

**EFFECTIVENESS OF COLLABORATION BETWEEN TECHNICAL
INSTITUTIONS AND INDUSTRY ON TRAINING FOR SKILL ACQUISITION:
A CASE OF NORTH RIFT REGION**

MULATI TOM WANJALA

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION IN
TECHNOLOGY EDUCATION IN THE SCHOOL OF EDUCATION
UNIVERSITY OF ELDORET, KENYA**

2019

DECLARATION

DECLARATION BY THE CANDIDATE

This thesis is my original work and has not been presented for a degree in any other university. No part of this thesis may be reproduced without the prior permission of the author and/or University of Eldoret.

TOM WANJALA MULATI .

EDU / PGT/ 1006/11

Date

DECLARATION BY THE SUPERVISORS

This thesis has been submitted with our approval as University Supervisors.

DR. KYALO N. M.
University of Eldoret, Kenya

Date

DR. H. DIMO
University of Eldoret, Kenya

Date

DEDICATION

This thesis is dedicated to my wife Jedidah and our sons Dalton, Dazwell and Brunner who through their love and encouragement, I have been able to develop this thesis.

ABSTRACT

The prerequisite that Technical and Vocational Education and Training (TVET) Institutes fuse a working environment experience for understudies before they graduate has gotten remarkable accentuation in the ongoing past. This participation is alluded to as industry-TVET organizations collaboration on training. The cooperation is an indispensable part of preparing expected to provide students with a chance to gain and improve learning, aptitudes and frames of mind from genuine work understanding. With learning, innovation and occupation attributes all changing quickly, today there is an all-inclusive issue of keeping the substance of instruction advanced. The rapidly changing work environment has led to modifications in job content, skill requirements and the demand for knowledge. These changes have called for collaboration between industry and technical institutions with the aim of enhancing market relevant skills. Research and policy papers point out existence of collaboration between industry and TVET institutions but minimal research have been carried out to ascertain the effectiveness of the industry-TVET institution collaboration. This thesis sought to assess the effectiveness of industry- TVET institutions collaboration with the aim of offering recommendations that can help better the collaboration. The study focused on TVET institutions and industries in the North Rift region. The research adopted a descriptive survey design. The study targeted workplace supervisor, lecturers/industrial attachment coordinators and students of technical training institutions in north rift region. Using stratified random sampling, the researcher identified a total of 848 respondents comprising 712 students, 104 lecturers/industrial attachment coordinators and 32 workplace supervisors to participate in the study. Data was collected using questionnaires and interview schedule. Quantitative and qualitative techniques were employed in data analysis. The study found majority of the students (over 60%), lecturers (over 90%) and workplace supervisor (over 80%) asserted that TVET institutions - industry collaboration has achieved its objectives. Majority of the respondents (above 60%) also confirmed that industry- TVET institutions collaboration on training is relevant on skill acquisition. Finding also showed that majority of the lecturers and students (over 70%) affirmed that the coordination and supervision in industry was adequate. On the role of industry regulators that accredit TVET institutions training, majority of the lectures (72.1%) reported that the main role of accreditation body is inspection of training equipment. Majority of the students (95.9%), lecturers (93.8%) and workplace supervisors (94.2%) stated insufficient funding was the main challenge encountered in the collaboration. Despite the challenges faced by industry- TVET institutions collaboration on training, the study concluded that collaboration between industry and TVET institutions was effective. However, hands on practical knowledge and skills are paramount to TVET and should be supported through strengthening financial support towards TVET institutions - industry collaboration.

TABLE OF CONTENTS

DECLARATION	II
DEDICATION	III
ABSTRACT	IV
LIST OF FIGURES	VIII
LIST OF TABLES	IX
LIST OF ABBREVIATIONS	X
DEFINITION OF OPERATIONAL TERMS	XI
ACKNOWLEDGEMENT	XII
CHAPTER ONE.....	1
INTRODUCTION OF THE STUDY.....	1
1.1 Introduction.....	1
1.2 Background of the Study	1
1.3 Statement of the Problem.....	5
1.4 Purpose of the Study	6
1.5 Objectives of the study	6
1.5.1 General objective	6
1.5.2 Specific Objectives	6
1.6 Research Questions.....	7
1.7 Justification of the Study	7
1.8 Significance of the Study.....	9
1.9 Assumptions of the study.....	9
1.10 The scope and limitations of the Study.....	10
1.10.1 Scope of the study	10
1.10.2 Limitation of the study.....	11
1.10 Conceptual Framework.....	11
CHAPTER TWO	15
LITERATURE REVIEW.....	15
2.1 Introduction.....	15
2.2 Objectives of Industry- TVET Institutions collaboration on training.....	15
2.3 Measurement of objectives	17

2.4 Relevance and adequacy of industry-TVET institutions collaboration in training	20
2.5 Co-ordination and supervision of industry- TVET institutions collaboration	21
2.6 Accreditation of training programmes	24
2.7 CHALLENGES OF TVET INSTITUTIONS WITH THE INDUSTRY	25
2.8 Comparative Education	26
2.9 Critical Review	27
2.10 Conclusion	28
CHAPTER THREE	29
RESEARCH DESIGN AND METHODOLOGY	29
3.1 Introduction	29
3.2 Research methodology	29
3.3 Research Design	31
3.4 Study Area	31
3.5 Target Population	32
3.5.1 TVET Institutions	32
3.5.2 Industries	32
3.6 Sampling and Sample Sizes	33
3.6.1 Sample size	33
3.6.2 Sampling Procedures	33
3.7 Research Instruments	35
3.7.1 The Questionnaires	35
3.7.2 Interview Schedule	36
3.8 Data Collection and Administration of Instruments	36
3.8 Reliability and Validity of Research Instruments	37
3.10 Data Analysis and Presentation	38
CHAPTER FOUR	39
DATA PRESENTATION, ANALYSIS AND INTERPRETATION	39
4.1 Introduction	39
4.2 Bio Data of the Respondents	39
4.2.1 Bio Data of the Students	39
4.2.2 Academic qualification of lecturers	41

4.2.3 Data of Workplace Supervisors	41
4.3 Attainment of Industry –TVET Institution collaboration objectives.....	42
4.4 Relevance and Adequacy of skills	46
4.4.1 Forms and nature of industry-TVET collaboration	46
4.4.2 Skills Expected to be learnt.....	46
4.4.2Causes of training gaps	47
4.4.3 Respondents’ assessment of relevance and adequacy of skills.....	48
4.5 Level of success of the coordination and supervision of the industry- TVET institutions on training	54
4.6 Role of Accreditation body.....	58
4.7 Challenges of industrial attachment program	59
CHAPTER FIVE.....	66
SUMMARY, CONCLUSION AND RECOMMENDATIONS	66
5.1 Introduction.....	66
5.2 Summary of findings	66
5.3 Conclusions.....	69
5.4 Recommendations.....	70
5.5Recommendation for further research	73
REFERENCES	74
APPENDIX I: QUESTIONNAIRES FOR STUDENTS.....	82
APPENDIX II: QUESTIONNAIRES FOR LECTURERS, INDUSTRIAL ATTACHMENT COORDINATORS/PRINCIPALS.....	86
APPENDIX III: QUESTIONNAIRES FOR WORKPLACE SUPERVISORS.....	91
APPENDIX IV: INTERVIEW SCHEDULE.....	94
APPENDIX IV: SIMILARITY INDEX/ANTI-PLAGIARISM REPORT	97

LIST OF FIGURES

Figure1.1: Conceptual framework 12

LIST OF TABLES

Figure1.1: Conceptual framework	12
Table 3.1 Summary of Sampling	35
Table 4.1 Year of study.....	39
Table 4.3 Academic qualification of lecturers	41
Table 4.4 Academic qualification of Industry Supervisors	42
Table 4.5 Students’ Assessment on Attainment of Objectives of Industry –TVET Institution Collaboration on Training	43
Table 4.6: Lecturers’ Assessment of Attainment of industry-TVET institutions collaboration objectives	44
Table 4.7: Work Place Supervisors’ Assessment of Attainment of industry-TVET institutions collaboration objectives	45
Table 4.8 Skills to be acquired during industry-TVET institutions collaboration.....	47
Table 4.9 Causes of training gaps	47
Table 4.10 Students’ Assessment on Adequacy of skills	49
Table 4.11: Lecturers’ Assessment of relevance and adequacy of skills.....	51
Table 4.12: Workplace supervisors’ assessment of relevance and adequacy of skills	53
Table 4.16: Students’ Assessment on Challenges of industrial attachment program	60
Table 4.17: Lecturers’ Assessment of Challenges of industrial attachments program.....	62
Table 4.18: Workplace supervisors’ assessment of Challenges of industrial attachments program.....	64

LIST OF ABBREVIATIONS

CTDLT:	Catering and Tourism Development Levy Trustee
DIT :	Directorate of Industrial Training
EFA :	Education for All
KMLLTB :	Kenya Medical Laboratory Technicians and Technologists Board
MDG :	Millenium Development Goals
NITA :	National Industrial Training Authority
NITC :	National Industrial Training Council
PPB :	Pharmacy and Poisons Board
SET :	Science, Engineering& Technology
ST&I:	Science Technology & Innovation
TVET:	Technical and Vocational Education and Training

DEFINITION OF OPERATIONAL TERMS

Collaboration: Refers to all forms of linkages and access for the gain or/ and advancement of knowledge, skills and attitudes.

Effectiveness: In this study effectiveness is limited to effectiveness of collaboration, coordination and supervision of the TVET institutions –industry collaboration programme.

Industry Regulators: Refers to regulatory bodies with an established legal mandate to control a particular profession's training and practice.

Industrial Attachment Co-ordinators: Liaison staff at Institutions in-charge of Institution- industry linkages.

Industry: Refers to any workplace where there is production of goods or services and where knowledge, skills and attitudes can be acquired from inherent systems.

Workplace Supervisor: Refers to all staff at the workplace involved in instruction of trainees while at the industry.

ACKNOWLEDGEMENT

I wish to thank Dr. Kyalo N.M. and Dr. H. Dimo for their tireless efforts they accorded me while developing this thesis. They patiently did open my eyes into the world of research while guiding me through the research work. I further acknowledge my classmates in University of Eldoret and workmates at Kisiwa Technical Training Institute who did offer useful suggestions and insights worth appreciation.

CHAPTER ONE

INTRODUCTION OF THE STUDY

1.1 Introduction

This chapter focuses on the background of the study, statement of the problem, the purpose of the study, research questions, objectives of the study, significance of the study and the scope of the study.

1.2 Background of the Study

The requirement that Technical and Vocational Education and Training (TVET) programmes incorporate practical skills commensurate to workplace experiences for students before they graduate has gotten phenomenal accentuation in the ongoing past (Bertrand, 2004; NITC, 2004). This offers students the chance to relate hypothesis to rehearse and set them up for the universe of work and further training (NITC, 2004).

World Bank (2008) revealed that there is little point in attempting to figure and plan preparing necessities without knowing the result. This suggests it is vital to recognize what happens to the students who are prepared and enter the industry. In addition, it is essential to comprehend the connection between the preparation they have gotten and the occupations they will hold. That is why emphasis has shifted in evaluating the quality of education from a concern with inputs to a concern with results.

The affirmation that there is a overlap between the sort of training programs and the activity showcase prerequisites has regularly been fronted by numerous educationists

(UNESCO, 2007). While arrangements are being looked for from all measurements, there is an intensified issue of fast change in innovation that has made it hard for instructive organizations to get every single important machine and gear required for preparing. Similarly, while these machines are purchased, they before long become out of date on account of the equivalent evolving innovation (Finch & Crunkilton, 1999). These have caused the estimates concerning the instruction business relationship to be somewhat conceptual, disengaged from the financial condition and far expelled from the basic leadership circle.

In an effort to take advantage of industry- TVET institutions collaboration successfully, training institutions are faced with another challenge of having strong collaborative mutually beneficial linkage programmes with the industry where students and trainers can be expected to conduct training as if it were within the institution. Coll *et al.* (2001) reported that the achievement of TVET relies upon the help of the industry which much of the time, is regularly sharp in meeting its very own objectives that are not really educational. Finch and Crunkilton (1999) explained that sufficient preparing for occupations is preparing through occupations. In this regard, care must be taken to guarantee that industry don't assume a restrictive job in an exertion of attempting to accomplish quality TVET graduates and TVET establishments thusly don't hamper industry targets.

Against this background, efforts on industry- TVET institutions collaboration on training need to be dynamic and in consonance with innovative progression in the industry. As right on time as 1908 when the pilgrim government got the Frazer report and all through every one of the suggestions of instruction commissions that pursued, there is no

uncertainty that specialized training has gotten uncommon accentuation. All the more in this way, the requirement for the training framework to create graduates who are independent. The discoveries of the Ominde report, 1964, the Ndegwa commission 1971, the Gachathi report 1976, the Mackay report 1984, the Kamunge report 1988 and the Koech report 1998 laid a solid accentuation on specialized training which assumes a basic job in any lively society. A typical element in these proposals was the need to reinforce the TVET sub area of instruction and the educating of arithmetic and science in the school educational plan (Kerre, 2009). Kenya's vision 2030 has one of its six pillars inserted in Science, Technology and Innovation (STI) in national profitable procedures fundamental to the accomplishment of the administration approaches and projects. A key objective under this push is to give a culture of imagination, ingenuity and ceaseless learning in Kenya (Republic of Kenya, 2007). The job of TVET establishments in guaranteeing that this vision is acknowledged can't be overemphasized.

With learning, innovation and occupation qualities all changing quickly, there is today an all-inclusive issue of keeping the substance of instruction state-of-the-art. Instructors and reading material, the two significant courses by which the 'stuff of learning' gets channeled into the homeroom have high pace of outdated nature in this quickly evolving world (Bertrand, 2004). The quality and pertinence of any preparation keeps on invigorating energetic exchanges among educationists. Instructive expenses are at the very edge of bringing forth decreasing negligible returns because of rising joblessness levels among different factors that lead to reducing social and private returns of training. In the midst of every one of these vulnerabilities and limitations, the social and private interest for training keeps on rising unabated. Maybe a more extensive and progressively

powerful arrangement ought to be looked for on subjective parts of instructive advancement one which perspectives training as a living thing, whose decency dwells in its greatness comparative with 'models' however in its importance and wellness to the changing needs of the understudies, preparing organizations, managers and the general public it is expected to oblige (Beeby, 2007).

Industry- TVET institutions collaboration on training which enables students and trainers to use a real work environment in order to get 'hands on' experiences deserve mention if at all training institutions have to be relevant in their endeavor. The collaboration offers students and trainers hands on instruction methodology which has greatest potential of efficiency for transfer of relevant knowledge, skills and work ethics for their respective trades. Also, the industry does benefit from the production and technology transfer from TVET attaches in the process. The National Industrial Training Council now National Industrial Training Authority [under National Industrial Training Board] (2004) outlined the objectives of the industry- TVET institutions collaboration as;

- a. Students should demonstrate problem solving skills.
- b. Students should demonstrate practical competence in specific situations.
- c. Students should exhibit appropriate attitude and social skill towards work.
- d. Students should practice appropriate work ethics and culture.

The aim of the authority is to 'advance the obtaining of functional abilities and hardworking attitudes among students so as to get the best improvement in the quality and effectiveness of the preparation of supervise occupied with the occupational (NITC, 2004). While these goals were planned for accomplishing such great results from students, inadequate data exists to show that the program targets have been met. As

economies are moving from the customary components of generation to learning based economy, endeavors must be reinforced inside the preparation establishments to guarantee that goals to deliver for all intents and purposes gifted alumni are figured it out. With this enthusiasm on instructive results, the achievement of instructive projects, for example, TVET must be acknowledged whether an exhaustive report is attempted on the effectiveness of industry-TVET institutions collaboration on training. This is because concerns have been expressed about the growing gap between training programmes and job market requirements (Session Paper No.1: 2005; Kenya Vision 2030). It is the backdrop of this existing lacuna that the study purposed to investigate the effectiveness of technical institution - industry collaboration on training with an aim of providing recommendations that may be used to better the collaboration.

1.3 Statement of the Problem

The rapid technological change has made it problematic for educational institutions to obtain all essential machines and equipment crucial for training, and while these machines are bought, they soon after become obsolete because of the same changing technology. The generally accepted expectation from TVET students is that they should be technology compliant through practical disciplines. However, this has proved not reliable enough to be able to act as a “technology shock absorber” between the skill imparted by training institutions and the skills actually required and practiced by the industry.

While the objectives of the industry-TVET institutions collaboration in training were aimed at achieving wonderful outcomes among students, there is patchy evidence to

show that these objectives have been met or even meaningful collaboration exists (Commonwealth Association of Polytechnics in Africa Conference, 2009). In light of these, effective industry- TVET institutions collaboration on training at the end of the day should give accounts of its gains. It is on this background that this research deemed it important to investigate the effectiveness of technical institution - industry collaboration on training

1.4 Purpose of the Study

The purpose of this study was to establish the effectiveness of industry- TVET institutions collaboration on training. Any worthwhile education investment needs monitoring and evaluation. This helped the study to know the extent to which objectives were being met and the nature of outputs of the system.

1.5 Objectives of the study

1.5.1 General objective

The general objective of this study was to establish the effectiveness of TVET institutions - industry collaboration on training.

1.5.2 Specific Objectives

1. To establish the extent of achievement of the objectives of industry- TVET institutions collaboration on training by TVET institutions.
2. To find out the relevance and adequacy of industry- TVET institutions collaboration on training on skill acquisition desired by TVET institutions.

3. To determine the level of success of the coordination of the industry- TVET institutions collaboration on training.
4. To establish role of the various accreditations between TVET institutions and industry regulators on training.
5. To establish the challenges of industry- TVET institutions collaboration on training.

1.6 Research Questions

1. To what extent have TVET institutions achieved the objectives of industry- TVET institutions collaboration on training?
2. To what extent has the industry- TVET institutions collaboration on training on skill acquisition been relevant and adequate?
3. How successful has been the coordination of industry- TVET institutions collaboration?
4. What role do the industry regulators that accredit TVET institutions training have on training; knowledge and skills standards?
5. What are the challenges of industry- TVET institutions collaboration on training?

1.7 Justification of the Study

An effective industry- TVET institutions collaboration on training programme will among other factors help bridge the skill gap between what training institutions offer and

the expectations of the industry whilst also reducing cost implications of such training (Nyerere, 2009). The assessment of the effectiveness of industry- TVET institutions collaboration on training is critical in determining whether it is has made intended impact to TVET institutions and industry hence effective in delivery of quality graduates (Afeti, 2012). This is the reason why this study was conducted.

The attainment of Education for All (EFA) goals, Millennium Development Goals (MDGs) and Vision 2030 depends largely on the relevance and quality of training and education. To achieve relevant and quality training calls for more concerted efforts from all stakeholders (Hollander and Mar, 2009). This is because there is no a single training system that can fully prepare an individual for the rest of his life (Maclean and Ordonez, 2007). The need to constantly update skills and knowledge among personnel is becoming a common training among employers (Tansky and Cohen, 2001). This has resulted in the TVET institutions to enhance collaboration with industry so as to assist in the appraisal of knowledge and skills gained by trainees in industrial attachment (Nyerere, 2009).

The requirement that students acquire relevant skills and apply theory to practice among TVET graduates continues to illicit passionate concerns because of cost implication for purchase of training materials and equipment (Osei-Asibey, 2015). If the cost implication of teaching up to date hands on practical training were to be passed on to the trainees or the government, certainly it would not be sustainable. This is because technology is rapidly changing and it will be extremely expensive for TVET institutions to catch up with the changing technology. This why this study endeavoured to study the effectiveness of collaboration between TVET institutions and industry on training with an aim of passing on the most up to date skills at a relatively lower cost.

1.8 Significance of the Study

The study sought to inform educationists and policy makers of the status of industry – TVET institution collaboration in training. It purposed to inform planners to be more sensitive about the modes of collaboration to undertake for best results. Also the study ultimate outcome was to improve training of TVET graduates both at institution and during industrial attachment. Equally, the study established the scope of current status of industry – TVET institution collaboration in training visa vie expected outcome. This information is useful to educational institution managers, lecturers and workplace supervisors about the extent of the realisation of collaboration objectives, knowledge and skill transfer parameters and challenges. This knowledge positions educationists and industrialists in a better place to advise policy makers on the most appropriate model of industry-TVET institutions collaboration on training.

1.9 Assumptions of the study

The study was conducted on the assumption that:

- The TVET institutions trainees are on the same knowledge levels at the time of exposure to industry.
- All TVET institutions find relevant industries to collaboration with on time.
- Students on attachment were adequately exposed, assessed and supervised by trainers and industry.

1.10 The scope and limitations of the Study

This section focused on highlighting both the boundary of the study and the anticipated difficulties, challenges and issues that were most likely to be experienced while conducting the study and, therefore, affect the out-come of the research. For convenience and clarity these two issues were handled separately.

1.10.1 Scope of the study

This study restricted itself to the assessment of industry-TVET institutions collaboration in science, engineering and technology programmes within TVET institutions and industries in the North Rift. North Rift region was selected on basis that the region has the fastest growing and performing TVET institutions as per government ratings as supported by ratings in National Performance and Contracting listings. Examples include, Eldoret Polytechnic, Rift Valley Technical Training Institute, Ol'lessos Technical Training Institute, Kaiboi Technical Training Institute, Rift Valley Institute of Science & Technology and Kitale Technical Training Institute. Private institutes include: Alphax College, African Institute and Aviation training Institute just but to name a few. The region also has many firms and industries that collaborate with institutions on training aspects. Examples of these industries are Raiply wood Ltd, Kenya Seed Company, Kenya Power and lighting company, Ken Knit, Construction Companies, CMC Motors just but to mention a few.

1.10.2 Limitation of the study

- 1 The TVET institutions trainees have access to different exposures of practical skills and thus trainees have varied grasp of skills at the point of proceeding to industrial attachment.
- 2 The study limited itself to North Rift region and thus the results cannot be generalized to other regions.

1.10 Conceptual Framework

Reiche and Ramey (1991) define a conceptual framework as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation. They contend that a conceptual framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under scrutiny. The figure below shows: internal, external and student/institution related factors that determine the effectiveness of industry - TVET institutions collaboration in training. All these factors have to be addressed in order to ensure an effective industry - TVET institutions collaboration in training that is mutually beneficial. The quality of collaboration is the dependent variable. The quality of collaboration will be influenced by the extent of achievement of the objectives of TVET institution-industry collaboration.

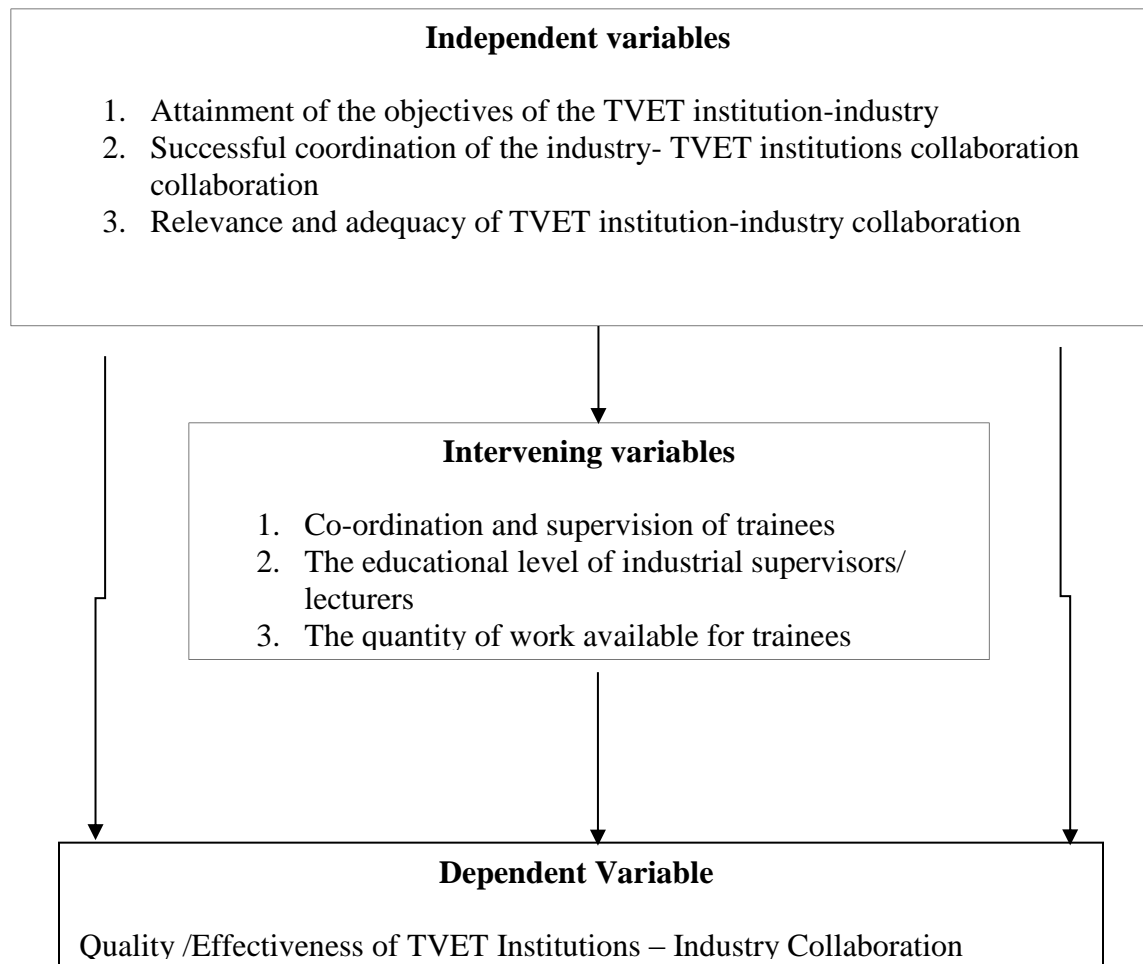


Figure1.1: Conceptual framework

The TVET institutions needs to strengthen links with industries to improve networking between academia and industries, to create a better understanding of each other's needs and to identify how they can be met through the industry programs. The TVET institutions will have the link with their home industries to determine their standard and to develop their own curriculum. With collaborations, the students with technical know-how will be able to get job in the industries. Also the quality of collaboration will be

determined by the effectiveness of the TVET institution-industries collaboration and how well the collaboration is coordinated.

Effective TVET institution-industry collaboration is the dependent variable. How effective the collaboration will be and the results of the collaborations will depend on the quality of the collaboration. However, there are other variables that can affect the results if not checked and these are the intervening variables. In this study the intervening variable will comprise of the co-ordination and supervision of trainees, educational level of industrial supervisors and the quantity of work available for the trainees. The study will control the variable by sampling on industries that are almost on the same development level. This will imply that the companies recruit employees almost of the same academic level, have a well-structured training department and contains allot of work for the trainees to practice on.

Conclusion

Many observers and educationists on quality of TVET training have given parallel observations on the effectiveness of the TVET training system visa vie industry expectations. These observations include among others, mismatch between the skills learned and skills demanded by industry, inadequate mechanism for quality assurance, and low participation of industry in educational issues. Ultimately, the search for competent, relevant and highly marketable TVET graduates among employers is high while casting doubt on the ability of the TVET system to meet these qualities. Can industry- TVET institutions collaboration in training be able to develop an individual and enable him/her fit into the world of work and society at large? Is the collaboration

between industry and TVET institutions capable of assuring the quality of graduates' knowledge skills and attitudes desirable for the world of work? These are the questions that this study attempted to answer.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents relevant literature review of the study. The highlights of the existing empirical study on industry- TVET institutions collaboration on training are discussed.

2.2 Objectives of Industry- TVET Institutions collaboration on training

The job of instruction to build up the person's character and empower the person in question fit into the general public has gotten an expanding consideration in the ongoing years (McMahon and Patton, 2002). Similarly, analysis has been broadly communicated by the overall population, the media, managers and guardians about the nature of TVET instruction; its capacity to deliver applicable, capable and qualified alumni (Wanyeki, 2016). TVET organizations have been on the focus on the way where they direct knowledge and skills transfer (Almeida, Behrman and Robalino, 2012). In a recent survey sponsored by Federation of Kenya Employers (2009), it emerged that 78% of human resource hired required re-training.

With knowledge, technology and job characteristics all changing very rapidly, there is today a universal problem of keeping the content of education up to date (Wanyeki, 2016). Teachers and textbooks, the major conduits by which the 'stuff of learning' gets piped into the classroom have high rate of obsolescence in this rapidly changing world (UNESCO, 2007). More so, the rapid increase in enrolments at all levels in education without commensurate increase in infrastructure and personnel has led to overstretched

facilities and high student staff ratios (Kenya vision 2030, 2008). Consequently, training especially in the TVET sub sector of education has been hindered by inadequate facilities and inappropriate curricula hence most graduates lack appropriate skills (Lelei, 2011). Further, the mismatch between skills and job requirement places a sharp demand on the education system to improve student's opportunities to participate in development process and for globalization (Bertrand, 2004).

Training institutions have been on the spotlight to show case their quality of training. Perhaps the best solution is to find a broader and more dynamic conception of the qualitative aspects of educational development-one which views education as a living thing whose goodness resides not only in its excellence relative to certain 'standards' but in its relevance and fitness to the changing needs of the particular students, employee or the society is intended to serve (Beefy, 2007).

In an effort to bridge the gap between training and the job requirements, the government through the national skills training strategy developed a manual through the National Industrial Training Council. Its aim was to ensure that students in training institutions become more relevant in work places (NTIC, 2004). This was to be achieved through industry- TVET institutions collaboration in training and not solely reduced to contributions by the TVET training in the classroom. This is because the only adequate training for occupations is training through occupations (Union, 2007. Finch &Crunkilton (1999) acknowledge that it is difficult for individuals and institutions to get all the highly specialized equipment needed to operate quality programmes in schools. It follows that while some skills could be obtained in the classroom, others are best developed in the workplace through work based learning (Roegge, 1996; Coll, Zegward and Hodge,

2002). The industrial attachment programme designed under the mandate of the National Industrial Training Council was to ensure the greatest improvement in the quality and efficiency of the training of personnel engaged in the industry (NTIC, 2004). The then director of industrial training acknowledged the ‘efforts being made by training institutions to attach trainees. He further noted that industrial attachment targets to influence the quality and efficiency of training in order to secure adequate supply of well-equipped manpower with problem solving skills as well as appropriate work ethics (NTIC, 2004). NITC (2004) outlined the following general objectives of an industrial attachment programme to include among others To; improve labour market relevance among trainees, link in-school training with on the job training and promote acquisition of practical skills and work ethics of attachés.

The specific objectives as outlined by the NITC (2004) were that attachés should be able to: Demonstrate problem solving skills, demonstrate practical competence and problem solving skills in specific situations, exhibit appropriate attitude and social skills like curiousness, self-confidence, maturity and self-reliance, and practice appropriate work ethics and culture

These objectives are in tandem with content objectives for TVET industrial attachment programme. Nonetheless, scanty information is available on the effectiveness of TVET institutions - industry collaboration.

2.3 Measurement of objectives

World Bank (2008) noted that for quite a while past, an expanding number of nations have understood that there is little point in attempting to gauge and plan preparing

prerequisites without knowing the result, in other words what happens to the youngsters who are prepared, how they enter the working scene, the connection between the preparation they have gotten and the activity they will hold. Accentuation has moved in surveying the nature of instruction from a worry with contributions to a worry with results. There is subsequently a requirement for training frameworks to address the issue of employability of its alumni and substantially more, their versatility to the universe of work (World Bank, 2008). The parameters utilized for the estimation of results of industry-TVET organizations joint effort on preparing necessitate that quantifiable variables to be recognized and used to examine the circumstance (World Bank, 2008). In any case, this is a serious testing task. While it is anything but difficult to evaluate any contribution to terms of materials, money and work it gets tricky to measure yield or results. This is on the grounds that it isn't evident whether we should take a gander at it as the individuals or understudies who have experienced the training framework or the abilities that they have obtained or to go much further, the utilization to which they put their aptitudes (World Bank, 2008). The estimation of yield may likewise be fundamental if profitability can be estimated as far as level of aptitudes accomplished on the degree of instruction capability since the two don't essential suggest the equivalent. The business TVET foundations coordinated effort on preparing needs to meet its goals in spite of the techniques that might be utilized to gauge its destinations. This is so on the grounds that while preparing organizations target meeting these goals, they need to watch out for the advancements in the business. The predicament is that 'these days bosses are intrigued less with regards to specialized information and expertise than in conduct related abilities among representatives. The contention is that representatives ought to be able to examine,

to participate in national dialogs, to show proof of innovativeness, versatility, self-rule, an awareness of other's expectations and to function as a group (Bertrand, 2004). These components are given unmistakable quality in working environment by forward looking human asset directors (Bertrand, 2004). Clearly these abilities are difficult to process and whatever techniques that might be applied it will demonstrate to be an overwhelming assignment. Further, an assessment of capacities isn't really the learning and expertise.

The achievement of industry-TVET foundations cooperation on training targets is subject to the objective of the particular firm/industry which understudies are connected. There are firms that spot solid accentuation on solid specialized learning (hands on abilities) with little accentuation on the hypothetical information of the procedures while others place solid accentuation on the aptitude of the representative with minimal hypothetical establishing. The fulfilment of the business TVET organizations cooperation on preparing goals is additionally looked with different difficulties. Work procedures change and consistent redefinition of employments has contended for expansive put together preparing that concentration with respect to transversal abilities and extensively relevant hypothetical learning (UNESCO, 2007). The suggestion is a requirement for constant audit of a concurred aptitudes stock imperative at each level and a parallel stock of enterprises that bear the cost of the ideal abilities (UNESCO, 2007). For understudies to exhibit critical thinking ability, hardworking attitudes and other attractive aptitudes then they must be eager to be dynamic and open to change (UNESCO, 2007). Along these lines, this investigation tried to build up the degree of fulfillment of TVET content destinations through industry-TVET organizations joint effort in training.

2.4 Relevance and adequacy of industry-TVET institutions collaboration in training

McNally (2008) reported that mechanical linkages assume a double job; to get ready understudies for the consistently expanding working environment necessities and for further investigation. The significance of instruction framework implies that the training must be first acknowledged by the market players and also it ought to be versatile and materials to the activity advertise (McNally, 2008). This necessitates the instruction framework itself, preparing establishments and the business must be in consonance as far as their targets and requirements.

Preparing organizations are looked with many testing requests from the business. A few businesses for the most part require a work power with general instruction where understudies can apply their procured aptitudes in any applicable order while others require occupation preparing that is explicit in which case understudies become familiar with a particular exchange alone (McNally, 2008). These assorted prerequisites by the business/manager characterize the significance of the instruction framework and specifically the modern connection program. Understudies access to firms with these shifting requests may at last turn out with various directions about a similar industry (McNally, 2008). As preparing foundations battle to keep a bosom with the activity necessities, they need to know the particular prerequisites by explicit ventures (McNally, 2008). Businesses that spot prime accentuation on the degree of beginning preparing and flexibility of staff they enrol may require diverse preparing design for attachés in the business dissimilar to the ones that spot solid accentuation on laborers having little aptitudes however stable down to earth know-how. Consequently this examination

looked to build up the pertinence and sufficiency of industry-TVET organizations joint effort on training.

2.5 Co-ordination and supervision of industry- TVET institutions collaboration

Industry-TVET establishments' joint effort in training is a 'fundamental segment of preparing proposed to give students a chance to procure and hone information, abilities and mentalities from genuine work understanding (NITC, 2004). The program requires co-appointment and supervision of exercises settled upon by the boss, mentor and the students to be learnt by execution at explicit occasions and to set execution guidelines. The program typically is adaptable in term and mode; and 'serves to open understudies to the universe of work' where understudies are offered chance to look past the homeroom and the research facility/workshop and perceive how science/innovation is placed into work to serve humanity. Given that functional part of preparing is constrained by the incessant absence of the more current and costly research center gear and other foundation, understudies utilize the chance to find how a portion of the hypothetical standards they have scholarly are applied in the different modern procedures (Bertrand, 2004: UNESCO, 2007). Students are likewise presented to non-science factors, for example, financial matters of the activities just as the security and modern - work enactments that apply to the work place (UNESCO, 2007).

There is no specific preparing would nowadays be able to get the job done a readiness for a vocation. Instruction is persistent procedures and along these lines work force need to consistently refresh their abilities. The securing of these specific preparing is combined with numerous difficulties. World Bank (2008) takes note of that basically all countries today, rich and poor the same wind up in the grip of extending instructive emergency. It

is generally an emergency of maladjustment of incongruities taking numerous structures between instructive frameworks and their condition. In this regard, the workplace in schools where understudies get the majority of the hypothetical abilities varies altogether from that of the genuine workplace in which most understudies will in the end be required to work (World Bank, 2008).

The requirement for genuine work experience implies that preparation foundations need to fortify their relations with the business if these objectives must be accomplished. All the more so the preparation in these establishments needs to meet the current worldwide market prerequisites. In any case, the test is that 'educators; the courses by which the 'stuff of learning' gets channeled into the homeroom may not be side by side with the most recent advancements in the business (World Bank, 2008). This is a genuine concern since the instructor is to evaluate the understudies in the business. While the educator battles to be side by side with the happenings in the business, 'the ever steady activity changes always inferable from changes in innovation, monetary structures and associations have extensive ramifications on the system of preparing itself (Beidel, 1993). It is commonly a foundation decide that instructors who regulate modern connection must be specialists in two expressions; the specialty of educating and the specialty of an art or exchange (Beidel, 1993). The achievement of the connection program in this manner will to a great extent rely upon whether the instructor has aced both these expressions. This contention implies that educators inside the TVET bisector must know the strategy of the exchange to order regard of businesses and foremen in the business (Beidel, 1993). Estriyanto (2016) saw that the capacities of educators to administer and survey understudies on mechanical connection are in relation to the operational procedure he/she

embraces to instruct. This is affirmed by Yakhina *et al.* (2016) where they expressed that professional instructive staff ought to be occupationally and expertly equipped.

Preparing establishments should in this manner put an eye on the educational plans while deliberately setting their ears in the business. Truly, appropriate concerns have been voiced on the TVET stage on the inflexible Kenya Institute of Curriculum Development (KICD) educational programs sections the quickly changing situation in the business. Maybe the inquiry that we should pose is; who is to be on the lead! Preparing organizations that have the command to convey educational plans that is regularly not dynamic and insignificant or enterprises that are consistently essentially ahead as far as innovation yet have no order to prepare?

Group (2004) explained that while occupations much of the time change, they seldom vanish by and large, nor do totally new openings regularly appear. In spite of the fact that innovations may change, occupations may not fundamentally change. Despite what might be expected this innovative changes may bring another arrangement of occupation necessities by and large. Preparing establishments must know about these elements.

The utility of setting up a preparation assessment framework which isn't exclusively on formal criteria, for example, assessments which survey for the most part information but instead on an assessment of the capacities really procured can't be over stressed. The necessity that businesses place accentuation on conduct related aptitudes spot pressure on preparing foundations to grant such abilities on learners. The normal result of the instruction framework ought to be the capacity of the labor to adjust to dynamic workplace. The aptitude conferred 'ought to go connected at the hip with more noteworthy versatility of the preparation framework. This flexibility is the reaction to the

flightiness of the work showcase' presented by the consistently changing innovation and employment elements (Bertrand, 2004).

Preparing foundations have been blamed for being unbending and lethargic. As McNeil (2013) watches, this stems from the preparation establishments themselves just as from the structure and educational plan of the instructional classes. He sees that preparation foundations work in shut circuit therefore making it hard to take part in the outside request of the universe of work. It is vital to set up at this level whether the business and TVET organizations are enthusiastic about obliging each other in their frameworks. For that congruity to flourish there must be coordination components from either side for viable joint effort so mooted to flourish. It is on this background the examination purposed to build up the degree to which co-appointment and supervision of industry-TVET establishments' joint effort on preparing is successful to encourage TVET organizations and businesses the same to meet their targets. How unique and responsive the coordinated effort and supervision that up-dates its systems to current patterns. Structures for co-appointment and supervision from the two partitions will be broke down.

2.6 Accreditation of training programmes

The nonstop refreshing of abilities by workers or understudies must be done through training framework that is receptive to changes in innovation (Bertrand, 2004). Despite what might be expected the quickening specialized advancement has caused it to turn out to be essentially inconceivable for preparing organizations to approach modem gear and apparatus working under genuine generation conditions on the grounds that such hardware's are exorbitant and before long become out of date (Bertrand, 2004). The

ramifications of these is that solid institutional projects must be set up to guarantee that the connection between preparing organizations and the business stays energetic (Bertrand, 2004).

While industry-TVET establishments joint effort on preparing is an honorable thought, the worry of instructive organizers is to gauge the degree to which the destinations have been acknowledged and which technique to utilize. It is accepted that the achievement of industry- TVET institutions collaboration on training programmes 'depends firstly on precisely ability for industry to find a window of input into training and also the financial resources available and the practical means of pinpointing and questioning the TVET content groups concerned. Therefore, the study seeks to establish the extent of industry regulation of TVET content objectives through industry- TVET institutions collaboration on training. How dynamic and responsive the accreditation up-dates its mechanisms to current trends and mitigates potential pitfalls a foretime.

2.7 Challenges of TVET institutions with the industry

Kenya vision 2030 spots a solid accentuation on linkage between preparing organizations and the business. The Session Paper No. 1 of 2005 suggested that preparation establishments must reinforce the degree of coordinated effort with industry for important training to happen. The paper attests that modern concordance is basic so as to upgrade efficiency and firm aggressiveness. An all-around set out program whenever composed ought to bring solid ties between preparing establishments and the business. Much has been said about this relationship. Kenya vision 2030 notes that 'poor linkage between the work market and preparing organizations has prompted expertise jumble and

underdevelopment.' This linkage is incompletely conceivable if the two gatherings understand that the relationship that is to exist ought to be advantageous in nature. Businesses need to acknowledge that any workforce originates from preparing foundations and along these lines ought not exploit the modest work gave by the attachés at practically free cost. Preparing establishments then again need to take note of that their prosperity relies upon their retention level of their alumni into the activity showcase.

The perception by Fayol (2016) wholes it all that preparation foundations are not insignificant extras to industry or understudies or human intends to material methods. Unexpectedly, they ought to furnish students with basic soul and scholarly ability to change a modern and instructive structure. The need for a mutually beneficial arrangement is essential to maintaining the interest of the two parties to sustain interest and hence maintain the collaboration. That is why the study purposed to establish any challenges to industry- TVET institutions collaboration on training with a focus on SET programmes.

2.8 Comparative Education

On a comparative education analysis, several comparisons have been made among countries that can be considered strong and fast growing economies. It emerges that most countries that have rapid growth in this sector have a sound structure between TVET institutions and industry (Takahiro, 2012).

A case at hand is that of Malaysia and Japan (Takahiro, 2012), in the TVET training the institutions have a well-drawn calendar that allows six months' intensive internship at the industry. The internship mode offers a great deal of exposure as interns are expected to

perform duties of their career under supervision. Training experiences are moderated by industry to ensure competence based training tailored to new trends (Takahiro, 2012). Roege et al (1996) contend that TVET programmes should contain workplace experiences component. This is attributed to the fact that technologies and concepts are best mastered in practice / operation Roege *et al.* (1996).

Further the curriculum has a clear alignment to skills demanded by the industry; wherein industry regularly outlines operations at industry and requisite competencies (Takahiro, 2012). From this outline then institutions draw-up competency based training content. Curriculum development should have a mechanism to keep a constant eye on industry expectations and trends. The industries are given incentives to collaborate owing to tax allowance for time lost in instructing the trainees, through an established formula of calculating loss in production arising from internship(Takahiro, 2012). In Kenya, DIT has also a mechanism of motivating trainees and industry through an attachment funding scheme. Nonetheless, there is scanty information on its impact and hence this study.

2.9 Critical Review

The need to align TVET institutions and industry stands; in respect of training preparedness and consonance of the content of knowledge and skills to be learnt. This literature review reveals that partnerships between TVET institutions and industry are an active part of today's learning environment. Some scholars agree that while there is potential for effective partnerships between TVET providers and industry, there is scanty evidence of the effectiveness of the collaboration. From the literature, it is obvious that it is important to measure the effectiveness of TVET institution- industry collaboration.

This measure will indicate if the trainees are gaining from the collaborations and also pointing out areas of improvement. It is because of the importance and the scanty availability of information about the effectiveness of TVET – industry collaboration that drove the researcher to conduct this study.

2.10 Conclusion

Much has been said about the need to have quality graduates from TVET Institutions. There is no doubt that much consideration has to be given to industry- TVET institutions collaboration on training outcomes, that is to say, its effectiveness in relation to the way it is organized, supervised and assessed, its relevance and how it brings about impacts on quality of training and hence graduates. The findings of this study will not just reinforce the knowledge on how skills are acquired and imparted but how institutions can get optimum results from industry- TVET institutions collaboration on training.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter describes the research design and the methods that were used to collect data in accordance with objectives of the study. The covers the following; study area and population, research design, sampling and sampling techniques. Further, development and use of survey instruments, validity and reliability of research instruments is set out.

3.2 Research methodology

Mixed Method research is used in the design of the study. This method is used as it brings with it the following advantages to the study as identified by Schofield and Anderson (1984); Rallis and Rossman (1998); Mertens (2003).

- i. Qualitative research is conducted in natural settings rather than laboratory manipulation.
- ii. Utilizes the researcher as the chief “instrument” in both data-gathering and analysis.
- iii. Emphasizes “thick description,” that is, obtaining “real,” “rich,” “deep,” data which illuminate everyday patterns of action and meaning from the perspective of those being studied.
- iv. Tends to focus on social processes rather than primarily or exclusively on outcomes
- v. Employs multiple data-gathering methods

- vi. Uses an inductive approach to data analysis, extracting its concepts from the mass of particular detail which constitutes the database.

Also Eisner (1991) argues that qualitative studies express language and “voice.” By contrast quantitative inquiry brings’ with it the following advantages to this study as stipulated by Schofield and Anderson (1984, pp.8-9):-

- i. Qualitative examine is directed in regular settings instead of research facility control.
- ii. Utilizes the scientist as the boss "instrument" in the two information social affair and investigation.
- iii. Emphasizes "thick depiction," that is, acquiring "genuine," "rich," "profound," information which light up regular examples of activity and importance from the point of view of those being contemplated.
- iv. Tends to concentrate on social procedures as opposed to principally or only on results
- v. Employs numerous information gathering techniques

Therefore, utilizing both techniques has a complementing effect which in turn increases the reliability and validity of these study findings (Guba and Lincoln, 1994). Also because of their difference in advantages, scholars such as Reinhardt and Cook (1979) argue that method-type is not irrevocably linked to paradigm-type and that the qualitative and quantitative paradigms are neither as rigid nor as incompatible as is commonly assumed.

3.3 Research Design

Research design is the applied structure inside which research is led, comprises the blue print for the gathering, estimation and investigation of information (Yin, 2013). The examination utilized clear review research structure. Graphic overview is a technique for gathering data by talking or directing a poll to an example of people (Orodho, 2003). It tries to gather data about frame of mind, conclusion, propensities and discernment or any of the assortments of instruction or social issues (Orodho and Kombo, 2002). Toury (2012) found out that distinct examinations are limited to reality discoveries, yet may frequently bring about the detailing of significant standards of information and answer for huge issues. They include estimation, characterization, examination, correlation and understanding of information. The study used descriptive survey method because the researcher desired to examine the effectiveness of the industry – TVET institutions collaboration in training within the North Rift Region. The effectiveness of this programme was assessed by assessing how the objectives are being achieved, collaboration supervision, organization, quantifiable experiences, relevance and challenges.

3.4 Study Area

The study focused on TVET institutions in the North Rift Region. The region has one national polytechnic, four technical training institutes and one institute of technology. These are Eldoret National Polytechnic, Kaiboi Technical Training Institute (K.T.T.I.) in Nandi North, Ol'lessos Technical Training Institute (O.T.T.I) in Nandi East, Kitale Technical Training Institute (K.I.T.T.I) within Kitale town, Rift Valley Technical

Training Institute (R.V.T.T.I) 10km from Eldoret town on Eldoret-Nakuru road, Rift Valley Institute of Science and Technology (R.V.I.S.T) in Nakuru. About six private institutions exist namely: Alphax, Eldoret TTI, Nairobi Aviation, Kenya Institute of Applied Sciences, Nehema Institute and Eldoret Institute of Professional Studies with an enrolment in ‘Science Engineering and Technology’ courses of 1017 students.

3.5 Target Population

3.5.1 TVET Institutions

The students’ enrolment for these institutions stood at over 6104 with 434 lecturers (Provincial Technical Training Officer Report, May, 2013). The research targeted all students in these TVET institutions within the North Rift region. It also targeted six public and six private TVET Institutions- including lecturers who organize and assess students during industry- TVET institutions collaboration in training. Lecturers, Industrial attachment coordinators in sampled TVET institutions and Heads of Departments and Principals participated in the study.

3.5.2 Industries

The study purposefully sampled industries in the North Rift region. This was to ensure that the industries come from the same geographical region as the technical and vocational institution so as to ensure reliability of the data collected. A total of 87 industries (Appendix V) were targeted in the study. The study also targeted at least one supervisor per industry therefore, a total of 87 workplace supervisors formed the target population.

3.6 Sampling and Sample Sizes

Sampling is important because it is the process of selecting a typical representation of the population. It is an essential task to arrive at the correct sample size as it ensures that generalization is done to the total population without misrepresentation of facts. For the purpose of clarity this section discusses sampling and sample size separately.

3.6.1 Sample size

A sample size of at least 10% was adopted noting the sample sizes were below 10,000. Since this was a descriptive survey and most of the technical and vocational institution in Kenya have similar learning environment, the study was limited to one national polytechnic found within the region (Eldoret Polytechnic), one technical training institute in a rural set up (Kaiboi T.T.I) and one technical training institute in a town setup (Rift Valley Technical Training Institute). The researcher thus used purposive sampling to select the institutions by virtue of their location and status. The diverse population characteristic based on status and geographical location were a true representative of the entire population of the TVET sector. Two private institutes were selected randomly by picking a ballot without replacement namely Alphax college and Kenya Institute of Applied Sciences.

3.6.2 Sampling Procedures.

This involves how respondents were chosen. The researcher used stratified proportionate random sampling to get students and lecturers from Science Engineering and Technology (SET) departments in the five institutions. This is because of the relative enrolment in

different departments. Stratified sampling also enables the use of disproportionate sampling that gives unequal weight (Kothari, 2004). The advantage with stratified proportionate random sampling is that it ensures inclusion in the sample of every sub group (Kothari, 2004).

Purposive sampling was employed to choose the Industrial Attachment Coordinators. Systematic sampling was used to identify firms/industries that attach students. This was done making a list of all firms that attach students with number of students attached in the respective firms. The first five firms that had the highest number of students were selected for the study. It is also assumed that firms that take many students on attachment have done so consistently over time. This data was collected from respective industrial attachment coordinators in the given institutions. Purposive random sampling was used to select private institutes required in the study so as to select institutions which mount courses that require hands on industry exposure.

Table 3.1 Summary of Sampling

Category	Sample	Selected	%
1 National Polytechnic (ELDORET)	1	1	100
2 Urban Public T.T.I (RVTTI)	3	1	50
3 Rural Public T.T.I (KAIBOI TTI)	2	1	50
4 Private T.T.I (ALPHAX, KIAS)	6	2	30
5 Industries (Raiply, MU, Wilkori)	87	32	36.7
6 Students			
a) Public	6104	712	11.6
b) Private	1017		
7 Lecturers/ IAC/ Principals	434	104	24
8 Work place Supervisors	87	32	36.7

3.7 Research Instruments

The researcher employed two data collecting instruments in the study. These were questionnaire and an interview schedule.

3.7.1 The Questionnaires

Three sets of questionnaire were used namely; students' questionnaire, questionnaire for lecturers and questionnaires for workplace supervisors. Questionnaire technique was preferred because it covered a wide range of area and also it reached many respondents at a cheaper cost. It also saves a lot of time (Kothari, 2004). The sets of questionnaire

developed for this study comprised of combination of both closed and open-ended questions. It was divided into five sections namely; objectives of industry – TVET institution collaboration, supervision and organization of Industrial Attachments, relevance of exposures, attitude of students about the attachment programme and finally the challenges of the programme. A five point likert scale was used in each part to assess the various factors affecting the effectiveness of the industrial attachment programme.

3.7.2 Interview Schedule

The researcher used structured interview schedule to interview the industrial attachment coordinators and selected Industrial attachment coordinators and workplace supervisors. Structured interviews were selected because they are easier to analyse, economical and provide a basis for generalization (Kothari, 2004).

3.8 Data Collection and Administration of Instruments.

The researcher employed two research assistants to administer questionnaires. The researcher checked for completeness after the questionnaires had been administered. The researcher did administer the interview schedule himself. The respondents were requested to complete the questionnaire and given sufficient time before being collected. This was done after seeking permission from the management. In situations where the respondent, was not in a position to complete the questionnaire in a day, the questionnaire was left with the respondent to be collected at a later date upon completion.

3.8 Reliability and Validity of Research Instruments.

There is need to test the reliability of research instruments as this serves to know whether the questions asked are well structured. Cohen *et al.* (1998) stressed that specialists of research ought to distinguish the legitimacy and the unwavering quality of research instruments. The exploration instruments were given to two managers and two experienced specialists inside and outside the Technology Education branch of University of Eldoret so as to assess the reliability and legitimacy. Their suggestions and clarifications were utilized to improve portrayal or inspecting sufficiency of the material that should have been examined and enhancements for the instruments.

Reliability alludes to how much the scores got with an instrument are predictable (Polit and Beck, 2013). The idea of reliability has two perspectives to it; inner and outside firm quality. Inner solid quality is the capacity of a scale to gauge a solitary thought and whether it is inside expected; its reliability can be processed.

External reliability alludes to consistency of measure after some time. To guarantee steadfast quality of the analysis instruments, the researcher directed a pilot study; it included managing similar samples to students and instructors of Sigalagala National Polytechnic and working environment directors of two firms in Kakamega Town. The point was to set up the pertinence of the instruments of gathering information, recognize any issue that may happen at the genuine time of information accumulation procedure and check whether the inquiries are justifiable to respondents. The substance of the instruments depended on the targets and questions that guided the investigation. The

configuration of the instruments was sensibly considered to guarantee clearness of the heading to the respondents.

3.10 Data Analysis and Presentation

Descriptive statistics, which includes percentages, frequency distribution, graphs, and pie charts, was used in order to analyse data. The results were used for discussion of findings. In order to analyse the extend of success of the attainment of industrial attachment objectives, the researcher administered questionnaires to students, workplace supervisors and lecturers in order to ascertain the effectiveness of Industry- TVET Institutions collaboration in training assessment.

The analysis of the supervision and organization of the Industry- TVET Institutions collaboration in training was done by use of graphs, percentages and tables. The last part of the questionnaires employed ratings from very good to very poor on the way the industry- TVET institutions collaboration in training are being supervised and organized.

The relevance of adequacy of skills was analyzed by use of frequency distribution. Lastly, data analysis on challenges employed the use of tables and percentages. To analyse interview responses a frequency chart of the itemized responses was used to yield percentile assessments. These variables are supervision, organization, and relevance of industry- TVET institutions collaboration in training as well as the linkage mechanism with industry.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter deals with data presentation, analysis and interpretation of the research findings. In the first section, descriptive statistics are used to provide background information of the respondents who participated in this study. The second section presents the analysis of the responses to the specific objectives of the study as provided by the respondents in the questionnaires and interview schedule

4.2 Bio Data of the Respondents

4.2.1 Bio Data of the Students

The bio datas of students sought to determine year of study and course studied by respondents. Table 4.1 shows the responses on year of study

Table 4.1 Year of study

Year	Frequency	%
I	22	3.1
II	390	54.8
III	300	42.1
Total	712	100

As shown in Table 4.1, over half (54.8%) of the learners who contributed in the study were in their 2nd year of study, as another 42.1% (350) were in their 3rd year of the study. Only 3.1% (22) were in 1st year of study. It follows that 96.9% of the trainees had been exposed to industry through Industrial Attachment programme.

Table 4.2: Courses pursued by students

Course undertaken	Frequency	%
Diploma in Mechanical Engineering (DME)	97	13.6
Diploma in Fashion Design (DFD)	12	1.7
Diploma in Electrical & Electronic Engineering (DEEE)	67	9.4
Diploma in Civil Engineering (DCE)	63	8.8
Diploma in Information Communication Technology (DICT)	63	8.8
Diploma in Surveying (DS)	56	7.9
Craft in Masonry (CM)	49	6.9
Diploma in Building Technology(DBT)	23	3.2
Artisan in Plumbing (AP)	49	6.9
Artisan in Automotive Engineering (AAE)	84	11.8
Diploma in Architecture (DA)	56	7.9
Diploma in Secretarial Science &Office Management(DSSOM)	37	5.2
Diploma in Automotive Engineering (DAE)	56	7.9
Total	712	100.0

Findings in Table 4.2 showed that 13.6% are undertaking DME, 11.8% of them are pursuing AAE, DEFE (9.4%), DCE; DICT (8.8%), DA; DAE; DS (7.9%), AP; CM (6.9%), DSSOM (5.2%), DSSOM (5.2%), DBT (3.2%) and DFD (1.7%).

4.2.2 Academic qualification of lecturers

The lecturers who contributed in this study were requested to state their academic qualification. Their responses are presented in Table 4.3.

Table 4.3 Academic qualification of lecturers

Academic Qualification	Frequency	%
Certificate	0	0.0
Diploma	72	69.2
Higher Diploma	8	7.7
Degree	20	19.2
Masters	4	3.9
Doctorate	0	0.0
Total	104	100

As indicated in Table 4.3, majority of the lecturers (69.2%) were diploma holders while 19.2% (20) were degree holders. Another 7.7% (8) and 3.9% (4) were higher diploma and masters holders respectively. It should be noted that there were no certificate and PhD holders who participated in this study.

4.2.3 Data of Workplace Supervisors

The workplace supervisors who participated in this study were asked to state their academic qualification. Their responses are presented in Table 4.4

Table 4.4 Academic qualification of Industry Supervisors

Academic Qualification	Frequency	%
Certificate	0	0.0
Diploma	9	28.1
Higher Diploma	4	12.5
Degree	11	34.4
Masters	4	12.5
Doctorate	4	12.5
Total	32	100

As shown in Table 4.4, majority of the industry supervisors (34.4%) were degree holders while 28.1% (9) were diploma holders. Another 12.5% (4,) had each Higher Diploma, Masters and Doctorate. It should be noted that there were no certificate holders who participated in this study.

4.3 Attainment of Industry –TVET Institution collaboration objectives

The respondents were requested to give their view about the attainment of industry-TVET institution collaboration objectives. The responses are stated in Table 4.5

Table 4.5 Students' Assessment on Attainment of Objectives of Industry –TVET Institution Collaboration on Training

Response	SA		A		N		D		SD		TOTAL	
	f	%	F	%	F	%	f	%	f	%	F	%
Students' ability to demonstrate problem solving skills	95	13.3	348	48.9	77	10.8	52	7.3	140	19.7	712	100
Understudies' capacity to exhibit down to earth skill	68	9.6	384	53.9	166	23.3	94	13.2	0	0	712	100
Students' capability to display suitable social skills	86	12.1	108	15.2	375	52.7	103	14.5	40	5.6	712	100
Students' capacity to practice suitable work ethics and culture	20	2.8	98	13.8	398	55.9	5	0.7	4	0.6	712	100

n = 712; Key: SA = strongly agree, A = agree, N = Neutral, D = disagree and SD = strongly disagree

As shown in Table 4.5, 62.2% (443) of the students who participated in this study asserted that industry-TVET institution collaboration has achieved the objective of capacity to establish problem solving skills whereas 27% (192) stated that capability to validate problematic solving skills has not been attained, with 77(10.8%) of them being undecided. It is further indicated that 63.5% (452) agreed that ability to demonstrate practical competence and problem solving skills in specific situations has been achieved. Only 13.2% (94) disagreed and the rest (23.3%) were undecided.

The lecturers were asked to state whether the objectives of industry-TVET institutions collaboration were attained and the results are presented in Table 4.6. Findings obtained

indicated that majority (99.1%) of the lecturers who participated in this study agreed that the students' ability to demonstrate problem solving skills was attained.

Table 4.6: Lecturers' Assessment of Attainment of industry-TVET institutions collaboration objectives

Objectives	SA		A		N		D		SD		TOTAL	
	F	%	f	%	f	%	F	%	f	%	f	%
Student's ability to demonstrate problem solving skills	9	(8.7)	94	(90.4)	1	(1.0)	0	(0.0)	0	(0.0)	104	100
Student's ability to demonstrate practical competence and problem solving skills in specific situation	7	(6.7)	94	(90.4)	3	(2.9)	0	(0.0)	0	(0.0)	104	100
Student's ability to exhibit appropriate attitudes and social skills	0	(0.0)	65	(62.5)	4	(3.8)	27	(30.0)	8	(7.7)	104	100
Student's ability to practice appropriate work ethics and culture	7	(6.7)	94	(90.4)	3	(2.9)	0	(0.0)	0	(0.0)	104	100

n = 104; Key: SA = strongly agree, A = agree, N = Neutral, D = disagree and SD = strongly disagree

Another 97.1% (101) stated that students' ability to demonstrate practical competence and problem solving skills in specific situation was achieved whereas 62.5% (65) agreed that students' ability to exhibit appropriate attitudes and social skills was obtained. It is shown in Table 4.6 that 97.1% (101) of the lecturers stated that the objective on the students' ability to practice appropriate work ethics and culture was achieved.

Industry supervisors were asked to state whether the objectives of industry-TVET institutions collaboration was attained and the results are presented in Table 4.7

Table 4.7: Work Place Supervisors' Assessment of Attainment of industry-TVET institutions collaboration objectives

Students ability to;	SA		A		N		D		SD		TOTAL	
	F	%	f	%	f	%	F	%	f	%	f	%
Demonstrate- problem solving skills	8	(25.0)	19	(59.4)	5	(15.6)	0	(0.0)	0	(0.0)	32	100
Practical competence in specific situations	7	(21.9)	22	(68.8)	3	(9.3)	0	(0.0)	0	(0.0)	32	100
Appropriate attitudes and social skills	0	(0.0)	18	(56.3)	4	(12.5)	5	(15.6)	5	(15.6)	32	100
Appropriate work ethics and culture	7	(21.9)	15	(46.9)	3	(9.3)	0	(0.0)	0	(0.0)	32	100

n = 32; Key: SA = strongly agree, A = agree, N = Neutral, D = disagree and SD = strongly disagree

Table 4.7 shows that majority (84.4%) of the industry supervisors who participated in this study agreed that the students' ability to demonstrate problem solving skills was attained. Another 90.7% (29) stated that students' ability to demonstrate practical competence and problem solving skills in specific situation was achieved whereas 56.3% (18) agreed that students' ability to exhibit appropriate attitudes and social skills was obtained. Results further showed that 68.8% (22) of the supervisors stated that the objective on the students' ability to practice appropriate work ethics and culture was achieved.

Interview with key industrial attachment coordinators was scheduled to discuss objectives of industry-TVET collaboration on training. Below is an excerpt of the proceedings of such discussions “Our operation with the industries that we collaborate with is to improve labour market relevance among trainees, to link in-school training with on the job training and to promote acquisition of practical skills and work ethics of attachées”

4.4 Relevance and Adequacy of skills

4.4.1 Forms and nature of industry-TVET collaboration

Interviews with industrial attachment coordinators reported formal and informal as the main forms of industry-TVET collaboration in the study area. Results from the interview also reported that collaboration with; central government agencies and international donors through (MOEST), local private enterprises, county governments and jua kali enterprises are the main of industry-TVET collaborations within the study area.

4.4.2 Skills Expected to be learnt

Lecturers/industrial attachment coordinators were asked to state the skills that students in TVET institutions are expected to acquire during the industry-TVET institutions collaboration endeavours. Their responses are presented in Table 4.8

Results showed that 86.5% (90) of the lectures stated that industry-TVET institutions collaboration endeavours to supplement practical content as another 75% (78) stated that it provides an opportunity for one to be exposed to new technologies.

Table 4.8 Skills to be acquired during industry-TVET institutions collaboration

Skills Expected	Frequency	%
Exposure to practical content	90	86.5
Exposure to new technologies	78	75.0
Exposure to real work set up	99	95.2
Exposure to modern machines and equipment	87	83.6

There were 95.2% (99) who stated that industry-TVET institutions collaboration endeavours to expose one to real work set up and 83.6% (87) stated that it was set to enable one get exposure to modern machines and equipment.

4.4.2 Causes of training gaps

The supervisors were asked to state whether they experienced any training gap between what TVET institutions expected to do and industry opportunities, majority stated that they experienced training gaps. They were further asked to state the causes of the training gaps and their responses are presented in Table 4.9.

Table 4.9 Causes of training gaps

Cause	Frequency	%
Content mismatch	22	68.8
Hands on training need	18	56.3
Lack of adequate training equipment	15	46.9
Lack of adequate trainers with relevant skills	25	78.1

As shown in Table 4.9, 68.8% (22) of the supervisors who participated in this study stated that there was content mismatch between training and real work whereas 56.3%

(18) stated that there was hands-on training need. Another 46.9% (15) stated that there was lack of adequate training equipment.

4.4.3 Respondents' assessment of relevance and adequacy of skills

Students, lecturers were asked to state the relevance and adequacy of skills learnt and their responses are presented in Table 4.10; Table 4.11; Table 4.12.

As indicated in Table 4.10, 82.7% (589) of the respondents stated that to a great extent, they learnt about the latest development in their course through industry-TVET institutions collaboration. Another 83.7% (596) asserted that industry-TVET institutions collaboration added a good deal to their scientific knowledge. It is also indicated in Table 4.10 that 70.1% (499) of the respondents stated that to a great extent they were able to operate machines and equipment heard and read about in text books whereas 21.3% (152) said to some extent. Majority (83.3%) of the respondents stated that to some extent, they acquired new skills relating to their area of study, whereas only 15.4% (110) stated that they acquired new skills relating to their area of study to a little extent.

Table 4.10 Students' Assessment on Adequacy of skills

Objectives	GE		SE		L		VN		TOTAL	
	f	%	d	%	f	%	f	%	f	%
Learnt latest developments through the collaborations	589	82.7	82	11.5	38	5.3	3	0.4	712	100
The collaboration added a good deal to my scientific knowledge	596	83.7	106	14.7	10	1.4	-	-	712	100
Able to operate machines and equipment heard and read about in textbooks	499	70.1	152	21.3	61	10.0	-	-	712	100
Acquired new skill relating to my area of study	-	-	593	83.3	110	15.4	9	1.3	712	100
Able to sharpen old skill already acquired in area of study	588	82.6	93	13.1	29	4.1	2	0.3	712	100
Accomplished practical assignments given by my workplace supervisors	-	-	-	-	9	1.3	703	98.7	712	100
Acquainted with new technologies, machines and equipment	654	91.8	55	7.7	3	0.4	-	-	712	100
The collaboration gives an opportunity of relating theoretical knowledge to practice.	648	91.0	66	9.3	2	0.3	-	-	712	100

n=712; Key; GE= great extent, SE= some extent, L= little, VN=virtually nothing

Findings further revealed that 82.65 (588) of the respondents stated that to a great extent, they were able to sharpen their old skills already acquired in area of study. However, there was 0.3% (2) of the respondents who asserted that there was actually nothing acquired in the area of study.

It is worth to note that majority (98.7%) of the respondents stated that they were not able to accomplish practical assignments given by their work place supervisors. In addition,

91.8% of the respondents stated that they were acquainted with new technologies, machines and equipment in their areas of study function.

Table 4.10 further showed that 91.0% (648) of the respondents stated that to a great extent, industry-TVET institutions collaboration gives good opportunity of relating their theoretical knowledge to practice.

The lecturers were also asked to state whether the skills were relevant and adequate. The findings are shown in Table 4.11. Majority (65.4%) of the respondents stated that to some extent, students learnt about the latest developments in their course through industry-TVET institutions collaboration whereas 26.0% (27) stated that this was the case to a great extent.

Table 4.11: Lecturers' Assessment of relevance and adequacy of skills

Adequacy skills	GE		SE		L		VN		TOTAL	
	f	%	F	%	f	%	f	%	f	%
Students learnt about the latest developments in my course through the collaboration	27	(26.0)	68	(65.4)	9	(8.6)	0	(0.0)	104	100
The collaboration added a good deal students scientific knowledge	91	(87.5)	13	(12.5)	0	(0.0)	0	(0.0)	104	100
Students were able to operate machines and equipments heard and read about in textbooks	88	(84.6)	16	(15.4)	0	(0.0)	0	(0.0)	104	100
Students acquired new skills relating to area of study	42	(40.4)	38	(36.5)	20	(19.2)	4	(3.8)	104	100
Students correctly accomplished practical assignments given by workplace supervisors	20	(19.2)	71	(68.3)	10	(9.6)	3	(2.9)	104	100
Students were acquainted with knowhow of new technologies, machines and equipment	43	(41.3)	39	(37.5)	22	(21.2)	0	(0.0)	104	100
The collaboration gives a good opportunity of relating my theoretical knowledge to practice.	48	(46.2)	36	(34.6)	20	(19.2)	0	(0.0)	104	100
Students receive valuable idea about industry	59	(56.7)	38	(36.5)	7	(6.7)	0	(0.0)	104	100

n=104; Key; GE= great extent, SE= some extent, L= little, VN=virtually nothing

The study also reveals that 40.4% (42) stated that to a great extent students acquired new skill relating to area of study whereas 36.5% (38) stated that this was the case to some

extent, students were able to sharpen skills already acquired in area of study. Another 68.3% (71) stated that to some extent, students correctly accomplished practical assignments given by workplace supervisors.

Less than half (41.3%) of the lecturers stated that to a great extent, students were acquainted with how new technologies machines and equipment in their area of study function as 37.5% (39) considered this to some extent. There were 56.7% (59) of the respondents who stated that to a great extent, students receive valuable idea about industry whereas 36.5% (38) stated that this was the case to some extent while only 6.7% (7) agreed to a little extent.

The study also reveals that 84.4% (27) stated that to a great extent students acquired new skill relating to area of study. Another 15.6% (5) stated that to great extent, students correctly accomplished practical assignments given by workplace supervisors. It should however be noted that majority (93.8%) of the industry supervisors who participated in this study did not agree to the statement that 'the time I spent doing academic work.' This implies that they are of the agreement that the time spent in industry is meaningful to the student.

Table 4.12: Workplace supervisors' assessment of relevance and adequacy of skills

Adequacy skills	GE		SE		L		VN		TOTAL	
	F	%	f	%	f	%	f	%	D	%
Students learnt about the latest developments in my course	8	(25)	19	(59.4)	5	(15.6)	0	(0.0)	32	100
Students added a good deal to my scientific knowledge	5	(15.6)	27	(84.4)	0	(0.0)	0	(0.0)	32	100
Able to operate machines and equipment heard and read about in textbooks	8	(25)	22	(68.8)	0	(0.0)	0	(0.0)	32	100
Students acquired new skill relating to my area of study	19	(59.4)	8	(25)	5	(15.6)	0	(0.0)	32	100
Students sharpened my old skill already acquired	3	(9.4)	22	(68.8)	7	(21.8)	0	(0.0)	32	100
Students correctly accomplished practical assignments given by my workplace supervisors	5	(15.6)	18	(56.3)	9	(28.1)	0	(0.0)	32	100
The time Students spent in industry could have been more useful spent doing academic work	0	(0.0)	0	(0.0)	30	(93.8)	2	(6.2)	104	100
Students acquainted with how new technologies, machines and equipment function	5	(15.6)	18	(56.3)	9	(28.1)	0	(0.0)	32	100
Good for relating theoretical knowledge to practice.	3	(9.4)	22	(68.8)	7	(21.8)	0	(0.0)	32	100
Students receive valuable idea about industry	7	(21.9)	22	(68.8)	3	(9.3)	0	(0.0)	32	100

n=32; Key; GE= great extent, SE= some extent, L= little, VN=virtually nothing

Less than half (15.6%) of the lecturers stated that to a great extent, students were acquainted with how new technologies machines and equipment in their area of study function as 56.3% (18) considered this to some extent. There were 21.9% (7) of the

respondents who stated that to a great extent, students receive valuable idea about industry whereas 98.8% (22) stated that this was the case to some extent.

From the above results, it is evident that the industry- TVET institutions collaboration on training is relevant on skill acquisition. It points to the immense need for the exposure and also it affords a learning methodology that is effective in transfer of knowledge and skills. This method of learning is favored by students as it is capable of holding the concentration of learners' interest.

4.5 Level of success of the coordination and supervision of the industry- TVET institutions on training

Response on the success of the coordination and supervision of the industry- TVET institutions collaboration on training from coordinators and workplace supervisors were summarized in Table 4.13 and 4.14.

Response from lecturers showed that 91.3% (95) agreed that there are working collaborations with industry. Majority of the respondents (51.9%) reported that they are aware of only two working collaborations with industry in respect of training. Results further showed that 63.5% of the respondents reported that students are exposed once to industry each academic term. Majority 89.6% of the respondents agreed that the number of training visits by the students at industry was inadequate. About 76% of the respondents further reported that students prepare a final report on experiences at each industry while 63.4% of them confirmed that supervisors spend adequate time instructing students while at industry as shown in Table 4.13.

Table 4.13: Lecturers' response on success of the coordination and supervision of the industry- TVET institutions collaboration on training

characteristics	n=104
Presence of working collaborations with industry in respect of training	
Yes	95(91.3)
No	9(8.7)
Number of industry- TVET institution collaborations you know of	
One	5 (4.8)
Two	54(51.9)
Three	45(43.3)
More than three	0(0)
None	0(0)
No. of times students are exposed to industry each academic term	
Once	66(63.5)
Twice	28(26.9)
Thrice	10(9.6)
More than three times	0(0)
None	0(0)
The number of training visits at industry are adequate	
Yes	11(10.6)
No	93(89.4)
Students prepare a final report on experiences at each industry	
Yes	79(76)
No	25(24)
Supervisors spend adequate time instructing students while at industry	
Yes	66(63.4)
No	38(36.6)

Percentages are in parentheses

Responses from students on success of the coordination and supervision of the industry-TVET institutions collaboration on training were summarized in Table 4.14. Findings from the study showed that majority of the respondents (96.5%) agreed that they have been exposed to industry in the course of their training with 96.2% of them approving that the exposure was done in time.

Majority of the respondents (63.3%) were exposed to industry once per academic term with 91% of them feeling that the exposure time was not adequate. Approximately 99.4% of the respondents prepared a final report on experiences at the industry with 85.1% of them receiving feedback on the reports.

Table 4.14: Students response on success of the coordination and supervision of the industry- TVET institutions collaboration on training

Characteristics	n=712
You have been exposed to industry in the course of training	
Yes	687(96.5)
No	25(3.5)
If yes in above, the exposure was done in time	
Yes	685(96.2)
No	27(3.8)
No. of times you were exposed to industry per academic term	
Once	451(63.3)
Twice	244(34.3)
Thrice	17(2.4)
The exposure was adequate	
Yes	64(9.0)
No	648(91.0)
You prepared a final report on experiences at the industry	
Yes	708(99.4)
No	4(0.6)
You received feedback on the said reports	
Yes	606(85.1)
No	106(14.9)
Felt harassed by workplace supervisors at industry	
Yes	169(23.7)
No	543(76.3)
Supervisors spend adequate time instructing students while at industry	
Yes	687(96.5)
No	25(3.5)
Role of workplace supervisors during training stints at industry	
Give clear instructions	248(34.8)
Ensure attachés adapt to the work environment	561(78.8)
Ensure implementation of the content	55(7.2)
Give prompt feedback	587(82.4)

Percentages are in parentheses

4.6 Role of Accreditation body

Findings from the study in Table 4.15 indicated that majority of lecturers (88.5%) confirmed that training programmes of TVET Institutions accredited by the industry. Majority of the respondents (82.7%) confirmed that the assessment of training standards by regulatory body was done once annually. Results further showed that 72.1%, 63.5% and 42.3% of the respondents reported that the role of regulatory body include inspection of training equipment, curriculum content guidance and examinations supervision respectively.

Table 4.15: Role of accreditation body

Characteristics	n=104
Training programmes of TVET Institutions accredited by the industry	
Yes	92(88.5)
No	12(11.5)
Bodies that have accredited the training	
KML	
TTB	
KNEC	
PPB	
TVETA	
KASNEB	
NITA	
DIT	
Frequency of assessing training standards each academic year by regulatory body	
Once	86(82.7)
Twice	17(16.3)
Thrice	1(1)
More than three times	0(0)
None	0(0)
Role played by the accrediting body in training	
Inspection of training equipment	75(72.1)
Curriculum content guidance	66(63.5)
Examinations supervision	44(42.3)
Numbers of visits by industry accrediting bodies adequate	
Yes	89(85.6)
No	15(14.4)

Accrediting body prepares a final report on issues at the industry	
Yes	101(97.1)
No	3(2.9)
Received feedback on the above said report	
Yes	99(95.2)
No	6(4.8)

Majority of the respondents (85.6%) agreed that the numbers of visits by industry accrediting bodies are adequate. About 97.1% of the respondents agreed that the accrediting body prepared a final report on issues at the industry with 95.2% of them confirming that they received feedback on the report as indicated in Table 4.15.

4.7 Challenges of industrial attachment program

The respondents were asked to state the challenges of industrial attachment program. The responses are stated in Table 4.16, 4.17 and 4.18

Table 4.16: Students' Assessment on Challenges of industrial attachment program

Challenge	GE		SE		L		VN		TOTAL	
	f	%	f	%	f	%	F	%	F	%
Supervision by workplace supervisors is effective	515	(72.3)	128	(18)	69	(9.7)	0	(0.0)	712	100
Training institutions provide sufficient funds for the industry-TVET institutions collaboration	0	(0.0)	9	(1.3)	683	(95.9)	20	(2.8)	712	100
Workplace supervisors give accurate assessment of students on industry-TVET institutions collaboration	218	(30.6)	366	(51.4)	128	(18.0)	0	(0.0)	712	100
The industry-institute linkage affects the effectiveness of the industry-TVET institutions collaboration program	608	(85.4)	95	(13.3)	8	(1.1)	1	(0.1)	712	100
Training institutions secure good cooperation with workplace supervisors in the industry	0	(0.0)	85	(11.9)	420	(59)	207	(29.1)	712	100
The competencies on which students are exposed on are appropriate	78	(11.0)	274	(38.5)	316	(44.4)	44	(6.2)	712	100

n=712; Key; GE= great extent, SE= some extent, L= little, VN=virtually nothing

As revealed in Table 4.16, 72.3% (515) of the respondents stated that to a great extent, supervision by the workplace supervisors was effective whereas 18.0% (128) said that to some extent. Majority (95.9%) of the respondents stated, that to a little extent, training institutions provide sufficient funds for the industry- TVET institutions collaboration program while only 1.3% agreed to some extent. It is also indicated that 30.6% (218) of the respondents stated that to a great extent, workplace supervisors give accurate assessment of students on industry-TVET institutions collaboration whereas half (51.4%) of the respondents stated that to some extent, workplace supervisors give accurate assessment of students on industry-TVET institutions collaboration.

Table 4.16 shows that 85.4% (608) of the respondents asserted that to a great extent, the industry- institute linkage affects the effectiveness of the industry-TVET institutions collaboration program as only 13.3% (95) stated that this was the case to some extent. It is clear from the table that slightly above half (59.0%) of the respondents stated that to a little extent, training institutions secure good cooperation with workplace supervisors in the industry. Another 29.1% (207) stated that training institutions do not secure good cooperation with workplace supervisors in the industry. The competencies on which students are exposed to were considered by 11.0% (78) of the respondents to be appropriate to a great extent. However, 44.4% (316) of the respondents stated that to little extent, competencies on which students were exposed were appropriate.

Lecturers were asked on challenges of industrial attachments program and their responses were summarized in Table 4.17. Approximately 63.5% (66) of the respondents stated that to a great extent, supervision by workplace supervisors is effective while 30.8% (32) considered this to be the case to some extent.

Table 4.17: Lecturers' Assessment of Challenges of industrial attachments program

Challenge	GE		SE		L		VN		TOTAL	
	f	%	F	%	f	%	F	%	F	%
Supervision by workplace supervisors is effective	66	(63.5)	32	(30.8)	6	(5.8)	0	(0.0)	104	100
Training institutions provide sufficient funds for the industry-TVET institutions collaboration	0	(0.0)	5	(4.8)	98	(94.2)	1	(1.0)	104	100
Workplace supervisors give accurate assessment of students on industry-TVET institutions collaboration	77	(74.0)	20	(19.2)	7	(6.7)	0	(0.0)	104	100
The industry-institute linkage affects the effectiveness of the industry-TVET institutions collaboration program	89	(85.6)	15	(14.4)	0	(0.0)	0	(0.0)	104	100
Training institutions secure good cooperation with workplace supervisors in the industry	0	(0.0)	8	(7.7)	74	(71.2)	22	(21.2)	104	100
The competencies on which students are exposed on are appropriate	87	(83.7)	5	(4.8)	12	(11.5)	0	(0.0)	104	100

n=104; Key: GE= great extent, SE= some extent, L= little, VN=virtually nothing

The study reveals that 94.2% (98) asserted that to little extent, training institutions provide sufficient funds for the industry-TVET institutions collaboration. Another 74.0% (77) stated that to a great extent, workplace supervisors give accurate assessment of the students on industry-TVET institutions collaboration. Majority 85.6% (89) stated that to a great extent the industry-institute linkage affects the effectiveness of the industry-TVET institutions collaboration program whereas 71.2% (74) stated that to a little extent that training institutions secure good cooperation with workplace supervisors in the industry. There were 83.7% (87) of the respondents who stated that the competencies in which students are exposed to are appropriate to a great extent.

Workplace supervisors' assessments on challenges of industrial attachments program are presented in Table 4.18. Approximately 93.8% (30) of the respondents stated that to a great extent, supervision by workplace supervisors is effective while 6.2% (2) considered this to be the case to some extent. The study reveals that 93.8% (30) asserted that to little extent, training institutions provide sufficient for the industry-TVET institutions collaboration. Another 84.4% (27) stated that to a great extent, workplace supervisors give accurate assessment of the students on industry-TVET institutions collaboration.

Table 4.18: Workplace supervisors’ assessment of Challenges of industrial attachments program

Challenges	GE		SE		L		VN		TOTAL	
	f	%	f	%	f	%	f	%	F	%
Supervision by workplace supervisors is effective	30	(93.8)	2	(6.2)	0	(0.0)	0	(0.0)	32	100
Training institutions provide sufficient funds	0	(0.0)	0	(0.0)	30	(93.8)	2	(6.2)	32	100
Workplace supervisors give accurate assessment	27	(84.4)	5	(15.6)	0	(0.0)	0	(0.0)	32	100
Structure of linkage affects the effectiveness	27	(84.4)	5	(15.6)	0	(0.0)	0	(0.0)	32	100
Training institutions secure good cooperation with workplace supervisors	0	(0.0)	8	(25.0)	24	(75.0)	0	(0.0)	32	100
Competencies students exposed are appropriate	3	(9.4)	22	(68.8)	7	(21.8)	0	(0.0)	32	100

Majority 84.4% (27) stated that to a great extent the industry-institute linkage affects the effectiveness of the industry-TVET institutions collaboration program whereas 75% (24) stated that to a little extent the training institutions secure appropriate cooperation with industry. There were 78.2% (25) of the respondents who stated that the competencies on which students are exposed on are appropriate to a great extent / some extent.

Some coordinators through an interview reported that “Despite the benefit of industrial attachment and academic visits, the major challenge lies entirely on establishing a mutual collaboration, in other word how best can we seriously engage the industries in our training?”

They further gave their suggestions *“my suggestion would be incorporating relevant representatives from the industries at departmental level and involve them in curriculum design, development and implementation.*

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents discussion, conclusion and recommendations based on key findings from data presentation, analysis and interpretation as described and discussed in chapter four.

5.2 Summary of findings

The purpose of this study was to establish the effectiveness of TVET institutions - industry collaboration on training in North Rift, Kenya. The study sought to achieve this by establishing the; extent of achievement of the objectives of industry- TVET institutions collaboration, effectiveness level of success of the coordination, role of the various accreditations between TVET institutions- industry and challenges of industry- TVET institutions collaboration on training. The study sampled 712 students, 104 lecturers/industrial attachment coordinators and 32 workplace supervisors.

The following are the major findings of the study presented in the order of the study objectives.

On the first question of the study as to what extent have TVET institutions achieved the objectives of industry- TVET institutions collaboration on training, majority of the respondents who participated in this study asserted that TVET institutions - industry collaboration has achieved its objectives. It emerged that over 60% of the students who participated in this study asserted that TVET institutions - industry collaboration has achieved the objective of ability to demonstrate problem solving skills, ability to demonstrate

practical competence and problem solving skills in specific situation has been achieved. Similarly, majority (over 90%) of the lecturers who participated in this study agreed that the students' ability to demonstrate problem solving skills was attained, practical competence and problem solving skills in specific situation was achieved. Majority of the workplace supervisors (over 80%) also agreed that TVET institutions - industry collaboration has achieved its objectives in terms of offering practical skills to the student.

Findings obtained from the present study are in agreement with other studies. Ahmed (2010) reported that the industry entity allows for greater private participation in the delivery of public infrastructure project. Alias & AbdHadi (2011) reported that industry-TVET institutions collaboration was found to be successful in terms of developing students' soft skills related to creative and critical thinking. Another study by Kamin *et al.* (2010) showed that there are other benefits such as improved facilities through industry donations and improvement in teachers' knowledge and skills. Research indicates that these industrial trainings do improve students' soft skills as expected (Osman *et al.*, 2008).

On the second question of the study as to what is the effectiveness of the industry- TVET institutions collaboration on training on skill acquisition, Majority of the students (>60%), lecturers (>90%) and workplace supervisor (above 80%) confirmed that industry- TVET institutions collaboration on training. These finding are in agreement with those reported by Mahbubet al. (2014). In their study, the researchers reported a significant association between industry-TVET institutions collaboration and occupational skills in Bangladesh. The results are also in harmony with those of Rashidi (2013). In this study, a significant collaboration between public training institutions and private industries in Malaysia was recorded. The collaboration was also found to be of importance in improving the quality of training delivery in TVET institutions in Malaysia. Earlier on, a study by Choi (2001) in Korea showed that

linkages between schools, vocational colleges, junior colleges and industry played a role in provision of workplace training for students. Furthermore, Perkinson (2006) in a study carried out in in China clearly indicated that collaboration between TVET and industry provided of stronger connection between providers and industry is relevant on skill acquisition.

On the third question of the study as to what level of adequacy is the coordination and supervision of industry- TVET institutions collaboration, majority of the lecturers (above 70%) and students (above 70%) affirmed that the coordination and supervision in industry was adequate.

On the fourth question of the study as to what role do the industry regulators that accredit TVET institutions training have on training knowledge and skills standards, majority of the lectures (72.1%) reported that the main role of accreditation body is inspection of training equipment.

On the fifth question of the study as to what are the challenges of industry- TVET institutions collaboration on training, inadequate funding was found to be the main challenge. Majority of the students (95.9%), lecturers (93.8%) and workplace supervisors (94.2%) stated funding was insufficient.

The present results could be attributed to the institutions collaborating with the wrong partners which can be detrimental to the implementation projects in education because partners who do not have the capacity and knowledge to participate effectively will hinder the development of the collaboration. In enhancing industry-TVET institutions collaboration, the government should ensure that the parties in the private sector are sufficiently competent and financially capable of taking up the projects (Chan et al., 2010).

Challenges related to organizational structure contributed to a significant percentage of the challenges. This is so because industries must be honest and transparent in their engagements. This can only be achieved through clear communication between the two parties (Zhang, 2005). Li et al. (2005) further suggests that three features are important for transparency: (i) good communication between the public and the private sector including their advisor (ii) the private sector openly consulting with the public sector and its adviser, and (iii) the public and private sectors establishing a clear basis for making decisions.

5.3 Conclusions

Majority of the respondents (students, lecturers and workplace supervisors) asserted that TVET institutions - industry collaboration enhanced students' ability to demonstrate problem solving skills, ability to demonstrate practical competence and problem solving skills in specific situation. Thus, concluding that TVET institutions achieved the objectives of industry- TVET institutions collaboration on training.

Majority of respondents stated students have learnt about the latest development in their course through industry-TVET institutions collaboration. Furthermore, majority of the respondents reported that new skills were acquired relating to the area of study and students were able to sharpen their old skills already acquired in area of study. Therefore, that industry- TVET institutions collaboration on training was relevant on skill acquisition.

Results obtained in the present study showed that majority of the lecturers and students confirmed that there are working collaborations with industry and adequate supervision of student while industry. Thus, concluding that the coordination and supervision in industry was effective.

Findings from the study reported that among other roles of accreditation body, inspection of training equipment was found to be the main role of the body.

Inaccurate assessment, organization structure and insufficient exposure of students were some of the challenges encountered in industry- TVET institutions collaboration on training. However over 90% of the respondents agreed that lack of insufficient funds was their greatest challenge. Therefore, the study concluded that lack of sufficient funds was the main challenge in industry- TVET institutions collaboration on training in TVET institution with North rift region.

5.4 Recommendations

1. Emphasizing the Objectives of TVET

- i. The TVET should anchor on competence based training wherein knowledge and skills are clearly outlined at each level.
- ii. Curricula need to be reviewed on a regular basis because industry and by extension technology is not static. With the TVET Bill 2013 in place, it will be the mandate of Centre for TVET Curriculum Development, Assessments and Certification to adopt new online curricula updating systems.

2. Relevance and Adequacy of Skills on training on skill acquisition

- i. The government should establish policies to address and respond to technological changes. This will make sure that proper actions are taken in time and prepare the TVET sector to respond accordingly. This can be through joint ventures between the government (Ministry of Education Science and Technology and Ministry of

infrastructure and Industrialization), local training and research institutions and the industry employer organizations to ensure provisions of constant services like:-

- ii. Training and capacity building in Information Communication Technology (ICT).
ICT is key to exposure and adoption of new developments on the global platform.
- iii. Exposure to new technology options through the provision of information and direct contacts through study missions, technology trade fairs, technology seminars and workshops and technology advisory services.
- iv. Promoting technology linkage and transfer from established formal sectors to the TVET sector.

3. Coordination and Supervision:

- i. The government through the National Industrial Training Authority should establish a Management Information System that details students' characteristics that will facilitate planning, placement and assessment of students while at industry. Such data should be able to align admission to TVET institutions to industry opportunities for internship.
- ii. TVET stakeholders should lobby for a favourable policy framework so that 10% of all human resource needs in major procurement are reserved for TVET internships. The super highways, the standard gauge railway line, the northern corridor by-pass, oil exploration, etc. all have strong skills that should reach TVET trainees.
- iii. Industry supervisors will require short stints of sensitization so as to guide students at industry and assess the same on a rational uniform basis.

4. Accreditation of TVET Programmes

- i. Accreditation of TVET programmes should be supported by a strong policy framework that brings together TVET trainers and industry on a regular basis to review internship programmes. The same should be extended to end program evaluation so that industry can approve examination scope.
- ii. Strong industry regulators need be established to offer accreditation while government should only be supervisory in the TVET system.

5. Challenges to TVET Institutions – Industry Collaboration

- i. Funding of TVET institutions - industry collaboration should be strengthened than before borrowing a leaf from Ghana where strictly a 2% training levy has been directed towards enhancing quality of the TVET system.
- ii. There is need for a strong policy framework to govern industry- TVET institutions collaboration on training so that all players appreciate TVET as a national strategic preparation to meet development trends.
- iii. TVET institutions should re-invent practical and progressive competence based training by establishing enterprise units that procure jobs that are used for training and funds generated are used to build institution equipment capacity to handle new technology trends.

5.5 Recommendation for further research

The following research should form part of the way forward:

- i. To establish impact of qualification of TVET trainers on TVET content objectives.
- ii. Examining if there is a relationship between skills learnt at industry and end program evaluation of TVET.

REFERENCES

- Ahmed, S. M., (2010). Community engagement in research: frameworks for education and peer review. *American journal of public health, 100*(8), 1380-1387.
- Alias, M., & Hassan, R. (2013). TVET agency-industry collaborations: addressing diversity. *TVET@ Asia, (1)*, 1-14.
- Almeida, R., Behrman, J., & Robalino, D. (Eds.). (2012). *The right skills for the job? Rethinking training policies for workers*. The World Bank.
- Beeby, R. B., (2007). Students' attitudes toward playing games and using games in education: Comparing Scotland and the Netherlands. *Computers & Education, 69*, 474-484.
- Beide1, D. L. (1993). Perceptions. attitudes. teaching load, and compensation of non degree and degree vocational-industrial teachers. *Draft copy of unpublished doctoral dissertation, The Pennsylvania State University, University Park*.
- Beidel, D. C., Turner, S. M., & Taylor-Ferreira, J. C. (1993). Teaching study skills and test-taking strategies to elementary school students: The testbusters program. *Behavior Modification, 23*(4), 630-646.
- Bertrand, B. P., O'connor, M. T., & Rosenfeld, E. T. (2004). *U.S. Patent No. 6,745,170*. Washington, DC: U.S. Patent and Trademark Office.
- Chan, A., Broady, T., & Caputi, P. (2010). Comparison of older and younger adults' attitudes towards and abilities with computers: Implications for training and learning. *British Journal of Educational Technology, 41*(3), 473-485.

- Choi, J., Misko, J., Phan, O., & Kang, K. J. (2001). *Linkages between vocational education and training providers and industry*. National Centre for Vocational Education Research.
- Cohen, L., Manion, L., & Morrison, K. (1998). *Research methods in education*. routledge.
- Coll, M. D., McDaniel, M., Webb, M., Herman, J., & Witty, J. V. (2001). Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. *The Internet and higher education*, 13(3), 134-140.
- Coll, R. K., Zegwaard, K., & Hodges, D. (2002). Science and technology stakeholders' ranking of graduate competencies part 1: Employers perspective. *International Journal of Work-Integrated Learning*, 3(2), 19.
- Covey, S. R. (2004). *The 7 habits of highly effective people: Powerful lessons in personal change*. Simon and Schuster.
- Eisner, R. (1991). Infrastructure and regional economic performance: comment. *New England Economic Review*, (Sep), 47-58.
- Estriyanto, Y. (2016, January). A Review of Indonesian Pre-Service Teacher Certification Policy from the Point of View of the Philosophy of Vocational Education. In *Proceeding of International Conference on Teacher Training and Education* (Vol. 1, No. 1).
- Fayol, H. (2016). General and industrial management. Ravenio Books.

- Finch, C. R., & Crunkilton, J. R. (1999). *Curriculum development in vocational and technical education. planning, content, and implementation*. Allyn and Bacon, 160 Gould Street, Needham Heights, MA 02494.
- Foster, P. (1965). Vocational education and training. *Prospects*, 22(2), 149-155.
- Gachathi, P. (1976). Report of the national committee on educational objectives and policies. *Government Printers Nairobi, Kenya*.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, 2(163-194), 105.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, 2(163-194), 105.
- Hasan, M., Clement, C. K., & Alamgir, S. M. (2014). Relationship between occupational skills provided to Polytechnic Diploma Engineers by BTEB and requirement of industry in Bangladesh. *International Journal of Vocational and Technical Education*, 6(4), 43-50.
- Kamin, Y. B. Chinedu, C. C., & Olabiyi, O. S. (2010). Strategies for improving higher order thinking skills in teaching and learning of design and technology education. *Journal of technical education and training*, 7(2).
- Kenya. Presidential Working Party on Education and Manpower Training for the Next Decade and Beyond, Kamunge, J. M., & Moi, D. A. (1988). *Report of the presidential working party on education and manpower training for the next decade and beyond*. Republic of Kenya.

- Kerlinger, F. N. (1969). Research in education. *Encyclopedia of education*, 1127-1134.
- Kerre, B. W. (2009). A technical and vocational teacher-training curriculum. In *International handbook of education for the changing world of work* (pp. 1319-1332). Springer, Dordrecht.
- Koech, D. K. (1998). *Totally integrated quality education and training, TIQET: Report of the Commission of Inquiry into the Education System of Kenya*. Republic of Kenya.
- Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.
- Lelei, J. K. (2011). *Trends and causes of wastage in technical and vocational education and training (TVET) institutions in Kenya: a survey of TVET institutions in rift valley province of Kenya* (Doctoral dissertation, Moi University).
- Li, Y., Sheldon, P., & Sun, J. M. (2005). Education, training and skills. In *China's Changing Workplace* (pp. 131-148). Routledge.
- Mahbub, U., Imtiaz, H., Roy, T., Rahman, M. S., & Ahad, M. A. R. (2013). A template matching approach of one-shot-learning gesture recognition. *Pattern Recognition Letters*, 34(15), 1780-1788.
- McMahon, M., & Patton, W. (2002). Building positive work habits and attitudes. *Technical and Vocational Education and Training in the 21st Century: New Roles and Challenges for*.

- McNally, S. , Vignoles, A., Goodman, A., & Machin, S. (2008). Widening participation in higher education: a quantitative analysis. *Teaching & Learning Research Project*.
- McNeil, L. M. (2013). *Contradictions of control: School structure and school knowledge*. Routledge.
- Mertens, S. B.(2003). Lessons learned from more than a decade of middle grades research. *Middle School Journal*, 35(2), 55-59.
- Miller, R. (Ed.). (1965). *Training research and education*. Science Editions, John Wiley & Sons, Inc..
- Ndegwa, D. N. (1971). *Report of the Commission of Inquiry (Public Service Structure and Remuneration Commission), 1970-71: presented to His Excellency the President May 1971*. Govt. Printer.
- NITC(National IT Council).(2004).*National Youth&ICT Study*(Received and Validated Soft Copy)[unpublished].Kuala Lumpur: NITC,KBS,MBM&MIMOS.
- Ominde, S. H. (1964). *Kenya education commission report*. The Commission.
- Orodho, A. J. (2003). Essentials of educational and social sciences research method. *Nairobi: Masola Publishers*.
- Orodho, A. J., & Kombo, D. K. (2002). Research methods. *Nairobi: Kenyatta University, Institute of Open Learning*.
- Orodho, A. J., & Kombo, D. K. (2002). Research Methods: Kenyatta University. *Institute of Open Learning, Nairobi Kenya*.

- Osman, S. A., Omar, M. Z., Mat, K., Kofli, N. T., Rahman, M. N. A., & Darus, Z. M. (2008). Outcome based education (OBE) curriculum assessment for industrial training program: Based on students' perception. *WSEAS Transactions on Advances in Engineering Education*, 12, 454-463.
- Perkinson, R. (2006, December). International Higher Education "seizing the opportunity for innovation and international responsibility.". In *International Finance Corporation. World Bank Group. Presentation to 'Global 2' Education Conference, Edinburgh. December* (Vol. 7).
- Polit, D. F., & Beck, C. T. (2013). Is there still gender bias in nursing research? An update. *Research in nursing & health*, 36(1), 75-83.
- Psacharopoulos, G., & Woodhall, M. (1985). *Education for development*. Oxford, UK: Oxford University Press.
- Rashidi, R. H. (2013). Evaluation of collaboration between public training institutions and private industries and its importance in improving the quality of training delivery in TVET in Malaysia. *TVET-Online. Asia*, 1, 1-18.
- Reiche, B., Ramey, M. M., & Pastine, M. (1991). Making connections: Teaching information retrieval.
- Reinhardt, C. S., & Cook, T. D. (1979). Beyond qualitative versus quantitative methods. In *Qualitative and quantitative methods in evaluation research* (pp. 7-32). Sage Publications.

Republic of Kenya (2002). National Development Plan 2002-2008: Effective management for sustainable Economic growth and poverty reduction. Nairobi: Government printer.

Republic of Kenya (2007). Transformation of Higher Education and Training in Kenya to Secure Kenya's Development in Knowledge Economy: *Report of The Universities Inspection Board (Kinyanjui Report)*, Nairobi: Government Printer

Republic of Kenya. (2002). National Development Plan 2002-2008: Effective management for sustainable Economic growth and poverty reduction. Nairobi: Government printer.

Roegge, C. A. (1996). Using Tech Prep Principles to Improve Teacher Education. *Journal of vocational and Technical Education*, 13(1), 30-41.

Rossman, G. B., & Rallis, S. (1998). Analyzing and interpreting data. *Learning in the field: an introduction to qualitative research*.

Schofield, J. W., & Anderson, K. M. (1984). Combining quantitative and qualitative methods in research on ethnic identity and intergroup relations. *Educational, Management and Administration Society*, 121-127.

Takahiro, F. (2012). The consequence of educational reform on youth employment: evidence from an enrollment increase in vocational training in Ethiopia.

Takahiro, F., (2017). The consequence of educational reform on youth employment: evidence from an enrollment increase in vocational training in Ethiopia.

- Toury, G. (2012). *Descriptive translation studies and beyond: Revised edition* (Vol. 100). John Benjamins Publishing.
- UNESCO, E. (2007). The Dakar framework for action: Education for all: Meeting our collective commitments. *Dakar Senegal*, 26-28.
- Union, A. (2007, May). Strategy to revitalize technical and vocational education and training (TVET) in Africa. In *Meeting of the Bureau of the Conference of Ministers of Education of the African Union (COMEDAF II+)* (pp. 29-31).
- World Bank. (2007). *World development report 2008: Education for development*. World Bank.
- Yakhina, Z. S., Yakovlev, S. A., Kozhevnikova, N. V., Nuretdinova, Y. V., & Solovyeva, N. A. (2016). Practical Recommendations for University Graduates' Readiness Formation to Occupational Mobility. *International Journal of Environmental and Science Education*, 11(15), 7358-7367.
- Yin, R. K. (2013). Validity and generalization in future case study evaluations. *Evaluation*, 19(3), 321-332.
- Yin, R. K. (2013). Validity and generalization in future case study evaluations. *Evaluation*, 19(3), 321-332.
- Zhang, P. (2005). Toward a positive design theory: Principles for designing motivating information and communication technology. In *Designing information and organizations with a positive lens* (pp. 45-74). Emerald Group Publishing Limited.

APPENDIX I: QUESTIONNAIRES FOR STUDENTS

Dear Respondent,

Kindly set aside some effort to fill this survey. The survey is to encourage an examination on "The adequacy of industry-TVET foundation cooperation on preparing". The exploration discoveries will be utilized to illuminate strategy producers, educationists and partners on viability of industry-TVET establishment cooperation.

Kindly react by ticking in the sections gave and fill in the clear spaces where important
Section A: Bio Data of the Respondent.

1. Name of institution
2. Course currently pursuing.....
3. What is your year of study?

Year I [] Year II [] Year III []

Section B: Attainment of Industry-TVET Institution Collaboration Objectives.

This part tries to discover the degree to which you see the goals of industry-TVET organization coordinated effort have been figured it out. Kindly respond to the accompanying assertions. Every statement is evaluated on a 5 point scale as demonstrated as follows. **SA:** Strongly Agree, **A:** Agree **N:** Neutral, **D:** Disagree, **SD:** Strongly Disagree

	Objectives of Industry-TVET Institutions Collaboration	SA	A	N	D	SD
4.	Capacity to establish problem resolving skills.					
5.	Capability to establish practical proficiency skills in precise situations					
6.	Capability to exhibition appropriate attitudes and social skills.					
7.	Capacity to practice suitable work morals and culture					

Section C: Relevance and Adequacy of Skills Acquired By Students.

This segment looks to discover the degree to which you see the abilities obtained by understudies to be applicable and sufficient. If it's not too much trouble answer the associated items.

8. What abilities would you say you were required to gain during the business TVET establishments coordinated effort in training?

(i).....

(ii).....

(iii).....

(iv).....

Please reply to the following accounts. Each statement is valued on a 4 point scale as shown underneath. . SA: Strongly Agree, A: Agree N: Neutral, D: Disagree

Relevance / adequacy of skills		SA	A	N	D
10	I learnt about the latest developments in my course through industry-TVET institutions collaboration				
11	Industry-TVET institutions collaboration added a good deal to my scientific knowledge.				
12	I was in a position to operate machineries and equipment's that I had perceived and read about in text books.				
13	I acquired new skill related to my area of study.				
14	I was able to improve my old skill previously learned in area of study.				
15	I correctly skilful practical duties given by my workplace overseers.				
16	The period I spent in industry could have been more valuable spent doing academic work.				
17	I was accustomed with how new know-hows, machineries and equipment in my area of study.				

18	Industry-TVET institutions association gives good chance of relating my hypothetical knowledge to preparation.				
19	Students receive appreciated idea about industry				

Section D: Coordination and Supervision of Industry-TVET Institutions Collaborations in Training.

Please tick in the suitable cell that most sufficiently mirrors your views in relative to the given account.

20. Are trainees exposed to industry in the course of training?

YES [] NO []

21. If YES in (20) above, was the exposure done in time?

YES [] NO []

22. How many times were you exposed to industry each academic term?

Once [] Twice [] Thrice [] More than three times [] None []

23. Do you think the number of training visits at industry were adequate?

YES [] NO []

24. In your opinion what is the adequate number of training sessions at industry that should be organized per term?

Once [] Twice [] Thrice [] More than three times [] None []

25. Did you prepare a final report on your experiences at each industry?

YES [] NO []

26. Did you receive any feedback on the said reports?

YES [] NO []

27. Did you feel harassed by either workplace supervisors or lecturers while at industry?

YES [] NO []

28. Do lecturers spend adequate time instructing students while at industry??

YES [] NO []

29. What is the role of workplace supervisors during training stints at industry? (Tick all that apply)

a) Workplace supervisors are always available and give clear instructions []

- b) Workplace supervisors always ensure that students adapt to the work environment []
- c) Workplace supervisors ensure that the content of industry is internalized.[]
- d) Workplace supervisors always give prompt feedback []
- e) Others:(Please _____ State)
-
-

Section E: Challenges of the Collaboration.

Each account is appraised on a 4 point scale as shown below. GL: To a great level,

SL: To some level, L: little, AN: Almost nothing

Challenges of industrial attachment programme.		To a great level	To some level	Little	Almost nothing
30.	Supervision by workplace supervisors is effective.				
31.	Training institutions provide adequate resources for the industry-TVET institutions partnership programme.				
32.	Industry supervisors give accurate valuation of students on industry-TVET institutions association.				
33.	The industry-institute association influence the efficiency of the industry-TVET institutions association programme.				
34.	Training institutions safe good collaboration with workplace overseers in the industry.				
35.	The capabilities on which students are uncovered on are appropriate.				

THANK YOU

APPENDIX II: QUESTIONNAIRES FOR LECTURERS, INDUSTRIAL ATTACHMENT COORDINATORS/PRINCIPALS

Dear Respondent,

Please answer by ticking in the brackets provided and fill in the blank spaces where needed.

Section A: General information of the Respondent.

1. Name of institution
2. Designation
3. Please indicate the highest level of your academic qualification.
 Diploma [] Higher Diploma [] Degree []
 Master's Degree [] Doctorate []
4. Indicate length of stay at this workplace Years.

Section B: Attainment of Industry-TVET Institution Collaboration Objectives.

Each statement is rated on a 5 point scale as shown below. **SA:** Strongly Agree, **A:** Agree, **N:** Neutral, **D:** Disagree, **SD:** Strongly Disagree

	Objectives of Industry-TVET Institutions Collaboration	SA	A	N	D	SD
5.	Student's capacity to prove problematic solving skills.					
6.	Student's capacity to validate practical competence skills in specific conditions					
7.	Student's capacity to display suitable attitudes and social skills.					
8.	Student's capacity to practice suitable effort ethics and culture					

Section C: Relevance and Adequacy of Skills Acquired By Students.

9. State the skills TVET institutions trainees expect to acquire during the industry-TVET institutions collaboration endeavours?
 - (i).....
 - (ii).....
 - (iii).....
 - (iv).....

Kindly answer to the following accounts.

Relevance / adequacy of skills		To a great extent	To some extent	little	Virtually nothing
10.	Students learnt about the latest developments in my course through industry-TVET institutions collaboration				
11.	Industry-TVET institutions collaboration added a good deal to student's scientific knowledge.				
12.	Students were able to operate machines and equipment they had read about in text books.				
13.	Students acquired new skill relating to area of study.				
14.	Students were able to progress skills already learned in area of study.				
15.	Students appropriately proficient practical projects given by workplace supervisors.				
16.	Students were conversant with knowledge, new technologies, machineries and equipment in my area of study.				
17.	Industry-TVET institutions association gives good occasion to Students to relate hypothetical information to practice.				
18.	Students receive valuable idea about industry				

Section D: Coordination and Supervision of Industry-TVET Institutions Collaborations in Training.

Kindly tick the most suitable box that mirrors your opinions in relation to the given statement.

19. Does the Institution have working collaborations with industry in respect of training?

YES [] NO []

20. What number of industry- TVET institution collaborations do you know of?
 One [] Two [] Three [] More than three [] None []
21. How many times were students exposed to industry each academic term?
 Once [] Twice [] Thrice [] More than three times [] None []
22. Do you think the number of training visits at industry were adequate?
 YES [] NO []
23. Did students prepare a final report on experiences at the industry?
 YES [] NO []
24. Did you receive any feedback on the said reports?
 YES [] NO []
25. Do lecturers spend adequate time instructing students while at industry?
 YES [] NO []
26. What is the role of workplace supervisors during training stints at industry? (Tick all that apply)
- a) Workplace supervisors are always available and give clear instructions []
 - b) Workplace supervisors always make sure attachés adapt to the work environment []
 - c) Workplace supervisors ensure the content of industrial attachment is implemented []
 - d) Workplace supervisors always give prompt feedback []
27. What would you recommend to ensure that knowledge and skills acquisition of students at industry is improved?
- (i).....
 - (ii).....
 - (iii).....
 - (iv).....

Section E: Accreditation of Programmes

28. Are the training programmes of TVET Institutions accredited by the industry?
 YES [] NO []

29. If YES in (28) above, which bodies have accredited the training?

.....
.....
.....

30. How many times do the regulatory body assess training standards each academic year at the industry?

Once [] Twice [] Thrice [] More than three times [] None []

31. What role is played by the accrediting body in TVET training?

a) Inspection of training equipment []

b) Curriculum content guidance []

c) Examinations supervision []

32. In your opinion are the numbers of visits by industry accrediting bodies adequate?

YES [] NO []

33. Does the accrediting body prepare a final report on issues at each industry?

YES [] NO []

34. Did you receive any feedback on the said reports?

YES [] NO []

Section F: Challenges of the Collaboration

Kindly answer to the following statements

Challenges of industrial attachment programme.		To a great extent	To some extent	little	Virtually nothing
35.	Supervision by workplace supervisors is effective.				
36.	Training institutions provide sufficient funds for the industry-TVET institutions collaboration programme.				
37.	Workplace supervisors give accurate assessment of students on industry-TVET institutions collaboration.				
38.	The industry-institute linkage affects the effectiveness of the industry-TVET institutions collaboration programme.				
39.	Training institutions secure good cooperation with workplace supervisors in the industry.				
40.	The competencies on which students are exposed on are appropriate.				

THANK YOU

APPENDIX III: QUESTIONNAIRES FOR WORKPLACE SUPERVISORS

Dear Respondent,

Please set aside some effort to fill this survey. The poll is to encourage an examination on "The adequacy of industry-TVET foundation joint effort on preparing". The examination discoveries will be utilized for advising arrangement creators, educationists and partners on adequacy of industry-TVET organization joint effort.

1. Name of industry
2. Designation.....
3. Please indicate the highest level of your academic qualification.
 Craft certificate [] Diploma [] Higher Diploma []
 Degree [] Master's Degree [] Doctorate []
4. Indicate length of stay at this workplace Years.

Section B: Attainment of Industry-TVET Institution Collaboration Objectives.

	Objectives of Industry-TVET Institutions Collaboration	SA	A	U	D	SD
5.	Student's capability to prove problem solving skills.					
6.	Student's capability to reveal practical competence skills in specific situation					
7.	Student's capacity to display suitable attitudes and social skills.					
8.	Student's capacity to practice suitable work ethics and culture					

Section C: Relevance and Adequacy of Skills Acquired By Students.

9. Did you experience any training gap between what TVET institutions expected to do and industry opportunities?

YES [] NO []

10. If yes what are the causes of the training gaps?

.....

.....

.....

.....

Relevance / adequacy of skills		To a great extent	To some extent	little	Virtually nothing
11.	Understudies found out about the most recent improvements in my course through industry-TVET establishments cooperation				
12.	Industry-TVET establishments joint effort included a decent arrangement Students logical information.				
13.	Understudies had the option to work machines and types of gear heard and read about in course readings.				
14.	Understudies procured new expertise identifying with territory of study.				
15.	Understudies had the option to hone abilities previously obtained in region of study.				

Section D: Challenges of industrial attachment programme

Challenges of industrial attachment programme		To a great extent	To some extent	little	Virtually nothing
16.	Supervision by work environment administrators is successful.				
17.	Preparing establishments give adequate assets to the business TVET organizations coordinated effort program.				
18.	Working environment directors give precise evaluation of understudies on industry-TVET organizations cooperation.				

THANK YOU

APPENDIX 1V: INTERVIEW SCHEDULE

1) Bio data information

- Name
- Designation
- Qualification

Objectives of industry-TVET collaboration on training

- 2) Why industry-TVET collaboration on training?
- 3) What curriculum objectives are met through the collaboration? Give evidences to support.

Relevance of industry-TVET collaboration on training

- 4) What are the gaps between industry and TVET institutions (if any) in skills and knowledge?
- 5) What forms of collaboration exist between industry and TVET institutions?
- 6) Which form of collaboration offers the best results on skills and concepts acquisition?

Coordination of industry-TVET collaboration on training

- 7) What are the major challenges in coordination of:
 - Linkages
 - Educational Trips
 - Attachment
- 8) What policy framework supports industry- TVET institutions collaboration?
- 9) What is the role of the following in industry- TVET institutions collaboration?
 - Ministry
 - Directorate of Technical Education
 - Directorate of Technical Accreditation and Quality Assurance
 - Directorate of Industrial Training
 - National Industrial Training Authority and National Industrial Training Board
 - Workplace Supervisors
 - Principal
 - Head of Department
 - Subject teachers

Accreditation of TVET Training Programmes

- 10) Outline the role of industry regulators in curriculum implementation supervision.
- 11) Do industry regulators approve examinations administered to trainees?

Challenges of industry-TVET collaboration on training

- 12) Are there challenges faced by TVET institutions in quest for industry- TVET institutions collaboration? If yes outline them.

Benefits of industry-TVET collaboration on training

- 13) What mutual benefits accrue from industry- TVET institutions collaboration?

Appendix V: Research Authorisation

**NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION**

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:

NACOSTI/P/13/5425/125

30th October, 2013

Tom Wanjala Mulati
University of Eldoret
P.O.Box 657-50200
ELDORET.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*The effectiveness of industry-institution collaboration on training: A case study of selected Institutions in North Rift,*" I am pleased to inform you that you have been authorized to undertake research in **Uasin-Gishu County** for a period ending **18th June, 2014**.

You are advised to report to **the County Commissioner and the County Director of Education, Uasin-Gishu County, Managers of selected Industries and Principals of selected TIVET Institutions** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

**DR. M. K. RUGUTT, PhD, HSC.
DEPUTY COMMISSION SECRETARY
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION**

Copy to:

The County Commissioner
The County Director of Education
Uasin-Gishu County

APPENDIX IV: SIMILARITY INDEX/ANTI-PLAGIARISM REPORT

Turnitin

https://www.turnitin.com/newreport_printview.asp?eq=1&cb=1&esm=5&oid=1212368...

Turnitin Originality Report

Processed on: 12-Nov-2019 21:03 EAT
 ID: 1212368630
 Word Count: 21119
 Submitted: 1

EDU/PGT/1006/11 By Mulati Tom Wanjala



Similarity Index

23%

Similarity by Source

Internet Sources: 13%
 Publications: 2%
 Student Papers: 20%

<p>10% match (student papers from 09-Oct-2019) Submitted to Masinde Muliro University of Science and Technology on 2019-10-09</p>
<p>1% match (Internet from 18-May-2016) http://erepository.uonbi.ac.ke/bitstream/handle/11295/90455/Simiyu_influence%20of%20board%20of%20management%20on%20completion%20of%20constituency%20development%20funded%20projects.pdf?sequence=1</p>
<p>< 1% match (student papers from 23-Feb-2018) Submitted to Mount Kenya University on 2018-02-23</p>
<p>< 1% match (Internet from 22-Oct-2017) https://repository.up.ac.za/bitstream/handle/2263/22760/dissertation.pdf?sequence=</p>
<p>< 1% match (student papers from 21-Oct-2018) Submitted to Eiffel Corporation on 2018-10-21</p>
<p>< 1% match (Internet from 09-Apr-2018) http://ir.cuea.edu/jspui/bitstream/1/80/1/ikinya%20samson.pdf</p>
<p>< 1% match (Internet from 04-Nov-2012) http://www.apjce.org/files/APJCE_10_1_1_17.pdf</p>
<p>< 1% match (student papers from 16-Mar-2015) Submitted to Africa Nazarene University on 2015-03-16</p>
<p>< 1% match (Internet from 12-Jul-2015) http://rcp-platform.com/wp-content/uploads/2013/06/Co-llaboration-in-TVET.pdf</p>
<p>< 1% match (Internet from 29-Oct-2002) http://irs.ed.uiuc.edu/students/chiles1/ci335/finalevaluationproject.html</p>
<p>< 1% match (Internet from 08-May-2019) http://ir.jkuat.ac.ke/bitstream/handle/123456789/1651/KIBATI%20PATRICK%20-PHD%20BUSINESS%20ADMINISTRATION%28%20FINANCE%29-2015.pdf?isAllowed=y&sequence=1</p>
<p>< 1% match (Internet from 15-May-2018) http://erepository.uonbi.ac.ke/handle/11295/56519</p>