip learners with skills required in the world of work in Uganda, graduates' answers that were given are organised in Table AIIA.9.

Table AIIA.9: *Whether weaving tools and equipment in training institutions equip learners with skills required in the world of work in Uganda, as given by the graduates of weaving*

Question 1 c) i: Do weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions equip learners with skills required in the world of work in Uganda?										
Respondents	**Responses (N = 12)**									
	Yes					No				
	KyU		Mak		(f)	KyU		Mak		(f)
	M	F	M	F		M	F	M	F	
Graduates of weaving	00	01	02	00	03	03	02	01	03	09
Total responses	**00**	**01**	**02**	**00**	**03**	**03**	**02**	**01**	**03**	**09**

Source: Field data.

Graduates gave reasons for the "Yes" and "No" responses organised in Table AIIA.9 to whether weaving tools and equipment in training institutions equip learners with skills required in the world of work in Uganda. The reasons are organised in Table AIIA.10.

Table AIIA.10: *Reasons for "Yes" and "No" responses to whether weaving tools and equipment in training institutions equip learners with skills required in the world of work in Uganda, as given by graduates*

Question 1 c) ii: Give reason for your answer in 1 c) i above				
Reason for "Yes" in 1 c) i above	**Frequency of reasons**			
	Graduates (N =12)			
	KyU		Mak	
	M	F	M	F
• Tools and equipment in training institutions help learners to acquire basic skill, which does not require the use of sophisticated equipment	00	00	01	00
• Skills given to the learners can enable them to transform fiber to fabric and be able to manipulate simple equipment to produce a woven fabric	00	01	00	00
• The skill acquired by learners using tools and equipment in training institutions helps them to produce fabrics on small scale which also compete on the market	00	00	01	00
Total frequency	**00**	**01**	**02**	**00**
Reasons for 'No' in 1 c) i above.				
• Use of modern weaving tools and equipment in the world of work disadvantages learners who are not used to operate them for high quality production.	02	00	00	00
• Tools and equipment in training institutions help to equip learners with basic skills, but not the expertise of the skill appropriate to the world of work requirements	00	02	00	02
• The world of work requires industrial mass production skills, which are not acquired in training institutions using the available tools and equipment	01	00	01	01
Total frequency of reasons	**03**	**02**	**01**	**03**

Source: Field data.

Responses to research question two collected from lecturers of weaving using a questionnaire (Appendix ID) were organised in six Tables (AIIA.11, AIIA.12, AIIA.13, AIIA.14, AIIA.15 AND AIIA.16) according to each question on the instrument. The tables contain questions, respondents, responses and frequencies of responses. In response to whether weaving tools and equipment used in the teaching and learning of a skill in training institutions match those used in the world of work in Uganda, lecturers of weaving from the two training institutions; KyU and Mak gave answers which are as organised in Table AII.11.

Table AIIA.11: *The matching of weaving technology, tools and equipment, against those in the world of work in Uganda by lecturers of weaving*

Question 1 a) i: Do weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions match those used in the world of work in Uganda?										
Respondents	**Responses (N = 5)**									
	Yes					No				
	KyU		Mak		(f)	KyU		Mak		(f)
	M	F	M	F		M	F	M	F	
Lecturers of weaving	00	00	01	00	01	01	01	01	01	04
Total responses	**00**	**00**	**01**	**00**	**01**	**01**	**01**	**01**	**01**	**04**

Source: Field data.

Reasons given by lecturers for the "Yes" and "No" responses organised in Table AIIA.11, are presented in Table AIIA.12

Table AIIA.12: *Reasons for the matching and mismatching of weaving technology, tools and equipment, in training institutions against those in the world of work in Uganda, given by lecturers of weaving.*

Question 1 a) ii: Give reason for your answer in 1 a) i above				
Reason for "Yes" in 1 a) i above	**Frequency of reasons**			
	Graduates (N = 5)			
	KyU		Mak	
	M	F	M	F
• Training institutions have tried to procure and installed tools and equipment that match with those in the world of work but depending on the ever increasing technology, much more is still required.	00	00	01	00
Total frequency	**00**	**00**	**01**	**00**
Reasons for 'No' in 1 a) i above.				
• Equipment in training institutions is manually operated and is in poor working conditions. The world of work uses modern and automated equipment.	00	00	00	01
• Tools and equipment provided in training institutions give the students the basic skills in weaving. The industrial equipment is not available.	00	01	00	00
• Institutions have not upgraded their equipment to match modern industrial standards.	00	00	01	00
• The tools and equipment we use in training institutions are old fashioned and cannot match the ones used in the industries.	01	00	00	00
Total frequency of reasons	**01**	**01**	**01**	**01**

Source: Field data.

Answering to whether the weaving tools and equipment in training institutions are efficient for use in the process of teaching and learning a weaving skill in relation to the world of work in Uganda, lecturers' responses were as shown in Table AIIA.13

Table AIIA.13: *Efficiency of weaving tools and equipment in training institutions in relation to the world of work in Uganda, as given by weaving lecturers*

Question 1 (b) i: Are the weaving tools and equipment in training institutions efficient for use in the process of learning a weaving skill in relation to the world of work in Uganda?											
Respondents	**Responses (N =5)**										
	Yes					No					
	KyU		Mak		(f)	KyU		Mak		(f)	
	M	F	M	F		M	F	M	F		
Lecturers of weaving	00	00	01	00	01	01	01	01	01	04	
Total responses	**00**	**00**	**01**	**00**	**01**	**01**	**01**	**01**	**01**	**04**	

Source: Field data.

Table AIIA.14 presents reasons given by lecturers for "Yes" and "No" responses reflected in Table AIIA.23

Table AIIA.14: *Reasons for weaving tools and equipment in training institutions being and not being efficient for use in relation to the world of work in Uganda, given by weaving lecturers*

Question 1 b) ii: Give reason for your answer in 1 b) i above				
Reason for "Yes" in 1 b) i above	**Frequency of reasons** Lecturers (N = 5)			
	KyU		Mak	
	M	F	M	F
• Yes they are because existing textile design projects are using them already.	00	00	01	00
Total frequency	**00**	**00**	**01**	**00**
Reasons for 'No' in 1 b) i above.				
• Many of the tools and equipment in training institutions are broken down, not serviced and miss component parts.	01	00	00	00
• Tools and equipment in training institutions need to be upgraded to produce larger pieces of work as required in the world of work.	00	00	00	01
• There is need to evolve to computer generated designs and use of power controlled looms	00	01	01	00
Total frequency of reasons	**01**	**01**	**01**	**01**

Source: Field data.

In regard to whether weaving tools and equipment used in training institutions equip learners with skills required in the world of work in Uganda, responses given by lecturers are organised in Table AIIA.15.

Table AIIA.15: *Whether weaving tools and equipment in training institutions equip learners with skills required in the world of work in Uganda, as given by lecturers*

Question 1 (c) i: Do weaving tools and equipment used in the teaching and learning of a weaving skill in training institutions equip learners with skills required in the world of work in Uganda?

Respondents	**Responses (N = 5)**									
	Yes					No				
	KyU		Mak		(f)	KyU		Mak		(f)
	M	F	M	F		M	F	M	F	
Lecturers of weaving	00	01	02	00	03	01	00	00	01	02
Total responses	**00**	**01**	**02**	**00**	**03**	**01**	**00**	**00**	**01**	**02**

Source: Field data.

Table AIIA.16 contains reasons for "Yes and "No" responses to whether weaving tools and equipment used in training institutions equip learners with skills required in the world of work in Uganda, organised in Table AIIA.15.

Table AIIA.16: *Reasons for "Yes" and "No" responses to whether weaving tools and equipment in training equip learners with skills required in the world of work in Uganda, given by lecturers.*

Question 1 c) ii: Give reason for your answer in 1 c) i above				
Reason for "Yes" in 1 c) i above	**Frequency of reasons**			
	Graduates (N = 5)			
	KyU		Mak	
	M	F	M	F
• Tools and equipment in training institutions help learners to acquire basic skill, which does not require the use of sophisticated equipment.	00	00	01	00
• Students need to have zeal and creativity. Tools and equipment themselves are okay, though may require repairs from time to time.	00	00	01	00
• Skills given to the learners can enable them to transform fiber to fabric and be able to manipulate simple equipment to produce a woven fabric	00	01	00	00
Total frequency	**00**	**01**	**02**	**00**
Reasons for 'No' in 1 c) i above.				
• Use of modern weaving tools and equipment in the world of work disadvantages learners who are not used to operate them for high quality production.	01	00	00	01
Total frequency of reasons	**01**	**00**	**00**	**01**

Source: Field data.

Appendix IIB: Organisation of raw data according to each instrument used for research question three for each category of respondents

What challenges are faced in using the technology in training institutions during the teaching and learning of a weaving skill in relation to the world of work in Uganda?

Research question three sought information regarding the challenges faced in using the technology in terms of tools and equipment in training institutions in relation to the world of work in Uganda. The responses were gathered using three instruments which were: a focus group discussion guide (Appendix I B) for students, a one to one interview guide (Appendix I C) for graduates and a questionnaire (Appendix I D) for lecturers. Sought responses included how challenges faced were overcome and suggestions on how to improve on the weaving technology in training institutions in relation to the world of work. Reponses from each category of respondents were separately organised in different tables. The tables contain the questions, respondents, responses, frequency and total of frequencies.

Responses to research question three gathered from students were organised in two Tables (AIIB.1, and AIIB.2). Table AIIB.1 represents the responses from focus group discussions with students of weaving to the challenges faced in using the weaving technology in terms of tools and equipment in training institutions in relation to the world of work in Uganda. In addition to the challenges faced, the table also contains how faced challenges were overcome.

Table AIIB.1: *Challenges faced by students in using weaving tools and equipment in training institutions in relation to the world of work and how faced challenges were overcome*

Question 2 (a) What challenges do you face in the process of teaching and learning a weaving skill, using the weaving tools and equipment in training institutions in relation to the world of work?

Responses	**Frequency of responses**											
	Students (N = 32)											
	KyU								Mak			
	Yr II				Yr III				Yr II		Yr III	
	BAID		BVAD		BAID		BVAD		BIFA		BIFA	
	M	F	M	F	M	F	M	F	M	F	M	F
• Lack of enough working space	00	01	01	00	00	00	00	01	01	00	00	01
• Less weaving equipment compared to the number of students	01	00	00	02	00	02	00	01	00	03	00	03
• Poor working conditions of the equipment – they are broken, missing parts and not repaired.	00	01	01	00	01	00	00	00	02	00	02	00
• Lack of modern tools and equipment to equip learners with modern skills of weaving.	00	00	00	00	00	00	00	00	01	01	02	00
• Some weaving equipment is lacking in training institutions leading to theoretical teaching and learning of some concepts	01	00	00	00	01	00	02	00	00	00	00	01
Total frequency of challenges.	**02**	**02**	**02**	**02**	**02**	**02**	**02**	**02**	**04**	**04**	**04**	**04**
Question 2 (b): How do you overcome the challenges in 2 (a)												
• Use the available space in small groups	00	00	00	00	00	00	00	01	01	00	00	00
• Sharing of tools and equipment	01	00	00	01	00	01	00	00	00	02	02	02
• Improvising for tools and equipment	00	01	00	00	00	00	01	01	00	02	00	00
• Making research to learn more	00	00	00	00	00	00	01	00	00	00	00	00
• Buy finished pieces of work to present for assignments	00	00	01	00	00	00	00	00	00	00	01	01
• Wait to undergo on job training to acquire the required skills in the world of work	00	00	00	00	00	00	00	00	02	00	00	00
• Simply do some small pieces of work to pass examinations.	00	00	00	01	00	01	00	00	01	00	00	01
• Learning some concepts theoretically	01	01	00	00	01	00	00	00	00	00	01	00
• Using workshops outside the institutions to do work	00	00	01	00	01	00	00	00	00	00	00	00
Total frequency of responses.	**02**	**02**	**02**	**02**	**02**	**02**	**02**	**02**	**04**	**04**	**04**	**04**

Source: Field data.

Table AIIB.2 contains students' suggested measures that should be taken to improve on the tools and equipment, used in the teaching and learning of a weaving skill in training institutions in Uganda, in relation to the world of work.

Table AIIB.2: *Students' suggestions on how to improve weaving tools and equipment in training institutions in relation to the world of work in Uganda*

Question 2 (c): Suggest measures that should be taken to improve on the tools and equipment, used in the teaching and learning of a weaving skill in training institutions in Uganda, in relation to the world of work.

Suggested measures to challenges	**Frequency of measures**											
	Students (N = 32)											
	KyU								Mak			
	Yr II				Yr III				Yr II		Yr III	
	BAID		BVAD		BAID		BVAD		BIFA		BIFA	
	M	F	M	F	M	F	M	F	M	F	M	F
• Procure advanced machinery that will motivate learners, teachers and make competitive labour output.	00	00	00	00	00	00	00	00	00	00	02	00
• Repair and maintain good working conditions of the weaving equipment in place	00	02	01	00	00	01	00	01	00	00	01	00
• Increase the number of weaving equipment to cater for the big number of students	01	00	00	00	01	01	00	01	00	02	00	01
• Procure and install new weaving equipment of modern technology similar to that in the world of work.	01	00	01	02	01	00	01	00	03	02	01	01
• Increase on the working space	00	00	00	00	00	00	01	00	00	00	00	00
• Exposing learners to weaving industries with modern equipment	00	00	00	00	00	00	00	00	01	00	00	02
Total frequency of challenges.	**02**	**02**	**02**	**02**	**20**	**02**	**01**	**01**	**04**	**04**	**04**	**04**

Source: Field data.

Responses to research question three collected from graduates using a one to one interview guide (Appendix ID) were organised in two Tables (AIIB.3 and AII.4). Table AIIB.3 represents the challenges graduates faced in using the weaving technology in terms of tools and equipment, during the learning of a weaving skill in training institutions in relation to the world of work in Uganda and how they overcame the challenges.

Table AIIB.4: *Suggestions on how to improve on weaving technology, tools and equipment in training institutions in relation to the world of work*

Question 2 (c): Suggest measures that should be taken to improve on the technology used in the teaching and learning of a weaving skill in training institutions in Uganda, in relation to the world of work				
Suggested measures to challenges	**Frequency of measures**			
	Graduates (N = 12)			
	KyU		Mak	
	M	F	M	F
• We need to advocate for apprenticeship as a way to bridge the gap between learning at school and work life.	00	00	01	00
• Increase the number of weaving equipment to cater for the big number of students	01	00	01	00
• Procure and install new weaving equipment of modern technology similar to that in the world of work.	01	03	00	03
• Exposing learners to weaving industries with modern equipment	01	00	01	00
Total frequency of suggestions	**03**	**03**	**03**	**03**

Source: Field data.

Responses to research question three collected using a questionnaire (Appendix IC) from lecturers of weaving were organised in two Tables (AIIB.5 and AIIB.6) according to each question on the instrument. Responding to what challenges are faced in using the technology in terms of tools and equipment in training institutions in relation to the world of work in Uganda, the lecturers forwarded the following as organised in Table AIB.5, which also contains responses to how faced challenges were overcome.

Table AIIB.5: *Challenges faced in using weaving tools and equipment in training institutions in relation to the world of work in Uganda and how faced challenges were overcome as given by Lecturers*

Question 2 (a) What challenges do you face in the process of teaching of a weaving skill, using the weaving tools and equipment in training institutions in relation to the world of work?				
Responses	**Frequency of responses**			
	Lecturers (N = 5)			
	KyU		Mak	
	M	F	M	F
• Less weaving equipment compared to the number of students	01	01	02	00
• Lack of modern tools and equipment to equip learners with modern skills of weaving.	00	00	00	01
Total frequency of challenges	**01**	**01**	**02**	**01**
Question 2 (b): How do you overcome the challenges in 2 (a)				
• Sharing of tools and equipment	00	00	00	01
• We use group method of training	00	00	02	00
• Reduce the number of learning tasks given to students.	00	01	00	00
• Using workshops outside the institutions to do work	01	00	00	00
Total frequency of responses	**01**	**01**	**02**	**01**

Source: Field data.

In response to what measures should be taken to improve on weaving technology in terms of tools and equipment in training institutions in relation to the world of work, lecturers forwarded the following responses, organised in Table AIBI.6.

Table AIIB.6: *Suggestions given by lecturers on how to improve on weaving technology in terms of tools and equipment, in training institutions in relation to the world of work in Uganda*

Question 2 (a) What challenges did you face in the process of learning a weaving skill, using the weaving tools and equipment in training institutions in relation to the world of work?				
Suggested measures to challenges	**Frequency of measures**			
	Lecturers (N = 5)			
	KyU		Mak	
	M	F	M	F
• Where possible, institutions should acquire equipment from the world market that will serve through time.	00	00	01	00
• Procure advanced machinery that will motivate learners, teachers and make competitive labour output.	00	01	01	00
• We need to advocate for apprenticeship as a way to bridge the gap between learning at school and work life.	01	00	00	00
• Procure and install new weaving equipment of modern technology similar to that in the world of work.	00	00	00	01
Total frequency of suggestions	**01**	**01**	**02**	**01**

Source: Field data.

Appendix IIIA: Letter of introduction

KYAMBOGO UNIVERSITY

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

Date: 20/02/2013

To: The Human Resource Manager
Nytil, Jinja

OK

RE: LETTER OF INTRODUCTION

This is to introduce Mr/~~Ms/Mrs~~ MUJUNI TITO
Registration No. 2011/U/HD/289/MVP ...who is a student of Kyambogo University pursing on a post graduate programme in Vocational Pedagogy.

He/She intends to carry out a research in:
INFLUENCE OF TECHNOLOGY ON TEACHING AND LEARNING A SKILL: A CASE OF WEAVING AT SELECTED TRAINING INSTITUTIONS IN UGANDA,
as partial fulfillment of the requirements for the award of the Degree in Masters of Vocational Pedagogy.

We therefore kindly request you to grant him/her permission to carry out the research at your organization.
Any assistance accorded to him/her shall be highly appreciated.

Thank you.

Yours Faithfully,

KYAMBOGO UNIVERSITY
09 JAN 2013
DEPARTMENT OF ART AND INDUSTRIAL DESIGN

Mugisha John
Ag. Head of Department
Art and Industrial Design

Appendix IIIA: Letter requesting for permission from administrators to conduct research at their organisations

KYAMBOGO UNIVERSITY,

P.O.BOX 1,

KYAMBOGO.

Date: 14/03/2013

To: The Director,
TEXDA,
BUKOTO - KAMPALA.

Dear Sir/Madam,

RE: REQUEST FOR PERMISSION TO CONDUCT A RESEARCH AT YOUR ORGANISATION

I am Mujuni, Tito from Kyambogo University pursuing a Masters Degree in Vocational Pedagogy. I am carrying out a study on: *"Influence of technology on teaching and learning a skill: A case of weaving at selected training institutions and workplaces in Uganda"*. Objectives of the study are:

i. To identify the type of technology, in terms of tools and equipment, used in the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda
ii. To investigate whether the type of technology, in terms of tools and equipment, used in the teaching and learning of a weaving skill in training institutions relates to the world of work in Uganda
iii. To establish challenges faced in using the technology, in terms of tools and equipment, during the teaching and learning of a weaving skill in training institutions in relation to the world of work in Uganda.

I humbly request you to grant me permission to conduct this study at your organisation. Information obtained will only be for academic purposes in this study and will be treated with maximum confidentiality. The study findings will be used to suggest ways of improving on the technology, in terms of tools and equipment used in the teaching and learning of a skill in training institutions in relation to the world of work.

I will be grateful if my request is granted.

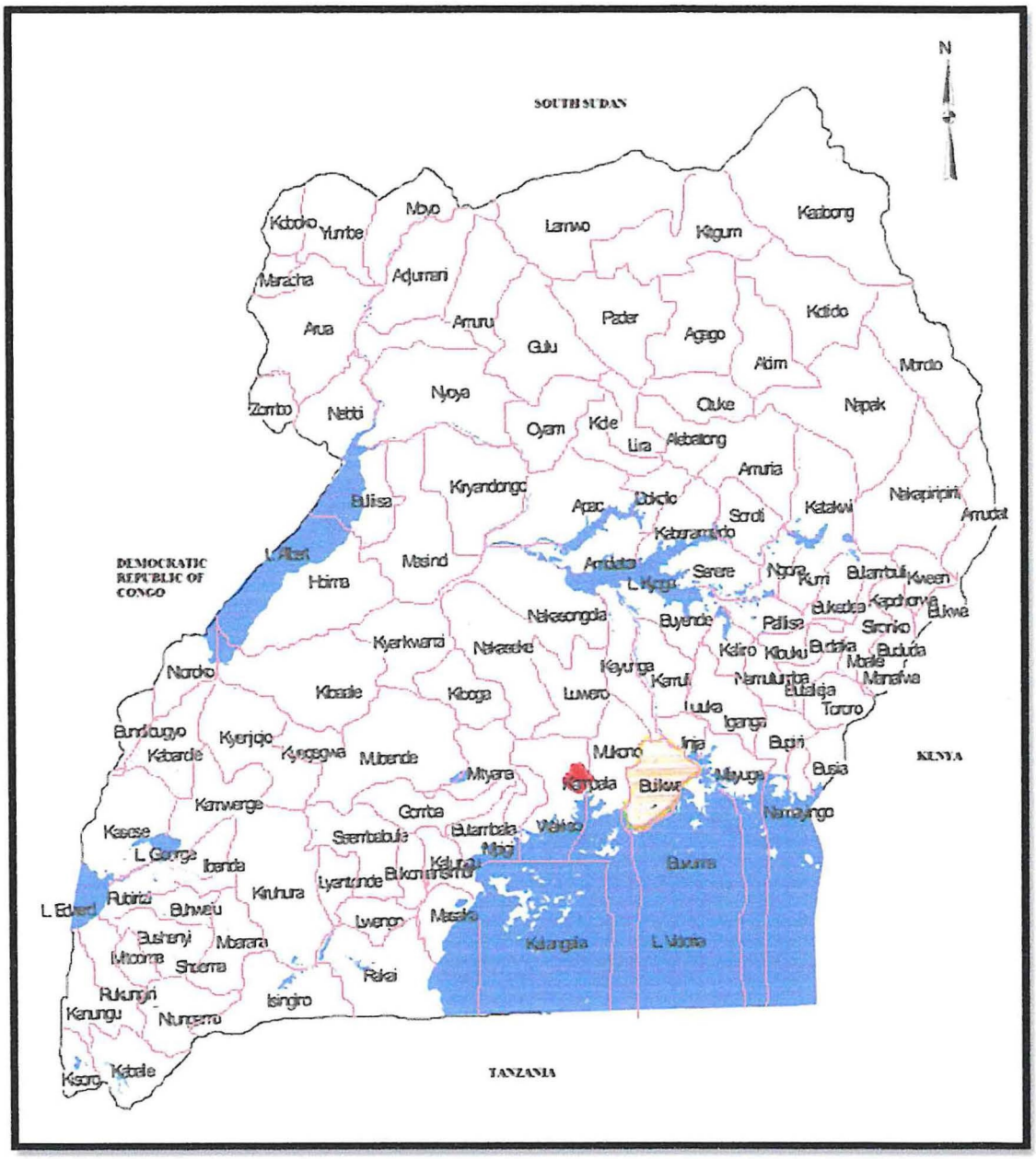
Yours faithfully,

Mujuni, Tito (2011/U/HD/289/MVP)
0782-077554
0702-077554

TEXTILE DEVELOPMENT AGENCY
UNIDO TEXTILE PROJECT
P.O.BOX 7168, KAMPALA
TEL: 256-41-255956

Permission granted

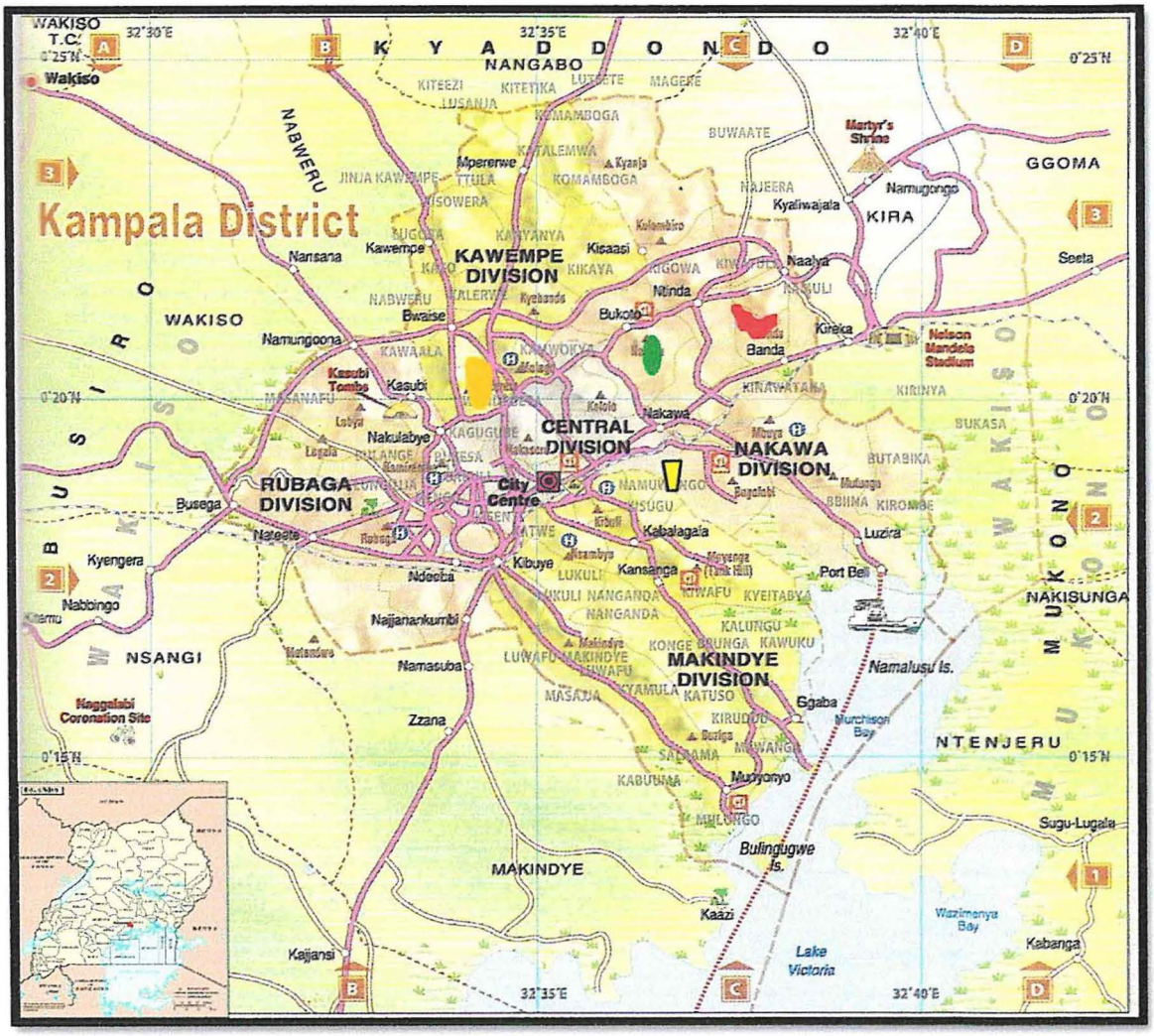
Appendix IVA: Map of Uganda showing the location of Kampala and Buikwe Districts.



Source: Rural Communications Development Fund (RCDF) (2010, p.14)

Key:
- Kampala District
- Buikwe District
- Water bodies

APPENDIX IVB: Map of Kampala showing the location of Kyambogo and Makerere Universities, Phenix Logistics Uganda Limited and Textile Development Agency

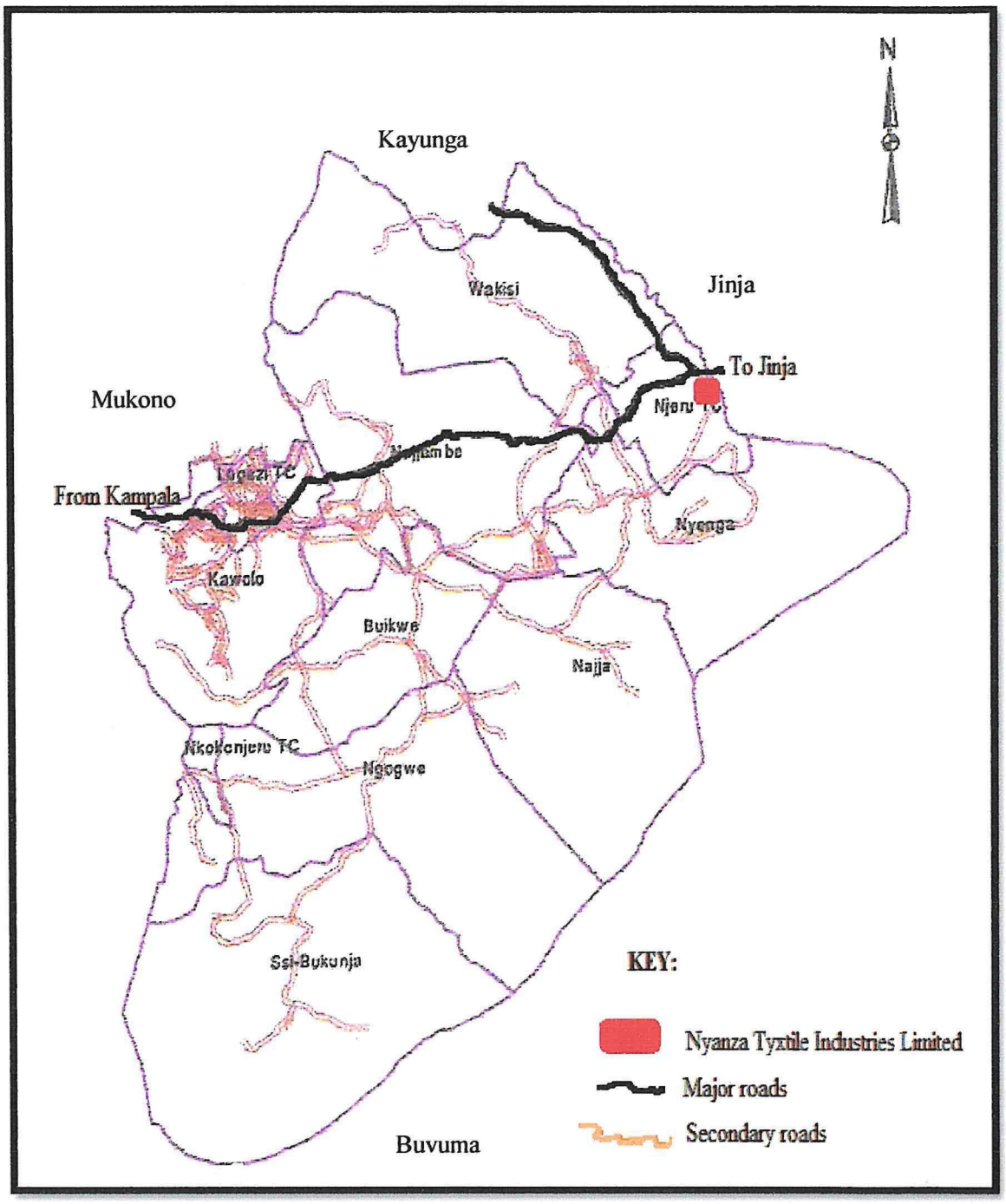


Source: Accessed and modified from:
"http://www.maplandia.com/uganda/kampala/kampala-city-council/kampala/"

Key:

- Kyambogo University
- Makerere University
- Phenix Logistics Uganda Limited
- Textile Development Agency
- Boundary of Kampala District
- Boundary of Divisions
- Road Networks
- Railway line

Appendix IVB: Map of Buikwe District showing the location of Nyanza Textile Industries



Source: Rural Communications Development Fund (RCDF) (2010, p.15)