

**Education and Skills Development: Examining the Effectiveness of
Technical Education, Vocational and Entrepreneurship Training in
Solwezi District of Zambia**

By

Kennedy Mwila

*A dissertation submitted to the University of Zambia in partial fulfillment of the
requirement for the award of the degree of master of education in education and
development.*

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LUSAKA

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Declaration

I, Kennedy Mwila do hereby declare that this is my own work, and that all the works of other persons used in this report have been duly acknowledged, and that this work has not been previously presented in this university or any other for similar purposes.

Authors signature

Date

Supervisor: Dr. Gift Masaiti

Signature

Date

Approval

This dissertation of Kennedy Mwila is approved as a partial fulfillment of the requirements for the award of the degree of Master of Education in Education and Development, of the University of Zambia.

Examiners' Signatures.

1.....Date.....

2.....Date.....

3.....Date.....

Dedication

This dissertation is dedicated to my late mother Febby Kabwe, Mom you always taught us the value of education. The heroic struggles and sacrifices you made as a single parent were not in vain. Your legacy will live forever as it has been passed on to your grandchildren. Thank you for being the model of vision, purpose and passion that this world desperately needs. May your soul rest in everlasting peace.

To my late sister Bridget and brother Felix, the happiness and contentment we shared still linger in our memories, we miss you greatly. Rest in peace.

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Acronyms

AVET- Advanced Vocational Education and Training.

CVET-Continuous Vocational Education and Training.

DTEVT-Development of Technical Education and Vocation Training.

ESD-Education for sustainable Development.

ESSU-Education Sector Strategy Update.

GW- Green Works.

ILO- International Labour Organizations

IT- Information Technology.

IVET-Initial Vocational Education and Training.

R- SNDP-Revised Sixth National Development Plan.

SCID-Systematic Curriculum and Instructional Development.

SDF-Social Dimension Fund.

SOSTI-Solwezi Skills Training Institute.

SOTTI-Solwezi Trades Training Institute.

TEVET-Technical Education, Vocational and Entrepreneurship Training

TEVETA-Technical Education, Vocational and Entrepreneurship Training Authority.

TVET-Technical and Vocational Education and Training.

UNESCO-United Nations Educational, Scientific and Cultural Organisation.

VET-Vocational Education and Training.

VTC-Vocational Training Centres.

ZESCO-Zambia Electricity Supply Corporation.

Abstract

This study was an examination of the effectiveness of Technical Education, Vocational and Entrepreneurship Training (TEVET) in provision of education and skills development in Solwezi District. The assumption behind the research was that the district suffered from skills mismatch between the training that was offered at the training institutions and what was demanded on the labour market. Solwezi being a new mining hub of Zambia required well skilled human capital to work in the emerging industrial sector. To that effect, the role of TEVET in enhancing skills acquisition cannot be overemphasized.

The study was guided by three specific objectives: to assess the nature of infrastructure at Solwezi Trades Training Institute (SOTTI) and Solwezi Skills Training Institute (SOSTI) in supporting skills acquisition; to evaluate the responsiveness of the TEVET curriculum to the labour market demands of Solwezi district and to establish to what extent funding has been a constraint to the operations of SOTTI and SOSTI.

The study sample was 278 respondents, comprising 244 students, 27 instructors, 2 principals, 1 training manager and 2 accountants from SOTTI and SOSTI. It also involved the chief operations technologist from ZESCO and the Training engineer from Kansanshi Mine. A mixed method design known as embedded design was employed; where questionnaires were used for quantitative data collection from students and instructors and semi-structured interview guides, observations and document analysis for qualitative data collection. Quantitative data was entered in SPSS to generate frequency table, means, modes, standard deviations and other inferential statistics while qualitative data was analyzed thematically.

Key findings suggest that SOTTI and SOSTI were riddled with infrastructural challenges these include among others: old and obsolete training equipment, shortage of workshop and classroom accommodation, poor library facilities and poor internet connectivity. The curriculum was established to be updated but was poorly implemented due to limited use of practical pedagogical approaches (projects and field trips), Lack of effective tracer mechanism for graduates and non-examination of entrepreneurship courses. It was also established that the institutions were poorly funded. The implication behind these findings is that TEVET institutions were not producing inventive and productive graduates to work in the emerging industries.

The study concluded that the poor state of infrastructure, poor implementation of the curriculum and inadequate funding resulted in the mismatch between the training offered and what was demanded on the labour market. The study therefore, recommends in the short term, increased partnership between training institutions and the industrial sector so as to enhance the responsiveness of the training to the labour market demands. It further recommends for future research an investigation on how revenue diversification can be explored as an alternative funding modality in TEVET institutions in order to address both the infrastructural and curriculum implementation challenges.

CHAPTER ONE: INTRODUCTION

1.0 Overview

This chapter provides the reader with background information on Technical Education Vocational and Entrepreneurship Training (TEVET). It also presents the statement of the problem, purpose of the study and study objectives. The chapter also deals with the research questions which guided the study, significance of the study and theoretical and conceptual frameworks. The chapter further presents the scope of the study, operational definitions and ethical considerations.

1.1 Background of the study

In a globalized world, education and skills development for individuals is essential. Minimum education is neither sufficient nor adequate to enable citizens to prepare for the rigors of a rapidly changing knowledge economy. The existence of a vibrant post-school education and training system for personal and national development is therefore not an option anymore. It is arguably indispensable to national developmental outcomes (Mahomed, 2007). In this regard, the World Bank's Education Sector Strategy Update (ESSU) emphasizes the growing importance of the knowledge economy and the need for a more skilled labour force to meet changing demands and maintain competitiveness (World Bank, 2005b). While labour market imperatives are important, they are not the only rationale for the development and provision of an efficient, effective and relevant education and training system (Mahomed, 2007). TEVET as a post-school provision form represents a crucial means to develop, at the individual level, skills which have indisputable impacts on national development. United Nations Educational, Scientific and Cultural Organisation (UNESCO) and International Labour Organisation (ILO) define TEVET as a term referring to those aspects of the education process involving, in addition to general education the study of technologies and related sciences, and acquisition of practical skills, attitudes, understanding and knowledge relative to various sectors of the economy and social life.

Tertiary education in general and TEVET in particular have seen significant changes in the last few decades such as, the introduction of new technology, especially information technology (IT) and the adaptation of student-centred approaches which necessitated the development of new skills and changes to teaching practices (Bennett and Lockyer, 2004). One of the main drivers of

these changes is the increasing pressure to link tertiary education institutions with the job market and to embed employability into the curriculum (Rafik, 2009). This is important for developed countries to up-skill their workforce and stay competitive but even more important for developing countries to "catch up" with industrialised countries (Rafik, 2009; Rafik *et al.* 2008).

Additionally, TEVET plays a significant role in the development of countries having a direct effect on the economy of the country (Rodrigues and Chincholkar, 2005; Masri, 1999). Generally, there is a mounting awareness in developing countries for the need to adopt TEVET to meet the rapidly changing requirements of the economy, at the national, regional and global levels. Increased co-operation between TEVET providers and those in industry has progressively become a factor in a number of systems for updating curricula, equipment and facilities, as well as introducing new programmes and cost-effective delivery approaches (Farmer *et al.* 2004; Lehto, 2003; Masri, 1999).

The government of the republic of Zambia embarked on major reforms to review the TEVET system in order to make it more responsive to the current training demands in the economy. In August 1994, the Minister of Science, Technology and Vocational Training appointed a widely representative national task force to review government policy on technical education and vocational training and to recommend changes that would be necessary for the training system to meet new and emerging challenges in the national economy and society in general. It is widely held that, until then, no serious attempts had been made to undertake such an exercise since the existing policies were formulated in 1968. In the meantime, the defining characteristics of the national economy and demographic patterns had both changed very significantly from the conditions under which the previous policies had been formulated. In spite of some attempts by the Department of Technical Education and Vocational Training (DTEVT) to respond to the changing environment, the underlying policies and structures of the training system were clearly out of step with the dynamic demands and requirements of the country. The government issued a new policy on TEVET by enacting a law, the Technical Education, Vocational and Entrepreneurship Training (TEVET) Act No. 13 of 1998, which led to the establishment of the Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA).

TEVETA is responsible for the interpretation and implementation of the TEVET policy. The new policy has a broader emphasis than the previous one, which almost exclusively catered for

the needs of formal sector employment. The policy declares, in general terms, Government's intention to develop a system of TEVET that will satisfy the real demands and requirements of the labour market and socio-economic conditions, all of which were recognized to be in a state of constant change (Nkanza, 2000).

Despite the rising importance placed on TEVET as a national development strategy across the globe, Hamweete (2008) reported that TEVET boards in Zambia were riddled with challenges such as lack of capacity to provide adequate training equipment and other materials, the inability to offer demand driven training and quality of instructional management and lack of self-financial sustenance. Other challenges included poor staff retention, poor quality training because of inability to provide required training facilities and consequently the training continued to be supply driven.

Solwezi district being a new mining hub of Zambia is undoubtedly gaining importance as a national economic zone. The substantial output of copper from Kasanshi, Lumwana and Kalumbila mine is crucial to economic growth. This has put a great focus on Solwezi and the surrounding region. Although the potential is abundant the challenge of skills development in the district is of great concern. Skills gap ranks as one of the main barriers to the mines and other emerging industries to achieve productivity and competitiveness (Yukani, 2013).

1.2 Statement of the Problem

This study focused on investigating the effectiveness of the TEVET institutions in addressing skills mismatch between what is trained at the training institutions and what is demanded on the labour market. Studies conducted by Tembo (2005), Hamweete (2007) Nkanza (2007), Nyerere (2009) Yukani (2013) and Osuanyi (2014) suggested that the current TEVET system is characterized by poor linkage to industry, inappropriate categorization of graduates on the field and a continuous chain of leadership crisis.

Despite all these studies, it appears there is little to almost non-existent of a comprehensive study that has been conducted to examine the effectiveness of TEVET institutions in provision of skills development in Solwezi district. To this end we do not know to what extent training institutions have been addressing skills mismatch as a way of achieving goals of key national policies such

as the policy document on education (Educating our Future), Revised Sixth National Development Revised (R-SNDP) and Vision 2030.

Solwezi being a new mining hub of Zambia is unquestionably gaining prominence as a national economic zone. However, the challenge of skills mismatch ranks as one of the main barriers to the mines and other emerging industries to achieve productivity, competitiveness, poverty alleviation and reduction of unemployment.

1.3 Significance of the study

This study examined the effectiveness of TEVET institutions in addressing skills mismatch in Solwezi district, considering the fact that the district is becoming an economic and industrial zone for the country. The findings of this research might therefore, be of great importance to the government, policy makers, individual citizens and other stake holders in promotion of TEVET as a tool for social and economic emancipation. The document will be published online, disseminated to TEVATA, SOTTI, SOSTI and all relevant government departments.

1.4 Purpose of the study

The purpose of this study was to examine the effectiveness of TEVET in provisions of education and skills development in Solwezi district.

1.5 Specific Objectives

1. To assess the nature of infrastructure in supporting skills acquisition at SOTTI and SOSTI.
2. To evaluate the responsiveness of the TEVET curriculum to the labour market demands of Solwezi district.
3. To establish to what extent funding has been a constraint to the operations of SOTTI and SOSTI.

1.6 Research Questions.

The study embarked on finding the answers to the following questions.

1. What is the nature of infrastructure in supporting skills development at SOTTI and SOSTI?
2. How responsive is the TEVET curriculum to the labour market demands of Solwezi district
3. How is funding a constraint to the provision of education and skills development at SOTTI and SOSTI

1.7 Scope of the study

This study targeted the two TEVET institutions in Solwezi district (SOTTI and SOSTI). This was based on the fact that the two institutions offered TEVET programmes that were industrial oriented and if effectively operated they had the potential to produce highly qualified human resource needed to work in various industries that are emerging in the district. In this regard the study therefore, focused on assessing the nature of infrastructure in addressing skills transfer, evaluating the responsiveness of TEVET curriculum to the labour market demands of Solwezi district and establishing to what extent funding had been a constraint to the operations of the TEVET institutions.

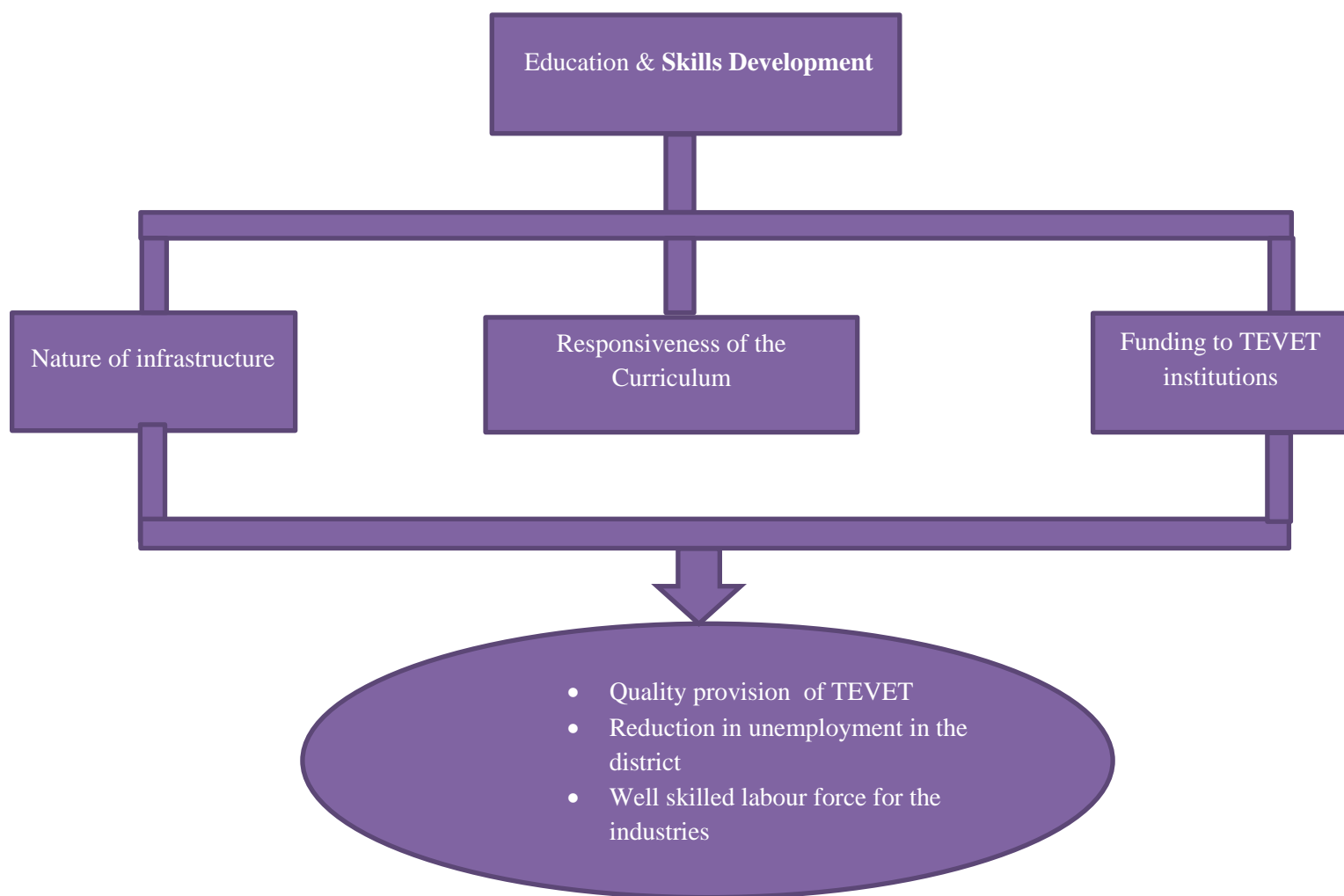


Fig 1.1: Coceptual Framework

The conceptual framework was designed to examine the effectiveness of TEVET in provision of education and skills development, which was investigated from three aspects: nature of infrastructure; funding constraints to TEVET institutions and responsiveness of the curriculum to the labour market demands of Solwezi. The assumptions behind the conceptualization was that in order for the TEVET institutions to be effective, there should be improved forms of infrastructure, institutions should be well-funded and the curriculum should be responsive to the current training demands in the economy. With these factors being available there would be quality provision of TEVET, reduction in unemployment and a well skill labour force for the industries.

1.8 Theoretical Framework: Human Capital Theory.

The researcher adopted the human capital theory. The theory has roots to the works of classical authors such as Adam Smith (1776) and Alfred Marshall (1890). It was later developed by authors such as Schulz (1961) and Backer (1975). The human capital is the stock of knowledge, habits, social and personal attributes including creativity embodied in the ability to perform labour so as to produce economic value. The theory states that “a person’s education is an investment”. Economists are now accustomed to looking at issues of skills development from the vantage point of human capital theory. The simplest notion is that individuals make investments in skills that have later payoffs in outcomes that matter. And, in this, it is commonly presumed that formal schooling is one of several important contributors to the skills of an individual and to human capital (Musa, 1986). The human capital and investment perspective immediately makes it evident that the real issues are ones of long-term outcomes.

Recent economic studies argue that vocational and technical education may provide economic benefits to society greater than the sum of its benefits to individuals by providing a rich environment for innovation and scientific discovery. The economics literature has focused on different ways to model the relationship between vocational and technical skills development and growth, but the basic idea is that human capital will directly affect the improvements in productivity and national income (Baker, 1975).

Vocational and technical skills training or education is focused on acquisition of individual skills and capability for occupation; therefore all the vocational courses offered such as fine and applied arts, agricultural science, home economics, automobile engineering and computer science, plumbing, power electric, metal fabrication and tailoring just to mention but a few, are packaged to provide knowledge and develop the skills of the future youths for sustainable development. Technological development and advancement revolve around a sound vocational and technical education programme (Bulus 1999: 22). Vocational and technical trainings are instructions intended to equip people for industrial or commercial occupations. It may be obtained formally either in trade schools, technical Secondary schools or in on –the Job training programmes or more informally by picking up the necessary skills on the job.

Bulus (1999) further argues that an individual can expect significant financial benefit from extended vocation and technical training. The common understanding of the overall returns is that high technology economies produce large demands for skilled workers, workers who can adapt to new technologies and manage complicated production processes effectively. Society as a whole also benefits from vocational and technical education. National income rises directly with earnings from workers with more and better skills.

1.9 Operational Definitions.

Nature of Infrastructure: Basic physical, organizational structures and facilities needed for the operation of an institution.

Responsiveness of the curriculum: Subjects taught or elements of the subject taught at an educational institution that will satisfy the real demands and requirements of the labour market.

Funding Constraints: limitations in the provision of financial resources for institutions.

Effectiveness: The degree to which something is successful in producing desired results.

1.10 Summary of the Chapter

Chapter one gave an overview of the TEVET sector from both the global perspective and Zambian context, the chapter set the background that triggered the need to conduct this study on the effectiveness of TEVET in provision of education and skills development in Solwezi District. The postulation behind this research was that the district suffered from skills mismatch between the training that was offered at the training institutions and what was demanded on the labour market. The chapter also looked at three specific objectives and research questions that guided the study. The study was grounded in the human capital theory which proposes that “a person’s education is an investment”. The next chapter will deal with a wide board of literature that was reviewed to come up with the literature gap.

1.11 Organization of the Dissertation

This dissertation is divided into six chapters. The following is a brief summary:

Chapter one provides the background to this study, the statement of the problem, purpose and objectives of the study, research questions and significance of the study. It also provides the conceptual and theoretical underpinnings, operational definitions and ethical considerations.

Chapter Two reviews and analyses the literature pertinent to the study topic which helped to determine the current state of research in the areas of TEVET. These areas have been reviewed from different subject perspectives among others, nature of TEVET Infrastructure in Africa, responsiveness of TEVET curriculum and funding of TEVET Institutions.

Chapter three presents the methodology which is segmented into themes that include research design, description of the study area, study population, sample size, response rate and sampling techniques. The chapter also presents data collection methods and techniques and data analysis methods.

Chapter four provides the presentation of findings and interpretation in view of the research questions set at the beginning of the study. Chapter five discusses the findings presented in chapter four while chapter six provides the conclusion, recommendations and suggestions for future research.

CHAPTER TWO: LITERATURE REVIEW

2.0 Overview

The previous chapter dealt with among other things the background of the study, objectives, and research questions, theoretical and conceptual frameworks that guided the study. In an effort to establish what other researchers have discovered about TEVET, this chapter deals with a wide board of literature that was reviewed prior to the research in order to understand different methodologies, findings and recommendations of various studies exploited from both internationally and in Zambia. The chapter explores the dominant themes of the study such as nature of TEVET infrastructure in Africa, responsiveness of the TEVET Curriculum, funding of TEVET institutions and social and economic benefits of TEVET.

2.1 Nature of TEVET Infrastructure in Africa

In Ghana, Dasmani (2011) reported that, a general drawback in TVET training institutions was traceable to factors such as teaching facilities which included equipment, studios and lecture halls. Appropriate teaching facilities had remained grossly inadequate in the practical training of students. The inadequacy of the facilities reflected the scenario where training sessions were undertaken without the expedient practical activities that may be necessary to bring out the best of students' talents. Most of the few tools and equipment were obsolete and outdated. Similarly, Duku (2012, p.32) noted that "studios designed for ten students now accommodate over fifty students; Lecturer-student ratio is beyond the National Accreditation Board prescription of 1:15; [and] lack of studio tools and equipment". Meanwhile, numerous complaints by students were not heeded to. A cursory look at some of the TVET departments in Takoradi polytechnic (T-Poly), University of Education, Winneba (UEW) and College of Art in Kwame Nkrumah University of Science and Technology (KNUST) confirmed the logistical challenges of the school based TVET institutions. The researcher felt that the report by Dasmani (2011) brought into question the quality of technical and vocational training offered in Ghana in view of the poor state of infrastructure which indicated a mismatch with the industrial equipment.

Atchoarena (1997) reported that in in southern Africa, predictably, structural adjustment programmes had negatively affected the quality of education and training. Shortage of lecture rooms in TEVET institutions had led to under-utilization of physical facilities, worsened by the

continuing decline in lecturers' real salaries and widening gaps between their pay and private sector pay for technicians and engineers. Quality had further been compromised by obsolete equipment, lack of books and training materials, and an inability of many training institutions to keep abreast with technological developments in industries. Opportunities for retraining and upgrading the knowledge of teaching staff had also diminished. To this end, structural adjustment raised the issue of the relevance of education and training as the economy adjusted. The researcher was of the view that Atchoarena (1997) gave an insight as to why training institutions in Southern Africa faced infrastructural challenges which he attributed to austerity measures resulting from structural adjustment programmes. However, this argument did not hold much water because various reports on the history of Technical and Vocational Education in Africa indicated that the sector had not been given necessary priority in terms of investment even before structural adjustment programmes.

In Zambia, various reports indicated that there was serious mismatch between training equipment used during training and what was obtaining in the industry. Nkanza (2007) and Tembo (2005) stated that the physical structures of most TEVET institutions were dilapidated, insufficient, and fully utilized. The training materials were inadequate and training equipment and plant were worn out. In most cases graduates were given on-job-training to enable them perform to the expected standard. Tembo (2005) further stressed that the observed mismatch would definitely affect the quality of training and development of full potential of students/trainees which would definitely affect their knowledge and skills for making contribution towards participation in the complex rapidly changing society. Other literature revealed that the issue of dilapidated physical structures, insufficient training equipment, teachers' qualifications for TEVET programmes and mismatch of knowledge and skills were not peculiar to Zambia. For instance, Nyerere (2009) in the study carried out in Kenya confirmed that the education system philosophy had rendered TEVET educational sector less favorable. According to him (Nyerere, 2009) university (academic) knowledge was more valued in Kenya than TEVET education irrespective of the quality of graduates from the two sectors of education.

Hamweete (2008), studied on the performance of selected TEVET management boards in Luanshya district of the Copperbelt province, the main goal of his study was to ascertain the

effectiveness of the management boards in the provision of TEVET. The study used data obtained through questionnaires, which were administered to management staff, support staff and students at the TEVET institutions through stratified sampling. The conventional performance indicators included; the ability of the management boards to attract and retain qualified human resources, the capacity to provide adequate training equipment and other materials, the ability to offer demand driven training and quality of instructional management and self-financial sustenance. The survey results indicated that management boards were riddled with poor staff retention, offering poor quality training because they were unable to provide required training facilities and their training continued to be supply driven. The study further established that management boards were hit by lack of finances and appeared to be far from becoming fully and financially self-sustaining. The study further made a number of recommendations, among them was the introduction of the training levy to help improve training institutions, improvement of the conditions of service and training standards by linking them to foreign institutions of technical and vocational training that seem to be doing well.

The researcher found the methodology used by Hamweete very satisfying for the results that were obtained. However, this study took a different scope as it did not focus on the performance of management boards but rather on the effectiveness of TEVET institutions in addressing skills mismatch in Solwezi district.

In Solwezi district the case study conducted by Yukani (2013) looked at the factors that affected the teaching of vocational skills at Primary school level at selected schools in the district. The study used both qualitative and quantitative paradigms for validity and richness of the findings. However, the qualitative design was used to a larger extent while the quantitative design was used to a lesser extent. The study targeted twenty primary schools and a College of Education as a sample for the whole district. This sample gave a total of 105 respondents who were divided as follows: 40 serving teachers, 60 student teachers and 5 Lecturers. Information was received from respondents by means of questionnaires. Observations were made and pictures taken where possible. Responses from the study were grouped into emerging themes, and data analysed using both the qualitative and quantitative approaches. The Study found that while teachers at primary school level were eager to teach vocational skills through Creative and Technology Studies, primary schools had no tools, equipment, essential materials and specialised rooms for

vocational skills education. Furthermore, the Learning Area's components, especially Home Economics and Industrial Arts, were not compatible, as the integration was not rationally done. Also the teachers' training was not adequate to fully prepare them for effective teaching of vocational skills and all components of Creative and Technology Studies (CTS). This study also used both qualitative and quantitative paradigms but was dominated by the quantitative methods of data collection and analysis.

Carmody(2009) also added that Zambia had a big problem of not having adequate up to date training equipment in most technical training colleges. He stated that *“training materials were inadequate...the training equipment and plant were worn out and technologically out-dated.”*

A very important aspect that the reviewed literature has not brought to the fore is the use of internet services and library facilities in TEVET training institutions. A report by New York Comprehensive Center of 2011 suggested that there was evidence of increased student achievement as well as more active teacher leadership in school environments where School libraries assist in the alignment of curriculum to set standards and in school-wide professional development activities. These functions were more critical with the shift to the common core standards and the attendant focus on 21st century skills. To this end the researcher investigated if training institutions had well-stocked libraries and the provision of internet services.

2.2 Responsiveness of TEVET Curriculum.

The curriculum is the very heart of a training programme, in the sense that all the resources and activities required to conduct a training programme emerge from the curriculum. Formerly, curriculum development for training was almost non-existent in TEVET; syllabuses from overseas were used as a guideline for the different examinations (Atchoarena, 1997).

2.3 Systematic Curriculum and Instructional Development Model

The Systematic Curriculum and Instructional Development (SCID) model represents a proven curriculum development process essential for developing competency based curriculum and instructional materials needed to train tomorrow's workforce (Dunbar, 2002). It has five phases; analysis, design, instructional development, training implementation and programme evaluation. Norton (1993: 1-5) elaborates the activities at each of the five phases;

Analysis: It is the initial stage in programme development. It includes the analysis of needs, job profiles and task verification. This activity involves representations from stakeholders. When need is flagged in by any of the stakeholders, at the analysis phase, experts in that subject area or job will be involved like employers, workers and training providers to come up with a job profile. They define among other things the attributes required of the learner, the tasks the job involve and purpose of the job.

Design: Data collected at analysis stage is used to determine the training approach, training plan, develop learning objectives and performance measures. In the design phase, there are a small number of employers and workers, and a large number of trainers, who translate the profile into the teaching - learning activities including assessments.

Instructional Development: Results in production of instructional materials decided upon during the design phase. In competence and performance based programmes, instructional materials take the form of competence profiles, learning guides and modules while traditional programmes take the form of curriculum guides, course guides and lesson plans. In the development phase, the curriculum document is subjected to validation by a group of experts (employers, workers, trainers, and experts) who either might have been in the analysis phase or not to give a comment on whether all aspects in the area have been captured

Implementation: Putting the training programme into actual operation. In the implementation phase, mostly trainers and employers are involved. The trainers provide the required skills while the employers provide the work related environment for students.

Evaluation: Results of performance are collected and analyzed. It is at this stage that corrective actions are taken.

The last phase is curriculum review and evaluation, involving trainers (institutions), students, employers, workers, TEVETA and the ministry of education. Some training institutions have tracer monitoring systems which they use to track their graduates in order to keep their programmes relevant while students in general as graduates provide feedback through the curriculum review cycles to TEVETA or through studies (like the tracer study 2004-2006) related to their employment status. The employers and workers evaluate programmes through student performance during work based learning as evaluation reports are written regarding

student performance. The SCID model emphasizes the critical ability of doing, in addition to knowing the what, how and why. This model also predicts effective instruction, meaning, intended learning will occur when activities outlined in the model are followed (Andrews 1980). However, this model has consequential problems in learning situations that may work against its application. The researcher examined to what extent the TEVET curriculum has been developed and implemented through the SCID model which entails involvement of various stakeholders in development and implementation of the curriculum. The researcher believes that this model if effectively implemented would result in achieving the main objectives of TEVET of being a viable tool for social and economic development. To this effect, the extent to which this model was being applied in the formulation and implementation of the curriculum was investigated in the current research.

2.4 Teaching Staff and their Implementation of the Curriculum.

In Zimbabwe, the Technical Vocational and Education Training (TVET) (2005) report on curriculum relevance pointed out that the courses that were offered in TVET institutions through Higher Education Examinations Council (HEXCO) were not always consistent with what the industry required. In Malawi, the country had problems on the teaching qualifications of teachers and lecturers. UNESCO (2010) attributed inappropriate skills training to teachers. From these two reports, it appeared challenges of TVET were similar to those of other Africa countries. Khasawneh *et al.* (2008) recommended that vocational teachers should adhere to established standards of teaching quality, develop competency records for their students during their program of study, and use technology tools to improve their instruction and, ultimately, the learning of the students. Additionally, Grollman (2009) argues that globally, the TEVET teaching profession faces both the challenges of its low status and the emphasis on factors that serve to maintain it at this low level.

It is indeed true that the qualifications of the lecturers play a critical role in the effective implementation of the curricula. Thus, this researcher also investigated qualifications of instructors that taught at SOTTI and SOSTI.

TEVET institutions under MSTVT employed and paid their own staff. Terms of tenure varies from institution to institution. Any person facilitating in TEVET should have a qualification

higher than the level they are facilitating including a teaching diploma. This implies that those teaching at diploma level are graduates, those teaching crafts are diploma holders, those teaching technician are either diploma or advanced diploma holders. However, in practice there were implementation challenges, especially in crafts because there were very few technicians within the country to handle that level. In addition, public institutions had high attrition levels because of varying conditions of services per management board (UNESCO, 2010).

2.5 TEVET Pedagogical Approaches.

In Sweden a study was exploited by Chen, Gomes and Brizuela (2011) with the purpose of examining how TVET curricula could be reoriented towards sustainable development. The research utilized interactive methods to assess TVET. The study first used content analysis to ground the knowledge around the two researched areas and to build the conceptual framework for a successful TVET for sustainability organization. The content analysis examined at Six Case Studies from Southern and Eastern Africa presented by UNESCO-UNEVOC who had done a robust research in five different African countries (Mauritius, Botswana, Malawi, Zambia and Kenya). This method helped the researchers to have a broader perspective of the strengths and weaknesses of the TEVET sector and helped complement their findings at Green Works and other interviewed organizations. The study then utilized observation (through a field trip), interviews with case study organization, survey with the students, interviews with other TVET organizations and experts, to learn what challenges and barriers were to embed sustainability concepts in TVET and what the strengths and weaknesses of the current model were.

Chen *et al.* (2011) further established that the adoption of the diverse pedagogical approaches had been identified as a strong characteristic of the current TVET model. The results in Mauritius showed diversified approaches being used to deliver ESD in the Tourism course offered by University of Technology of Mauritius (UTM). Some of them were: placement in hotels and travel agencies; participation in educational tours; focus-group interviews; distance learning; e-learning; case studies; extra-curricular activities; talks by professionals; study trips and industrial attachments; interaction with industry; empowerment of trainees; site visits and evaluation exercises; and class discussions on the subject. Malawi also evidenced diversity in the pedagogical approaches applied into TVET. They indicated nine delivery approaches being used in ESD. Practical lessons, group discussions, industrial or site visits, group demonstration and

using CBET were among the popular approaches used in the delivery of ESD into TVET (UNEVOC 2010). The content analysis in Botswana and Zambia indicated that unqualified trainers affect the quality of TVET. Also related to the trainers, Kenya indicated the lack of awareness of how to teach ESD as a weak point, even if there are ESD elements included into the curricula (UNEVOC 2010).

Additionally, the study findings showed that shorter vocational programmes, 5 days, presented more challenges of embedding sustainability knowledge, skills and attitudes. Programmes with lengthy months or even a year had a greater chance to develop long lasting skills and attitudes towards sustainability. Courses that are built around sustainability also had better chance to develop sustainability mindsets. Through content analysis the study further established that one of the major weaknesses was that there were not many TVET organizations were in the process of reorienting their curricula towards sustainable development. Many of them included stand-alone courses related to the environment, but a system thinking approach as well as sustainability embedded in all courses was still very incipient in TVET organizations.

After the content analysis Chen *et al.* (2011) did a case study at Green Works (GW) so as to establish if different courses had embedded sustainability knowledge, skills and attitudes in the TEVET curricula. Results indicated that only one course contained explicitly the sustainability concepts: “Introduction to Planning for Sustainability”. This course was offered by GW in partnership with Blekinge Technology Institute in Sweden. By interviewing the students from this course, the responses revealed that sustainability knowledge, skills and attitudes were delivered in this course. On the other hand all other GW courses did not present a direct application of the sustainability concepts embedded in Green Works curricula. From the survey with the students, there was evidence that some sustainability concepts were delivered, such as: systems thinking, entrepreneurship, environmental management, appreciation to the importance of environmental, social and economic contexts but this delivery is not structured as a formal content in the courses curricula and is dependent to the knowledge of the trainer to deliver those concepts. One critical issue brought out by this study was the use of practical and diverse pedagogical approaches in the implementation of the curriculum; in line with this fact the current study investigated the pedagogical approaches used by the training institution in the implementation of the curriculum.

Furthermore, the study exploited by Osuanyi (2014), with the core aim of investigating the root causes of the stigmatization of vocational and technical education and its concomitant effects on the development in Ghana, established that Technical and vocational education programmes had not produced productive and inventive output of employable graduates which could serve as real economic bell outs for the deteriorating economies in Africa. Using comparative analytical methodology, the study revealed that there was curriculum deficiency in TEVET programmes; logistical challenges due to inadequate funding; poor linkage of TEVET to industry; unfair trend of inappropriate categorization of graduates on the field and a continuous chain of leadership crisis. In the same vain this study investigated the relevance of the curriculum to the changing demands of the labour market in order to determine if the curriculum was able to produce employable graduates for Solwezi district using an embedded design of qualitative and quantitative techniques.

Osuanyi (2014) further reported that in industry the placement of Technical and vocational graduates was limited to artisans, foremen and supervisors who always worked as subordinates to their colleagues who had general academic education and progressed to the university to pursue diploma and degree programs. The conditions of service in industry with respect to remuneration, progression, incentives and others were skewed to favour the senior staff that had university education. Another apparent effect of the negative public perception towards TVET in Ghana is the failure of technical-oriented tertiary institutions to lead in industrialization.

The limitations of TVET systems in African societies have created a perception that TVET is second fiddle to general academic education. This is because graduates from grammar education are employed in white colour jobs while TVET education leads to blue-colour jobs which are less prestigious (Maiga, 2013).

Many scholars have observed the negativism with which many in most African countries including Ghana perceive TVET. The 2011 COTVET (Council for Technical and Vocational Education and Training) report confirmed public perceptions that TVET programmes are patronized by people who have low intellectual ability and in most cases by school dropouts and or illiterates. Students who pursue such programmes were seen as learners with low intelligence to learn the so-called prestigious academic subjects. These negative perceptions made detrimental inroads into Ghana's second cycle institutions, amongst the general public and even

in tertiary institutions that were mandated to train learners in TVET programmes. Ironically, the negative perceptions were from within the intellectuals who were better positioned to demystify the situation.

The study conducted by International Labour Organization (2007) looked at the relevance of the skills obtained by disabled people in Malawi. 61 percent of the skilled and employed respondents (44) who replied said they were using the skills they had acquired in their present work. The proportion of skilled and employed respondents who were using vocational skills they acquired in their jobs or small businesses was higher in rural areas (84 per cent) than in urban areas (58 per cent), possibly indicating a better match between the training courses offered in rural areas and the local labour market opportunities (mainly weaving, tailoring and agriculture or fishing). In Zambia, some skills had been more relevant to the labour market than others. Those who had trained in accounts and business management or to become radio technicians, for example, had found their skills training very useful for finding work. Similarly, the vast majority of those who had trained in carpentry and joinery or to become teachers replied that their skills training had been useful for finding a job. On the other hand, nearly one-quarter of those who had trained as telephone operators (37 per cent) or in home economics and housekeeping (38 per cent) did not find these skills useful for the job market. Among those who had trained as tailors, perceived usefulness of the skills training was even lower, with over half of these respondents (57 per cent) stating that the skills training they had acquired did not make it easier to find a job. Some of the case study respondents also commented that their skills were traditional and not marketable. Some said that they did not have the chance to choose skills in which they were interested, adding that there is a limited range of training courses available. The result for many was that they were working in activities for which they had not been trained, having learned the necessary skills largely through on-the-job training. Others managed to make use of their skills by becoming self-employed. Taking this into account the researcher investigated the nature of the programmes that the training institutions offered in order to ascertain their relevance to the current labour market demands of Solwezi district.

2.6 Funding of TEVET Institutions

Atchoarena (1997) reported that many countries in Southern Africa were facing the familiar problem of raising resources to finance their vocational training systems. Particularly those

countries that were undergoing structural adjustment programme-Zimbabwe and Zambia are salient examples—vocational education and training (VET) had come under increasing fire, forcing governments to reduce their spending on this vital segment of human resources development. In Zimbabwe, where the majority of vocational training programmes continued to be run by the government, allocations for vocational training declined sharply in real terms since the start of the Economic Structural Adjustment Programme, the second phase of which was about to commence. The picture is similar in Zambia (Atchoarena, 1997).

Irrespective of their economic situation and although the magnitude of their task differed, Southern African countries faced the same challenge: to find the will and means to invest more resources into vocational education and training. Atchoarena (1997) further highlighted options pursued by some of the countries to expand the resource base for vocational education and training which included: expanding revenues from traditional sources, expanding revenues from new, non-traditional sources and make better use of existing resources. The first option was often not a realistic one. In today's climate of economic downturns, structural adjustment and governments' reassessments of priorities among competing alternatives, VET programmes had often suffered budget shortfalls. Enterprises in difficulties often made training one of the first budget categories to cut. What remained was to expand revenues from new, non-traditional sources and make better use of existing resources. But one must remember that pouring more money - raised through whatever means – in already inefficient systems did not help. It just meant that inefficiencies were carried out on a larger scale. The first policy decision was therefore to make better use of existing resources (Ibid, 2007).The researcher agreed with this argument that effective utilization of already existing resources was one way of improving the operation of the training institutions, to this effect, this study, investigated the expenditure modalities employed by the training institutions in Solwezi district.

Atchoarena (1997) further observed that with the economic downturns, some of the countries in the region were attempting to raise revenues from new, non-traditional sources. Any policies and programmes to broaden the sources of finance for VET must depart from the premise that those who were potential new (and old) contributors were also integral partners in the process of defining and implementing VET policies. Working from this premise, devolution of authority and responsibility was a must in the context of political, policy and administrative reform. Policy

developments must nourish macro-economic conditions that result in employers benefiting from the training. Lower levels of government, community organizations and training partners must have a say in defining VET policy and in managing resources. The National Training Strategy Initiative in South Africa illustrates perfectly these considerations. Therefore, the initiative was an all-embracing effort, involving all stakeholders in training: government, unions, employers, industrial training boards, companies, training institutions, NGOs and individuals, in a programme of reform to recreate the education and training system so that it met the economic and social needs of the country and the development needs of the individual. In the context of the TEVET Review in Zambia, efforts were also made to involve all present and potential partners in VET in formulating and implementing a new TEVET policy (Atchoarena, 1997). The researcher believed that it was of outmost importance for institutions to divert from traditional methods of funding such as heavy reliance on government allocations if they were to improve the quality of training. Bringing various stakeholders on board to fund various training programmes of their interest was one of the sustainable methods of financing training institutions that should be given due consideration. In view of this fact the study established to what extent different stakeholders such as the mines had cooperated with the training institutions to shoulder the burden of funding.

Additionally, Achaerena (2007) alluded that the rationale of publicly financed training was that although according to some "there is no blanket case for governments either to provide or to finance training", governments in the countries of the region continued to play an important role both in running and financing training. In addition to the benefits to the individual and firm of improved skills (which alone would justify purely private financing) there were external benefits of training in the form of a better-educated work-force, which accrued to society at large. This is one reason why governments financed training programmes. Another reason was market imperfections, whereby the market did not provide sufficient incentives for enterprises and individuals to invest in training; consequently governments intervened to compensate for these market imperfections. A third reason for government intervention was the consideration of equity: government typically financed training to meet the needs of underprivileged groups of society, which without public intervention could not avail themselves for training opportunities. The researcher understood that this argument explained why training institutions could completely depart from public financing due to public benefits that accrued from such training.

However, an allusion had been made to inherent weaknesses in public-sector financing of training. This segment of training tended to suffer from under financing, the lower-income countries in the region relied primarily on duties and excise taxes for revenues, whereas middle income countries often had inefficient tax-collection systems. What the public system received was often not sufficient to maintain reasonable standards. Another weakness was instability as government budgets for VET tended to fluctuate with variations in the business cycle and natural calamities. In times of financial shortages, although public training programmes continued, inputs that were essential for maintaining adequate quality are invariably cut: for example, the cuts in equipment maintenance, training materials and allowances. Finances might be forthcoming for attractive capital projects but their maintenance was under supported. Finally public financing meant generally centralized control, with its inherent high administrative costs and lack of flexibility to adapt training programmes to changing market and training needs (Ibid, 1997).

Atchoarena (2007) further added that since more public resources could not be expected to be forthcoming for VET, many countries were looking for more money from private sources. This also conformed to the benefit principle: the beneficiaries were primarily the enterprise and the individual and therefore, these should pay for training. The main sources of private financing were: enterprise financing, individual/worker financing and direct income generation through various forms of production activities by training institutions. All these means were being deployed by countries in the region. The researcher was of the view that this presented an important alternative funding systems which this study investigated.

Atchoarena (1997), further stressed that in Zambia, a comprehensive review of the VET system was under way at present, necessitated by the structural changes in the economy and the labour market. While the bulk of jobs today were in the informal sector, the education and training systems continued to churn out graduates to meet the assumed requirements of the public service, modern industry and commerce. Weaned to expect formal-sector jobs, but equipped with skills and work attitudes that were ill-adapted to actually available job opportunities, VET graduates often ended up unemployed. The country must therefore reconstruct its education and training system so that it prepared Zambians for identifiable job opportunities and helped them venture

into jobs on their own account. Entrepreneurial training would loom importantly in this new training strategy. Skills' training in Zambia was presently heavily subsidized by the government and fees charged by public institutions are very low. In a climate of economic stagnation, maintaining quality and training standard became very difficult as infrastructure had deteriorated, teaching staff left and there was acute shortage of training materials. In government institutions, resources had often been diverted to non-productive activities like maintaining a bloated administrative staff and expensive boarding facilities (Ibid, 1997).

According Atchoarena (1997) the terms of reference of a recently commissioned study on financing training undertaken in the context of the TEVET Review, the new financing scheme for Zambia would also incorporate a levy or some alternative system for financing VET, consideration of incentive schemes to encourage industry-based training through grants, subsidies, tax exemptions; introduction of user charges and trainee loans. The new financing system should explicitly support the broad objectives of TEVET reform, namely: increasing the efficiency and competitiveness of TEVET while ensuring equity of access to training by poorer segments of the population - women, rural populations, handicapped and others. It should reduce the burden of financing VET that is at present falling on the government; encourage private training markets in TEVET provision; and promote the growth of a business culture among TEVET providers.

The scope of the Zambian study on financing VET suggested that, individuals and workers were another source that could be tapped to increase the resources available for funding VET. In the context of structural adjustment, many countries had introduced school fees as a means to compensate, albeit partially, for the loss of funding triggered by budget cuts. In some cases, for example in the case of proprietary (private) training institutions, fees tend to pay for all costs, whereas in others, they contribute only a minor part, the bulk being covered by other sources: government, enterprises and others. To compensate for the drop in funding, *cost recovery methods* had been introduced in Zimbabwe. In 1992 school fees, which had been abolished at independence in 1980, were reintroduced across the education and training system. To protect the poor, a Social Dimensions Fund (SDF) was created to ensure exemption for vulnerable groups from cost recovery. However, the SDF did not operated satisfactorily. It was estimated that the component of SDF that assisted those who could not pay school fees covered only one

eighth of the students eligible for exemption. Cost-recovery measures definitely had a negative impact on the equality of access to training. Primary and secondary school drop-out rates increased. Proposals to raise tuition fees dramatically and reduce subsidies in public vocational training would effectively exclude large numbers of people from gaining access to such training. At the same time, fee-paying private short-term courses were mushrooming in Zimbabwe, as the public system of training faced difficulties.

Driven by increasingly high levels of general education and traditions of self-improvement through education and training, a vibrant private training market has burgeoned, financed primarily by fees paid by students, but also by having fees reimbursed by employers. Even the government (Harare) polytechnic had entered the private market, providing technical and engineering courses in the evenings for a fee. To sum up, it seemed that fees were most effective in financing short-term training with good job prospects. Fees could mobilize additional resources and could also help regulate supply and demand for training, i.e. through charging higher fees to control excess demand. Individuals and workers are more selective in choosing training programmes that will lead to jobs and promotion. Institutions that relied on fees tended to respond to the interests of the students and therefore supplied training that was related to the job market. Fees introduced for basic non-work-related education and for pre-service training often had serious negative equity effects. Individuals and workers were less likely to pay for extensive training that may lead to inconclusive results. When competitive training markets exist, one policy would be to set fees at market levels and cushion their negative equity effects by scholarships based on means tests, establish training loan schemes, adjust fees to income levels and ensure that tuition fee policies were applied consistently to all types of education and training. In discussing financing of training by the worker/individual, mention should finally be made of traditional apprenticeship. The basic idea behind apprenticeship was that the worker apprentice pays for the training which the entrepreneur provided at the workplace by receiving reduced wages during the training period (Atchoarena, 1997).

From the literature the researcher comprehended that a lot of factors were supposed to be considered when taking the route of tuition fees as a funding modality as it had the potential to

exclude the poor from accessing TEVET which would defeat one of the core purposes of inclusiveness especially for the vulnerable.

The study conducted by International Labour Organization (2007) working in collaboration with disabled persons' organizations (DPOs) in Malawi, South Africa and Zambia examined skills acquisition among disabled people in the three countries. The project involved exploratory surveys of the experience of disabled persons in acquiring skills formally and informally, and in gaining employment on completion of training. It also involved case studies of some respondents who had attended training and gone on to get jobs or become self-employed. The specific objectives of the study were; to identify effective strategies for vocational skills acquisition by persons with disabilities leading to productive work and to promote training policies and effective methods of training and employment services delivery for individuals with different types of disabilities, particularly in mainstream training institutions. In Zambia, the survey was conducted in three provinces: Eastern, Copper-belt and Lusaka. In each province, activities were limited to the main urban centres. In all three countries respondents were asked to identify the problems they faced in attending vocational skills training courses, whether or not they had actually attended training. Many respondents experienced difficulties in paying training fees. In Malawi and in South Africa, this was the most frequently-reported barrier. In the South African survey, it was mentioned by two in five respondents (40 per cent), while in Malawi, approximately a third of the respondents mentioned this as a barrier. In Zambia, this was mentioned by a small minority of respondents (5 per cent). Several of the case study participants described the consequences of not having funds to pay for their training, leading them to drop out of school, or not attend the training course of their choice. A few were fortunate in having a family member to negotiate exemption from training fees, or in having an advocate to finance their training. From this view point the researcher believes that government should enhance inclusive participation for the less privileged in societies by giving them study loans which are more sustainable than bursaries.

Atchoarena (1997) argued that in VET programmes there was usually a direct link between studies and work. Hence there seems to be a strong case for having time spent on production to help strengthen performance capabilities in a particular occupational field. Many primary, secondary and VET schools in the sub-region have introduced production activities as a means of

providing additional income to finance education/training. The proportion of recurrent expenditures that could be recovered by income from production activities varied considerably. In Swaziland, for example, up to 80 percent of recurrent costs were covered by production income. In institutions where income from production covered the bulk of recurrent costs, production per se was the main activity, while training played a secondary role. As the amount of formal instruction increases, the income generating potential through production tended to decrease. A school could not expect to cover a high percentage of costs through productive activities while continuing to be an examination-driven training institution. Recently, technical colleges in Zimbabwe were advised to recover part of their cost of training for example through introducing production activities and fees and by providing consultancy services. However, given the problems of meeting adequate standards of training quality, referred to earlier, the new strategy to expand the resource base may in fact divert from, instead of consolidating and improving the performance of, their core training function. In contrast to formal training institutions, many NGOs have proven highly effective in financing training activities by integrating them with production for profit. They offer greater flexibility, and a more balanced relationship between practical work activities and theoretical studies. These programmes tend to target special populations. Instruction was low cost, student expectations were realistic, instruction focused primarily on production, there were few institutional constraints and staff is recruited on the basis of its production skills. In view of this argument the researcher established forms of production that institutions were engaged in as a way of supplementing their revenue generation. The integration of these activities were also investigated if at all they were in line with the core objectives of TEVET training institution

2.7 Social and Economic Benefits of TEVET

The European Union (2011) research review of the economic benefits of TEVET in European countries often cited growth. The review stressed that impacts of TEVET on labour-market outcomes often reflected direct or indirect aggregate individual productivity effects. The main outcomes pointed out by countries were higher participation on the labour market, lower unemployment, the opportunity to acquire a qualification for all categories which did not previously have one, and the chance to advance in a professional hierarchy. Through lifelong learning, individuals could improve their work opportunities and qualification levels. Higher

remuneration offers new opportunities which lead to further economic and social outputs, such as economic autonomy, and can also enhance psychological wellbeing. All these factors ultimately impact individual productivity.

In Sweden, European Union (2011) reported that TEVET programmes main outcomes included a higher rate of labour-market participation coupled with lower unemployment. Two-year programmes at the upper secondary level registered lower unemployment rates than comprehensive education (nine years of schooling). But the unemployment rates for graduates in three-year programmes were higher than for those in two-year programmes. Also, the inactivity rate was higher for those in a three-year programme than for those in a two-year programme. The probability of dropping out from a VET programme was higher for individuals enrolled in three-year secondary schools. Advanced Vocational Education and Training (AVET) was introduced on a trial basis and in 2002, the programme became a permanent type of education. AVET is a form of post-secondary school which aimed at supporting the continuation of studies. It had been organised in cooperation with companies who emphasized the importance of on-the-job training. The programme was designated for students who finished upper secondary school but also for employees who wanted to develop their skills. The main stimulating factor was the financial support accorded to individuals who participated in the programme. One critical point the researcher draw from this evaluation was that the duration of the TEVET programmes play an important role in imparting more knowledge and skills that enable the trainees to increase their chances of being employed. The other key factor that this literature stressed was that there was need for collaboration between TEVET institutions and different industries so as to ensure the curricula enhanced responsiveness in the programmes offered by institutions.

The report further indicated that in 2004 an evaluation study showed that 83% of the former participants had a job or were running their own business, with a slight difference between men and women (83% to 82%). 80% worked in a branch where AVET was relevant, compared to only 50% of individuals who followed IVET courses working in their qualified specialisation. In 2008 a follow up study confirmed the results.

In Italy, the European Union Report (2011) indicated positive outputs for different categories of people. Young people without work experience and unemployed people were able to find a job easier. For those already engaged in economic activity, acquiring new abilities could be an

insurance against unemployment and also favoured potential productivity and professional mobility. In France a correlation between unemployment and participation in training courses could not be directly established as positive outcomes depended on additional factors, not only participation in professional courses. In Spain, research uncovered different levels of development among regions in the north, including Madrid, and the south, even though geographic differences have been reduced over time. The worldwide economic crisis caused unemployment to increase to 17.4% in 2009, with unskilled labourers most affected. Even though unemployment was high, vocational training functioned as an active policy against the financial difficulties confronting citizens. Portugal stressed the deficit in TEVET research, but indicated that individual financial improvement is the main outcome of VET. A result not specific to VET but indicative is that a worker with an upper secondary education certificate usually earns around 60% more than an employee without one.

The Czech Republic did not report specifically on VET, but pointed out that education expansion, especially of higher education has led to lower unemployment and improved earnings. Further, the wage level for tertiary education graduates has grown substantially compared to secondary vocational graduates. In 1996, a male with tertiary education earned 78% more than a male with secondary education (European Union Report, 2011).

The main issue reported for Slovakia, for the whole education system and not only VET, concerns the inconsistency between labour-market needs and educational curricula. As a result, the research efforts were concentrated on forecasting the jobs required by the market economy effects of VET include: a higher probability of obtaining a full-time contract, on the- job promotion and better work-conditions. Cyprus emphasized research aimed at evaluating the four programmes promoting VET: ex-post evaluation of the existing schemes of the human resource development authority; impact of training/education and technology on the productivity of the Cyprus economy; study for the reorganization and development of the secondary technical and vocational education in Cyprus; and teacher training and upper secondary programme evaluations. The evaluation results confirmed the positive effects of VET on employment and wages. Hungary only provided data about research on IVET, as national CVET studies were not available. The end of the communist regime was followed by increasing investment in general education and the expansion of higher education and secondary VET. In this context, the main

outcomes are lower unemployment and better wages. The decline of vocational schools, which were artificially maintained during the communist regime, is a consequence of the influence of the communist past on VET policies. As a result, the qualifications offered by those vocational schools were no longer valuable and recognized on the labour market. Usually, the most disadvantaged students were the ones following vocational school courses, but the majority (around 80%) were planning to continue their study in secondary schools.

Slovenia, as in other post-communist countries isolated from technological innovation and know-how management for a long time, had high skills mismatch on the labour market. Five research studies underlined the need for retraining after graduation (general education or VET) to cope with labour-market demands (European Union Report 2011).

In Denmark the evidence was similar, studies found a positive relationship between employment growth and Continuous Vocational Education and Training (CVET). The report revealed that employees who participate in training programmes were less likely to remain in the same job. Research also highlighted that CVET could increase productivity in terms of hours worked but not in terms of cost reduction. Adult education and further training have a positive impact on participants' professional lives, which depended on the nature of the training. They enjoyed more stability compared to those that did not follow any Initial Vocational Education and Training (IVET) or CVET. The attendance rate was higher for people without higher level studies, followed by individuals with academic credentials. The positive relationship between CVET and labour-market needs was underlined by Norway which demonstrated that the number of apprenticeship places is dependent on the economic cycle. When unemployment rises, the available apprenticeship positions decreases. Stability in the VET system is maintained by government measures which create the institutional framework to stimulate enterprises to offer apprenticeship positions (European Union Report 2011).

In Germany the principal labour-market outcome of TEVET was intertwined with social benefit: it created a sense of stability among workers facing fierce competition. VET outcomes could be linked to the dual system approach because of the institutional settings which promote skills development. Practice-based and on-the-job learning company orientations did not only shape professional aptitudes but also social and personal abilities necessary for individual growth. At the same time, the dual system fostered low unemployment, although there were regional

differences between East and West Germany. Data available from 2003 showed that, after one month of completed training, unemployment was 37.7% in the East Germany compared with 19.4% in the western states due to structural factors (European Union Report, 2011).

Austria reported on research into individual returns by gender from different types of education. From 1999 to 2005 the returns were generally high, and characterized by high income disparities between women and men. The 1990s brought wage gap reductions between genders and different academic backgrounds, although some slight differences remained: business-oriented and technical specialisations are more profitable. In these sectors, apprenticeship graduates earned 15 to 20% more than graduates from compulsory schooling. BHS (VET College) graduates earned 40 to 50% more than AHS (general academic-oriented upper secondary education) graduates. Positive returns were hard to find for specialisations such as services, agriculture and forestry and even for the graduates of BMS (VET) schools. Returns for women were about the same for all occupations, but business degrees within universities and VET colleges stand out because of higher returns, followed by health and welfare sectors. For male graduates, the highest returns were in business, followed by engineering and social science. (European Union Report, 2011)

European Union Report (2011) further eluded that the outcomes of apprenticeship training depended on the training company's specialisation, its size and the available infrastructure. Companies design their future apprenticeship places by looking at the market needs. For CVET returns, people participating in CVET earned 6% more for men and 8% for women compared to those not participating in CVET. The correlation between CVET and wages could not be interpreted causally because personal employee information—such as individual abilities, motivations, ambitions, professional histories – was not available in the sample the research was based on. The curricula of apprenticeship training differ from school-based and academic forms of education. The quality of the curricula depends on the training company specialisation, its size and infrastructure. Quality effects can be observed in wage increases after training; this effect is directly related to the size of the firm. Another result highlighted was that it was easier for people taking part in CVET to find a job than for those who did not participate. The main outcome from studies in the Netherlands was the wage difference between employees participating in CVET

schemes and non-participants; results indicated that trained staff earned more, with wage differences ranging from 3.3% to 15.7%.

Finland reported a trend in IVET and CVET towards creating both vocational and general working life skills. The main aspect underlined is the quality of CVET in the framework of an integrated model. Traditionally, separate models of school-based and on-the-job learning tend to become increasingly mixed, intensifying the interaction between working life and education and training (European Union Report, 2011).

Other literature such as that of Wals (2009) contended that it was important that technical knowledge be accompanied with social skills in order to build harmonious societies. ESD within TVET was seen as a means to ensure sustainable lifestyles and occupations through the development of knowledge and skills that could meet the needs for a specific position in the labour market and result in an overall improvement of the quality of life of people. The role of TVET is to provide young people and adults with the life-skills necessary for the labour market and also to provide support to keep up with the fast changing market by expanding necessary skills and competencies.

Piazza-Georgi's (2002) work brought the role of human skills capital (HSK) into the equation of individual workers' productivity and, by extension, its role in the profit margins of organizations around the globe. According to Piazza-Georgi (2002), organizations around the globe were spending billions of dollars annually to educate and upgrade their employees' human-skills capital for them to compete effectively with their competitors in the knowledge-driven global marketplace. In the same vein, Clayton (1995) observed that more often than not workers were rewarded according to their skills – higher productivity as well as the quality of their goods and services – which influence their firms' bottom line or their profits' margin.

The UNESCO-UNEVOC (2008) recently indicated that TVET had a particular role in awarding knowledge and skills relevant to people's life quality improvement and upon linking with adequate recruitment chances, it should help to expand their skills, and increasing their outcome as well as their incomes, thus, it resulted into high living levels and rival economies. The UNESCO-UNEVOC (2008) also referred to TVET policies and practices may help support

overall development of individuals, the whole progress and make them ready for better sharing in the community.

UNESCO-UNEVOC (2006) report reiterated the important role of TVET in achieving sustainable human development. For example, the international Education for All programme emphasized vocational preparation within a context of social and environmental responsibility. Thus, Goal 3 in the Dakar Framework for Action included a call to “ensure that the learning needs of all young people were met through equitable access to appropriate learning and life skills programmes”. This Goal emphasizes the importance of skills development for employment and for effective citizenship, and the important relationships between them. In like vein, the 2002 Youth Employment Summit in Cairo called for educational approaches that empower youth, especially young women and the disadvantaged, to face the future with hope and optimism, secure in the knowledge that they have the human capabilities to care for themselves and their families and contribute to sustainable human development.

TVET takes on a complex and distinctive character with regard to sustainable development. This is because – both directly and indirectly – TVET produces and consumes resources, as well as affects attitudes towards sustainability held by future workers in all nations. TVET has always included elements of sustainability, especially in the way scarce training materials were conserved and waste materials were disposed. This historical commitment gives TVET a foundation upon which to build future commitments to sustainable practices. The manner in which production and consumption was managed could either contribute to sustainability or to practices and conditions that are not sustainable. During education and training, the greater the exposure of trainees to sustainable concepts, practices and examples, the more likely the desired workplace culture change will take place in the future. (UNESCO-UNEVOC, 2006).

Hanushek’s (2005) work observed that *“advanced technical manpower and knowhow may lead to higher rates of innovation and invention, make everybody more productive by helping firms introduce new production methods, and lead to more rapid introduction of new technologies”*.

The Zambian government also notes in the Sixth National Development Plan (SNDP) that education and skills development play a critical role in social-economic development. The

SNDP adds that the training sector provides opportunities for growth, poverty reduction, employment, productivity and human development.

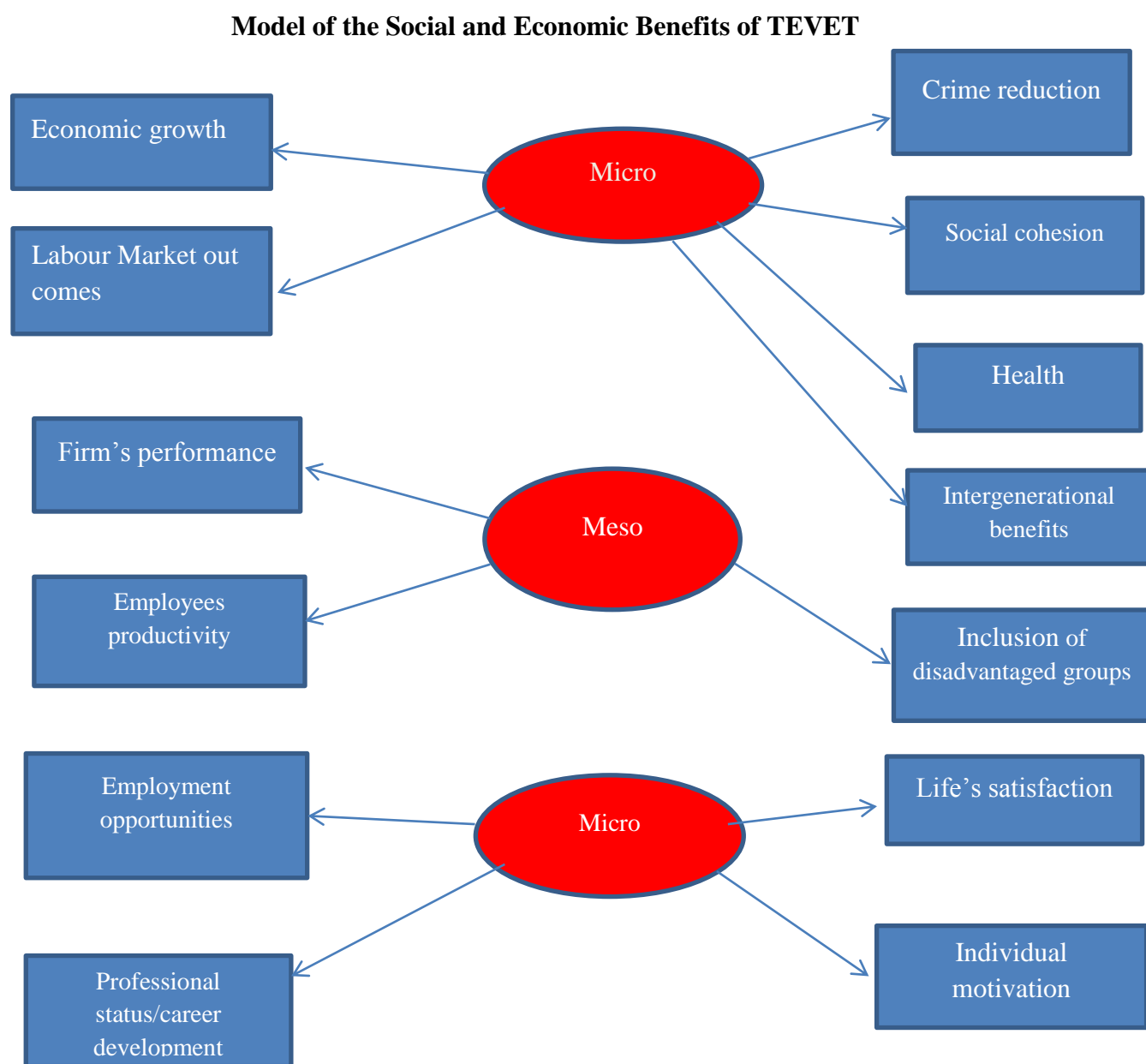


Fig: 2.1: Benefits of TEVET

Source: European Union Report (2011)

2.7.1 The Economic Dimension

Macro level:

- Economic returns on vocational education training: individuals that acquire vocational and technical skills will be able to generate income and pay tax when employed thereby, contributing and economic growth
- Labour-market outcomes of vocational education training: reduction of unemployment and inequality resulting from more people attaining a vocational qualification.

Meso level:

- Performance of enterprises: costs and benefits of training in terms of profitability and innovativeness.
- Employee productivity: individual abilities and capacity to contribute to profit after attaining vocational and technical skills.

Micro level:

- The benefit of vocational education and training on individuals: earnings, finding a job, reduction of skill mismatch, integration into the labour-market with satisfactory wage, further career development opportunities and professional status.

2.7.2 The Social Dimension

Macro level:

- Effects of vocational education training are across generations within families and how family impacts on skills development.
- Relationship between vocational education and health: how education and vocational education training can support the health of a nation.
- Social cohesion: multidimensional concept measured by, for example, tolerance, trust, formal and informal networking (social and relation capital), low grade of social polarisation, this can reduce delinquent and criminal acts in a society.

Meso level:

- Inclusion of disadvantaged or marginalised groups through education and vocational education training.

Micro level:

- Personal well-being: quality of life for individuals and effects on personal development, attitudes and motivation.

2.8 Summary of Chapter Two

The literature reviewed exposed various challenges faced by TEVET institutions especially in Africa. In terms of nature of infrastructure studies revealed that physical structures of most TEVET institutions were dilapidated, insufficient, and fully utilized. The training materials and equipment were inadequate. The literature review further, suggested that technical and vocational education programmes did not produce productive and inventive output of employable graduates which meet the current industrial demands. Studies also indicated the potential benefits of operating successful TEVET institutions citing examples from European countries. However it appeared there was no empirical study that had been conducted to examine the effectiveness of TEVET institutions in addressing skills mismatch in Solwezi district despite the rise in economic activities. To this end, this study sought to close up the literature gap between the findings of the reviewed literature and the current state of affairs in the district.

CHAPTER THREE: METHODOLOGY

3.0 Overview

The previous chapter provided the literature rearview. This chapter presents the research methodology which was used in this study. Howell (2013), argues that methodology is the systematic, theoretical and analysis of the methods applied to a field of study. The methodology comprises of the theoretical analysis of the body of methods and principles associated with a branch of knowledge, theoretical model, phases and quantitative or qualitative techniques. The chapter is divided into dominant themes that include description of the study area, research design, study population, sample size, response rate and sampling techniques. The chapter also presents data collection methods and techniques, research approach and data analysis methods.

3.1 Research Design

Kombo (2006) argues that a research design is the structure of a research. It is a “glue” that holds the elements of the research project together. This study adopted a mixed methods design known as *embedded design*. A mixed methods research design is a procedure for collecting, analyzing, and “mixing” both quantitative and qualitative research methods in a single study to deeply understand a research problem (Creswell, 2012). The embedded design (see fig 3.1) was dominated by the quantitative methods of data collection and analysis while qualitative techniques were used to a lesser extent. Quantitatively the researcher asked specific, narrow questions to collect quantifiable data from participants through the use of questionnaires. Quantitative methods enabled the researcher to conduct the inquiry in an unbiased and objective manner. Qualitatively the researcher relied on the views of participants; asked broad, general questions through interviews. Interviews enabled broader and deeper understating of the issues under investigations.



Fig 3.1: Embedded Design

Source: Creswell (2012)

3.2 Study Area

Kombo (2006) stresses that the selection of the study site is essential as it influences the usefulness of the information produced. This study was conducted in Solwezi district of North-Western province. The district is the provincial headquarters and also the biggest and most urbanized of all the eleven districts in the province. The population of Solwezi district by 2016 was projected to be 299,725. In terms of major economic activities, the district has three large operational mines at Kansanshi, Lumwana and Kalumbila (CSO, 2015). The choice of the study area was necessitated by the fact that Solwezi district being a new mining hub of Zambia requires well skilled human capital to work in the emerging industrial sector. To this effect, the role of TEVET in enhancing skills acquisition in the district cannot be overemphasized.

3.3 Study Population

A population refers to a group of individuals, items or objects from which samples are taken for measurement (Kombo, 2005). By 2015 Solwezi district had a total number of four registered TEVETA training institutions that made up the target for the study. The target participants for this study were the students, instructors, principles and accounts officers from both SOSTI and SOSTI. Additionally, the training manager from SOTTI, Chief operations Technologist from

ZESCO, Training engineer from Kansanshi mine were part of the target population. In 2015 SOTTI had the total number of 341 registered students and 19 instructors for all the training programs. On the other hand SOSTI had a total number of 98 registered students and 12 instructors.

3.4 Study Sample

The sample size refers to the number of items to be selected from the population to constitute a sample. Kothari, (2004) postulates that the size of sample should neither be excessively large, nor too small. It should be optimum. An optimum sample is one which fulfills the requirements of efficiency, representativeness, reliability and flexibility. While deciding the size of sample, the researcher should determine the desired precision as well as an acceptable confidence level for the estimate. The size of population variance needs to be considered as in case of larger variance usually a bigger sample is needed. The size of population must be kept in view for this also limits the sample size. The parameters of interest in a research study must be kept in view, while deciding the size of the sample. Costs too dictate the size of sample that one can draw. As such, budgetary constraint must invariably be taken into consideration when deciding the ample size. Taking this argument into account, out of the four registered TEVETA training institution the researcher purposively selected SOTTI and SOSTI based on the nature of the programs that were being offered which were industrial based compared to the other institutions two institution. SOTTI and SOSTI were also easily accessible as they were centrally located compared to the other two institutions which were in the outskirts.

For quantitative data collection the researcher targeted a sample size of participants that could give a 95% percent level of confidence and 5% (0.05) sampling error using the formula below.

$$n = \frac{N}{1 + Ne^2}$$

Where: n= sample size N= total population e = sampling error

- i. Using this formulae the study sample for students at SOTTI was calculated as follows:

- Total student population (N) was = 341

$$\begin{aligned}\text{i.e. } n &= \frac{341}{1 + 341 \times 0.05^2} \\ &= 184.12 \\ &= 184 \text{ students}\end{aligned}$$

ii. Sample Size for instructors at SOTTI

- Total instructor population was = 19

$$\begin{aligned}\text{i.e. } n &= \frac{19}{1 + 19 \times 0.05^2} \\ &= 18.14 \\ &= 18 \text{ instructors}\end{aligned}$$

iii. The study sample for students at SOSTI

- Total student population was = 98

$$\begin{aligned}n &= \frac{98}{1 + 98 \times 0.05^2} \\ &= 78.72. \\ &= 79 \text{ students}\end{aligned}$$

iv. Sample size for instructors at SOSTI

$$\begin{aligned}\text{i.e. } n &= \frac{12}{1 + 12 \times 0.05^2} \\ &= 11.65 \\ &= 12 \text{ Instructors}\end{aligned}$$

Adding the figures together, a total 263 students 30 instructors were targeted from both SOTTI and SOSTI.

3.5 Response Rate.

Out of 263 students who were given the questionnaires only 244 returned. Therefore,

$$\text{Response rate for students} = \frac{\text{number of respondents}}{\text{target sample size}} \times 100\%$$

$$= \frac{244 \text{ students}}{263 \text{ students}} \times 100\%$$

$$= 0.9277 \times 100\%$$

$$= 93 \%$$

$$\text{Response rate for instructors} = \frac{27 \text{ instructors}}{30 \text{ instructors}} \times 100\%$$

$$= 0.90 \times 100\%$$

$$= 90\%$$

3.6 Sampling techniques

The researcher used stratified random sampling technique to select participants for questionnaires. This was done by categorizing students and instructors in accordance with the training programmes that were offered at the institutions. Kothari (2004) argues that stratified sampling is applied if the population from which a sample is to be drawn does not constitute a homogeneous group, so as to obtain a representative sample. In this technique, the population is stratified into a number of non-overlapping subpopulations or strata and sample items are selected from each stratum. If the items selected from each stratum is based on simple random sampling the entire procedure, first stratification and then simple random sampling, is known as stratified random sampling. The strata constituted the 12 training programs that are offered from which students were randomly selected.

On the other hand respondents for the interviews were purposively sampled using *maximum variation purposive sampling*. Kombo and Tromp (2006) suggest that in purposive sampling the researcher targets a group of people believed to be reliable for the study. Maximum variation sampling was aimed at capturing the central themes that cut across participants' variation.

3.7 Data Collection Methods

3.7.1 Questionnaires

In order to gather quantitative data from the students and instructors the researcher used questionnaires. Kombo and Tromp (2006) define a questionnaire as a research instrument that gathers data over a large sample. Questionnaires uphold confidentiality and serve on time. The

questionnaires consisted closed question, closed questions are less time consuming for respondents and help the researcher to code information quickly.

3.7.2 Interviews

For the collection of qualitative data, interviews were conducted with the principals, accountants, training manager, training engineer and chief operations officer. An interview is an interaction between the researcher and the respondents in which both participants create and construct the narrative versions of the social world (Silverman 2004).

The researcher used semi-structured interviews. These are based on the use of interview guide. The method is advantageous because it allows direct questions to respondents about their activities. In other words, it allows the researcher to gather subjective opinion as well as factual information. This is because during the interview, the researcher and respondents will both be present and the questions will be being asked and answered. (Saunders, Lewis and Thornhill, 2009: 360). The purpose of a semi-structured is to understand the participant's complete and detailed understanding of the topic. Semi-structured interviews were opted because of their flexibility in that they allow more specific issues to be addressed, elicit interpretations from the respondents, follow-up on interesting points were made and probing where necessary. The interview guide also helped the researcher to be more systematic and to keep track with the objectives of the study.

3.7.3 Field Observation

Observation is a somewhat neglected aspect of research. Yet, it can be rewarding and enlightening to pursue and, what is more, add considerably to the richness of the research data. (Saunders, Lewis and Thornhill, 2009: 319). Physical visits were made to SOTTI and SOSTI workshops and classrooms. This method was used to supplement information gathered through questionnaires and interviews on the nature of infrastructure to ascertain if it is appropriate for skills development. The researcher also did an observation of workshop equipment and other learning materials present. This method provided first-hand information on how different teaching and learning activities are conducted especially the practical aspect.

3.7.4 Document Analysis

In order to obtain comprehensive information on how funding had been a constraint the researcher did a document analysis of financial reports from the two training institutions. This method was advantageous as it provided supplementary information on the funding modalities implored by the training institutions.

2.8 Data collection procedure and Time

Before embarking on data collection, permission was sought in advance from the relevant authorities to access and conduct research at the respective study sites. The researcher also carried an official introductory letter from the Directorate of Research and Graduate Studies (DRGS) at University of Zambia (UNZA) for identification purposes. In line with the research objectives questionnaires and interview guides were developed, the researcher analyzed the instruments with the supervisor. Thereafter, the questionnaires were pilot tested to 10 students and 4 instructors at Mufumbwe Skill Training Centre in Mufumbwe district. The instruments were later refined for actual research data collection. Dates for interviews were prearranged with all the participants involved. The field data collection was done within a period three weeks from 16th November 2015 to 4th December 2015

3.9 Data Analysis Instruments and Procedure

Data analysis is the process of bringing order, structure and meaning to the mass collected data (Kombo and Tromp, 2006). The researcher used both qualitative and quantitative methods of data analysis. After data collection; the data was firstly edited. Editing of data is a process of examining the collected raw data to detect errors and omissions and to correct these when possible. As a matter of fact, editing involves a careful scrutiny of the completed questionnaires and/or schedules (Kothari 2004: 122). The edited quantitative data was further entered into Computer Software called Statistical Package for Social Sciences (SPSS) and descriptive statistics were generated in form of frequency tables, modes, means and standard deviations in addition to inferential statistics such as Chi-square and Mann-Whitney Tests. Qualitative data from semi-structured interviews were transcribed from audio recordings into text. Thematic analysis was further used where themes were drawn from the interviews in line with the research

objectives and research questions. Some responses were also isolated that were used as original quotes for verbatim to highlight important findings of the study.

3.10 Ethical consideration

The researcher gained permission letters to gain access to the study sites. The purpose of the study was clearly defined that it was purely academic. In addition the privacy of the participants was protected. To minimize any suspicions on the part of the participants, the clearance letters clearly indicated that the findings will not be used for political purposes but would be beneficial to TEVET schools and programmes and by extension, the growth and development of the Zambian economy. Clearance was obtained from the University of Zambia Ethics Committee

3.11 Summary of the Chapter

The chapter presented the methodology implored by the researcher. The study adopted a mixed methods design known as an embedded design. The study sample consisted 278 respondents. Quantitative data was collected from 244 students and 27 instructors using questionnaires while qualitative data was collected by interviewing 2 principals, 1 training manager and 2 accountants from SOTTI and SOSTI, 1 chief operations technologist from ZESCO and 1 Training engineer from Kansanshi Mine. Observations and a document analysis were also done to consolidate qualitative data from interviews. Purposive sampling was used to select the training institutions and the respondents for interviews while stratified random sampling was used to select students and instructors. Questionnaire data was analyzed using SPSS and interviews were analyzed thematically. Validity and Reliability was ensured by triangulation, large sample size and pilot study. The next chapter will deal the presentation of findings.

CHAPTER FOUR: PRESENTATION OF FINDINGS

4.0 Overview

The previous chapter provided the methodology that was employed to obtain the data. This chapter presents the findings in view of the research questions set at the beginning of the study. The respondents in this study included students, principals, accountants, instructors, training manager for SOTTI, Chief operations technologist for ZESCO and Training engineer for Kansanshi Mine. The chapter is divided into the following themes; social demographic characteristics for respondents, findings on the nature of infrastructure, findings on the responsiveness of the curriculum and findings on funding constraints.

4.1 Social Demographic Characteristics of Respondents

4.1.1 Gender of students

TEVET is a highly significant source of pro-poor skills development and employment opportunities. It is therefore, imperative that such a system is serious about gender parity in terms of enrolments. To this effect this variable intended to demine the ratio of male students to female students at SOTTI and SOSTI. Fig 4.1 shows the results.

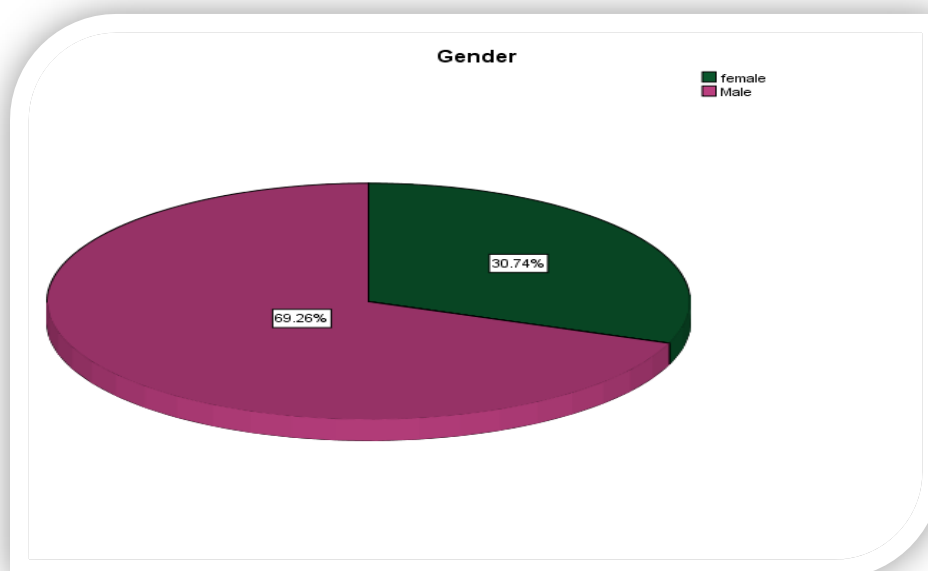


Fig 4.1: Gender of students

4.1.2 Gender of instructors

The finding on the gender of the instructors showed that there were 14 (51.9%) females and 13(48.1%) males. This shows a fair representation of males and females instructors at the two TEVET institutions. This shows that males and female are fairly represented as employees of the two TEVET training institutions.

4.1.3 Age of Students

The main target of TEVET is to equip young people with skills so that they can participate in the social and economic trajectories of the country. To this effect students were asked to indicate their age so as to ascertain if the training institutions were responding to the aspirations of young people. Table 4.1: shows the results.

Table. 4.1:		Age			
	N	Minimum	Maximum	Mean	Std. Deviation
Age	244	19	34	23.50	3.191
Valid N	244				

The findings on the age profile of students indicated that the youngest respondent was 19 years old while the oldest was 34 years old. The mean age was 23.50 years with the Standard Deviation of 3 .192. This means that the majority of the respondents were between 20 and 27 years old. While, ages 19 and 28-34 can be considered to be outliers.

4.1.4 Work Experience of Instructors

The findings on the experience of instructors showed that 5(18.5 %) of them had only served as instructors between 1-3 years, 11 (40.7%) had served between 4-6 years, 8(29.6 %) had served for 7-9 years and 3 (11.1%) served for more than 10 years. This clearly shows high levels of attrition of instructors because 24 (88.9%) of them served for less than 10 years. These have serious implications not only for the experience of instructors but also for schools' cost to hire new instructors, cohesions and professional cultures.

4.1.5 Programs of Study of Students

TEVET institutions should always endeavor to offer programs that are demand driven and not supply driven so as to meet the aspirations of societies in which they are located. Therefore, this variable was aimed at establishing the nature of the programmes offered at SOTTI and SOSTI training institutions. The results are displayed in fig 4.2.

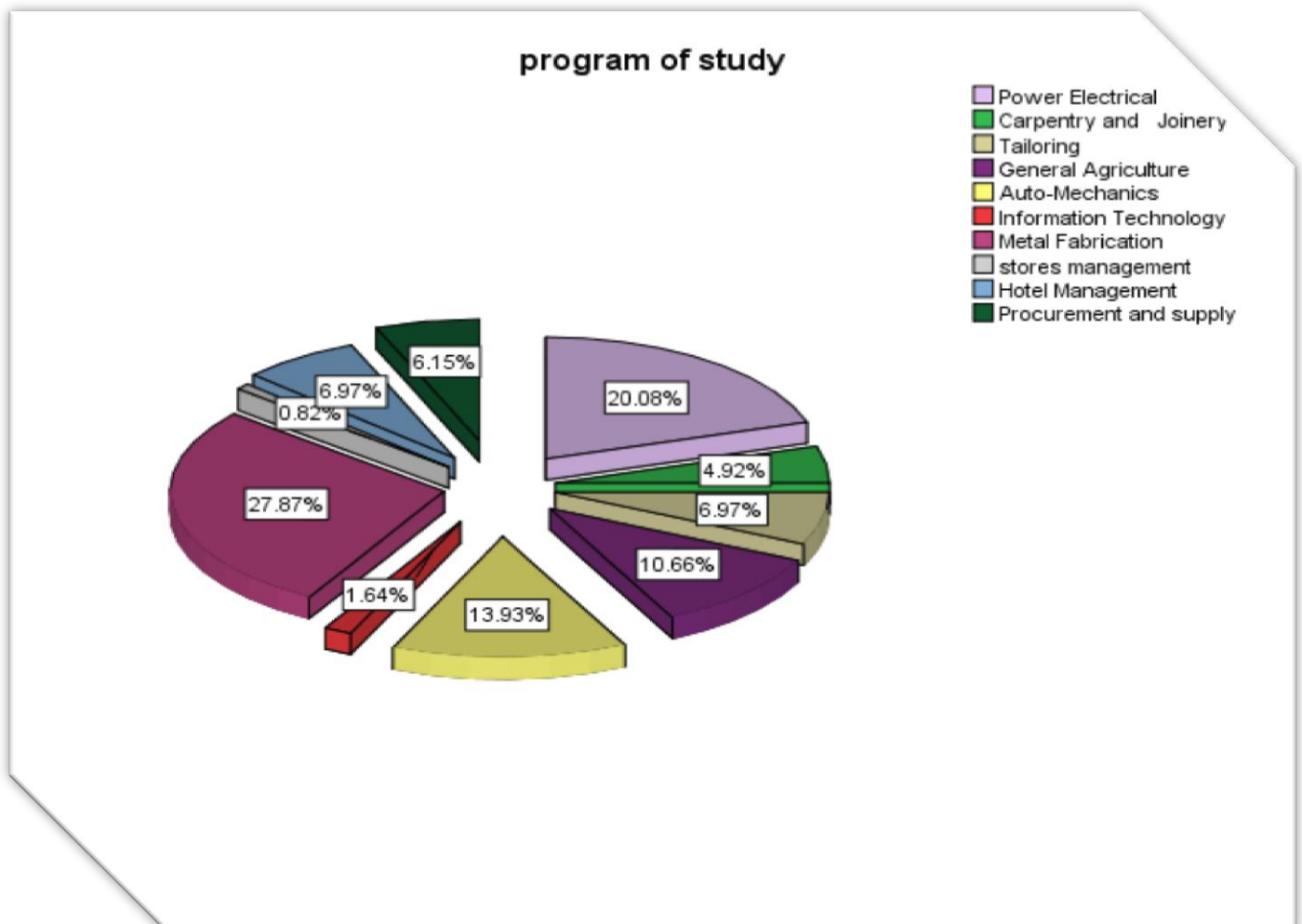


Fig 4.2: programmes of study by students.

The displayed findings on the chart demonstrates that the majority of the students were pursuing power electrical and metal fabrication while stores management and information Technology recorded the least enrolments.

4.1.6 Chi-Square Test

A chi-square test was used to establish if there was an association between gender and the type of program being pursued by male and female students. This was arising from the findings that the majority TEVET were male dominated. Appendix 8 shows the cross tabulation for the Chi-Square.

- i. **Null hypothesis (H_0):** There is no association between gender and type of program pursued by males and females.
- ii. **Alternative Hypothesis (H_1):** There is an association between gender and the type of program pursued by males and females.
- iii. **Chi-Square Test Results**

Table 4.2 : Chi-Square Tests Decision Box				
	Value	Df	Asymp. Sig. (2-sided)	
Pearson Chi-Square	76.822 ^a	9	.003	
Likelihood Ratio	87.826	9	.000	
Linear-by-Linear Association	.064	1	.800	
N of Valid Cases	244			
a. 6 cells (30.0%) have expected count less than 5. The minimum expected count is .61.				

- iv. **Interpretation of Chi-Square results from table.4.2.** The results show the p-value of 76.822 which is associated with the significance value of 0.003. Therefore, since the significance value (0.003) is less than 0.05, we reject the null hypothesis and accept the alternative hypothesis. To this end there was an association between gender and the type of program pursued by students.

4.1.7. Duration of programs and Qualifications to be obtained by students cross tabulation

Table 4.3: shows a cross-tabulation designed to establish the relationship between duration of the program and the qualification to be obtained by students. The results show that only 8(3.3%) students were doing three months programs and would acquire the qualification of a trade test level three certificate, 75(30.7%) of the students were pursuing 6 months program and would be awarded a trade test level two certificate, 67(27.5%) of the students were doing one year programs for the award of trade test level one certificate. Further, 75 (30.7%) of the students were pursuing two years programme to be conferred with craft certificates and 19 (7.8%) students were doing three years programme for the award of diplomas at completion.

Table. 4.3 : Duration of program * Qualification to be obtained at the end of study Cross-tabulation							
		Qualification to be obtained at the end of study					Total
		Trade Test level one Certificate	Trade test level Two certificate	Trade test level three Certificate	Craft Certificate.	Diploma	
Duration of program	3 months	0	0	8	0	0	8
	6 months	0	75	0	0	0	75
	1 year ,	67	0	0	0	0	67
	2 years	0	0	0	75	0	75
	3 years	0	0	0	0	19	19
Total		67	75	8	75	19	244

4.1.8 Qualifications of Instructors

One way of improving quality and relevance of TEVET systems is by having instructors that are well trained to be able to deliver quality with sufficiently strong blend of subject specialist knowledge, industrial experience and pedagogical skills. To this end, the cross-tabulation of the qualifications of the instructors and the courses they offered was intended to establish if the instructors possessed the relevant qualifications as the TEVET policy requirement. The results showed that from power electrical programme, two of the instructors had advanced certificates and the other two had diplomas. This meant that the four instructors were qualified to be instructors considering the fact that the highest qualification that was being offered in power electrical was a craft certificate. The instructor for carpentry and joinery possessed the highest qualification of craft certificate. However, the instructor was also teaching students to obtain the qualification of the craft certificate equivalent to his highest professional qualification which is

against the TEVETA regulation that “for one to qualify as an instructor they must hold qualification more than”. This was the case with the instructor for tailoring and two others for auto-mechanics whose highest qualifications were craft certificates. From bricklaying and plastering the three instructors were all qualified with one having a diploma while the other two had bachelor’s degrees. On the other hand, courses like information technology, metal fabrication, computer appreciation, procurement and supply and communication skills had all the instructors with relevant qualifications. The cross- tabulation shows that 4 out of 27 instructors who were sampled were not qualified to be instructors for the courses that they were offering represent 14.81 % of unqualified Instructors while 23 (85.18%) were qualified.

Table 4.4: Cross-tabulation of courses offered by instructors and their Qualifications						
Count						
Name of the course you offer.	What is your highest professional qualification?					Total
	Craft Certificate.	Advanced certificate	Diploma	Bachelor’s Degree	Post-graduate diploma	
Power Electrical	0	2	2	0	0	4
Carpentry and Joinery	1	0	0	0	0	1
Brick laying and Plastering	0	0	1	2	0	3
Tailoring	1	0	2	0	0	3
Auto-Mechanics	2	0	5	0	0	7
Information Technology	0	0	0	2	0	2
Metal Fabrication	0	0	0	2	0	2
Metal Fabrication	0	0	1	0	0	1
Computer Appreciation	0	0	0	2	0	2
Procurement and supply	0	0	0	0	1	1
communication skills	0	0	0	1	0	1
Total	4	2	11	9	1	27

4.2 FINDINGS ON THE NATURE OF INFRASTRUCTURE

4.2.1 Workshop Tools

Availability of effective workshop tools is Key in ensuring quality practical transfer of skills to students. Therefore, this variable intended to determine if the TEVET institutions had workshops that were equipped with effective tools. The responses from the students are displayed on the figure 4.3.

The measures of central tendency on this on workshop tools indicated that the mode (most frequent response) was 1 which was associated with the response *very dissatisfied* on the likert scale, while the mean response was 2. 23 which was closely corresponding with the response *dissatisfied* while the standard deviation was 1.205. This basically implies most of the responses leaned on the lower side of the likert scale, meaning that the trainings at the institutions were generally characterized with lack of effective workshop tools.

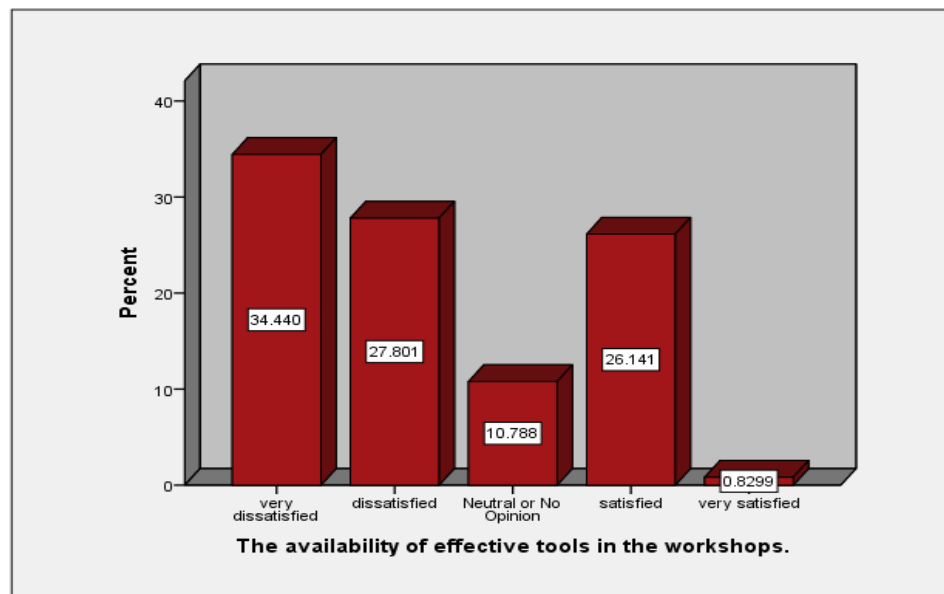


Figure 4.3: student responses on workshop tools

The lack of effective workshop tools was also highlighted by the Principle for SOTTI in an interview:

We have deficiencies in the workshops, the power electrical workshop in my view is not modern, the carpentry workshop is small but we have sufficient equipment inside...for metal fabrication we do not even have a workshop but we have a few equipment which we are using to train our students. Therefore, if we have to expand we need a modern workshop for power electrical, metal fabrication and heavy equipment repair which the newest programme we have introduced effective January 2016, but we do not have a workshop for it (Principal, November 2015: Interview).

Similar concerns were also raised by the Principal for SOSTI who stressed shortage of workshop equipment for metal fabrication and power electrical.

4.2.2 Modern Equipment

This variable intended to determine the exposure of students to modern equipment during practical work. The responses from the students are displayed on the fig: 4.3. The Mode response was 2 corresponding with the response *dissatisfied* whereas the mean response was 2.29 which was close to the response *dissatisfied*. The standard deviation was 1.231 indicating that the majority of the responses were on the lower side of the likert scale.

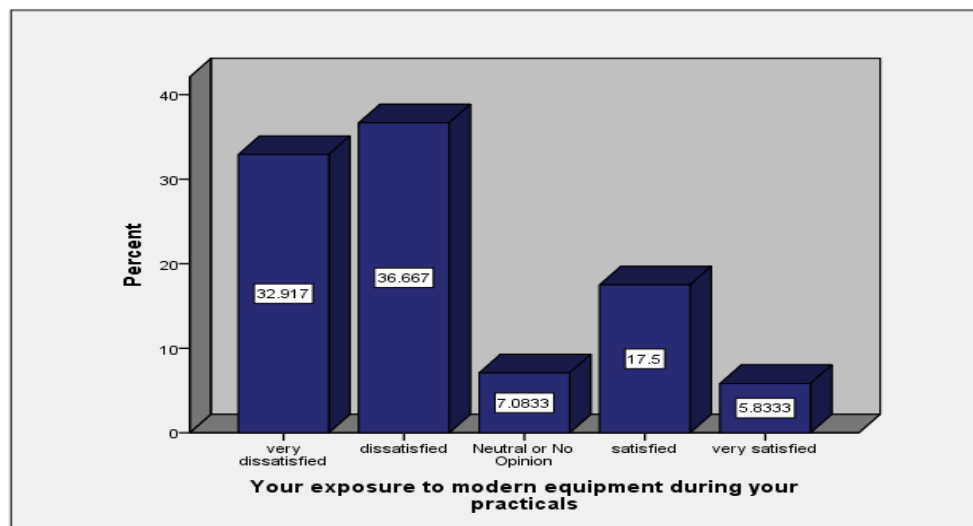


Fig 4.4: students' responses on modern equipment

The results clearly shows the two colleges were grappling with the challenge of outdated workshop tools. This point was also highlight by the principal for SOSTI when asked to describe the nature of infrastructure in supporting skills acquisition she replied:

The infrastructure at the college is not updated, from the time the mines came in the district we have not improved, we are using the same old workshops, the only improvement that has been done is the donation of some workshop machinery for metal fabrication and welding by TEVETA. As for carpentry and power electrical we are using the same old tools and most of them are domestic (Principal, 2015: interview).

In the same vein the training manager for SOTTI also reported that some workshops at the institution were housing outdated tools. The training engineer for Kansanshi Mine also bemoaned the mismatch between the equipment at the training institutions and the industrial equipment at the mine:

If you look at what these students are doing at the college comparing with the Mine, the gap is just too big. There it is more of domestic installations, but here we work with heavy equipment such as mills and crushers (Training engineer, November 2015: Interview).

He further revealed that the mine had partnered with SOTTI through the construction of three modern workshops under the project called Kwambula at the institution. The workshops are well equipped with modern machinery to train students specifically for the mine.

Additionally, Instructors in the questionnaires were asked to rate the availability of modern workshop tools, 4 (14.8%) perceived the tools as very poor, 11(40.7%) as poor, 3 (11.1%) expressed no opinion, while 9 (33.3 %) perceived them as good. The most frequent response was 2 corresponding with the response *poor* on the likert scale. The mean response was 2.63 with the standard deviation of 1.15 implying that generally the training institutions were characterized with old workshop equipment.

4.2.3 Library Facilities

The fact remains that the objectives of TEVET cannot be realized without the supporting role of the library for purpose research and provision of variety of teaching and learning materials. Instructors were asked to rate the availability well stocked library facilities at the training institutions. The most frequent (mode) response was 2 corresponding with the response poor on the likert scale. The mean response was 1.93 with the standard deviation of 0.781 meaning that the majority of the instructors were of the view that the two colleges had poor library facilities. The responses are shown on Fig: 4.5.

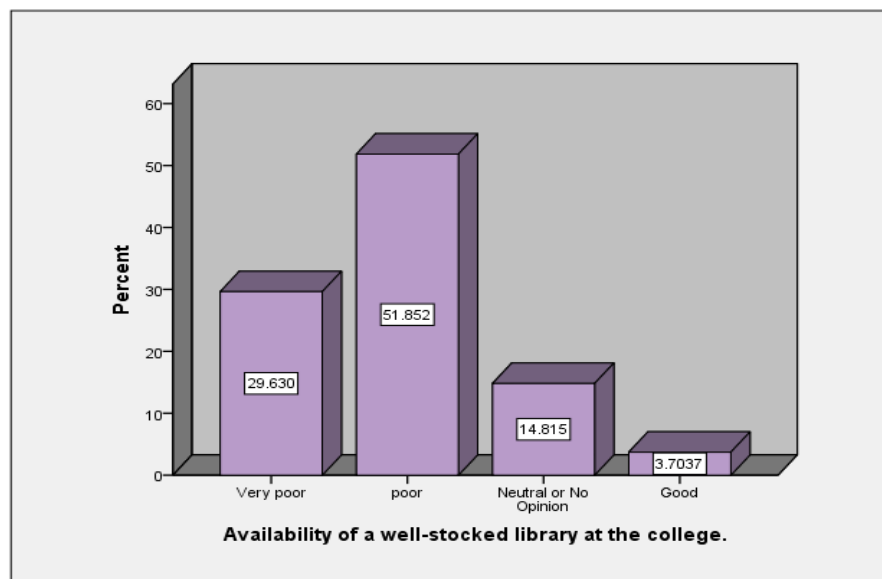


Fig 4.5: Instructors' responses on library facilities

The responses from instructors were in consonant with the students' views from which 87 (37.0%) of the respondents were *very dissatisfied* with the library facilities, 66 (28.1 %) were *merely dissatisfied* resulting in the cumulative frequency of 65.1 %. In addition 24 (9.8%) of the respondents expressed no opinion. On the other hand 24 (16.6%) were *merely satisfied* and 19 (8.1%) were *very satisfied*. The mode -most common response -was 1 which was associated with the response *very dissatisfied* on the likert scale.

4.2.4 Internet Services

The rapid spread of electronic communications has the capacity to affect the quality and efficiency of technical and vocational education throughout the world. To this end, this variable intended to determine to what extent TEVET institutions were providing internet services to students. The responses are displayed on the chart below.

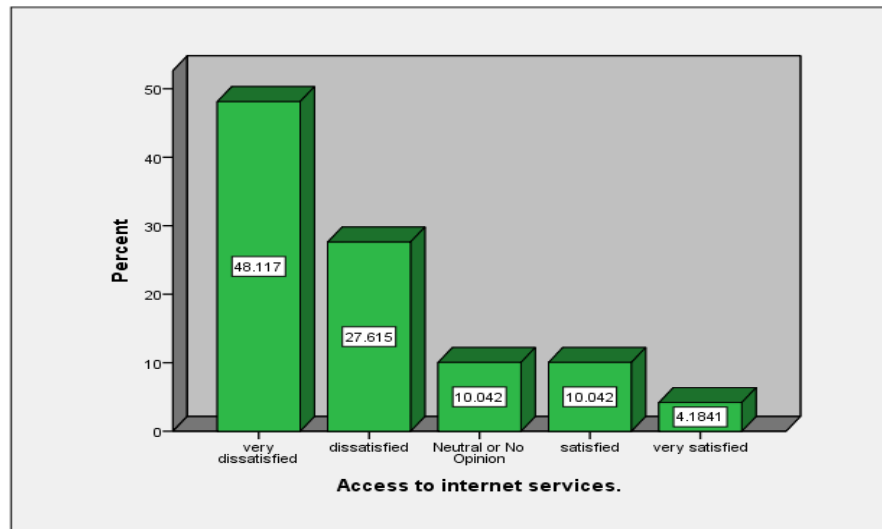


Fig 4.6: Students' responses on access to internet

The mode response was 1 which was associated with the response *very dissatisfied* while the mean response was 2.01 close to the response *dissatisfied* on the likert scale. The Standard Deviation was 1.168. This suggests that the majority of the students were not satisfied with their access to internet services.

4.2.5 Updated Teaching Materials

Effective training is largely dependent on a lot of physical facilities, concentrating on the use of emerging modern and relevant equipment to fit in with the ever-changing world of work and technological inventions. Instructors were asked to describe the nature of teaching materials, 6 (22.2%) indicated *very poor*, 14 (51.9%) indicated *poor* resulting in the cumulative frequency of 74.1%, 4 (14.8%) were *not decided* while 3 (11.1%) indicated *good*. The mode response was 2 corresponding to the response *poor* on the likert scale while the mean response was 2.15 with the

standard deviation of 0.907 meaning that the majority of the respondents felt that the training institutions were characterized with outdated teaching materials. Appendix 10 shows the frequency distribution table for the responses.

4.2.6 Training Materials

Evidence shows that without adequate provision of learning and teaching materials, the TEVET schools will lack the necessary equipment/tools and personnel for hands-on activities and will be unable to produce highly skilled technical manpower. This variable intended to determine if the institutions had adequate training equipment. 2 (7.4%) of the instructors felt that the training materials were *very poor*, 13(48.1%) indicated *poor* resulting in the cumulative frequency of 55.6 %. Further, 5 (18.5%) expressed *no opinion*, 5 (18.5%) indicated *good*, while 2 (7.4%) indicated *very-good*.

4.2.7 Classroom Accommodation

Shortage of classroom has been reported to be a serious problem in many school systems. It is from this background that this variable sought to determine the availability of enough classroom accommodation at SOTTI and SOSTI. The mean response was 3.58 which if rounded off would give the value of 4 (satisfied) while the standard deviation was 1.394, implying that generally the majority of the respondents were satisfied with the classroom space at the institutions.

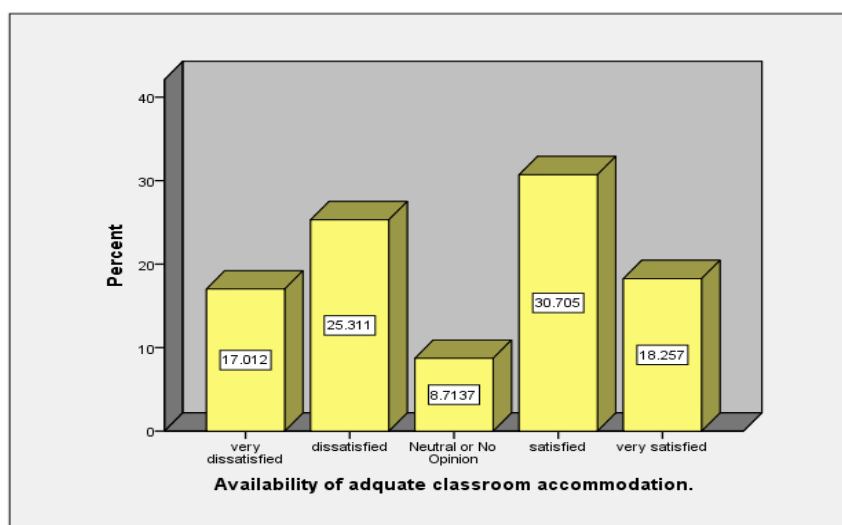


Fig 4.7: students' responses on classroom accommodation

Nonetheless, an interview conducted with the Principal for SOSTI revealed that the institution was grappling with lack of sufficient classroom and workshop accommodation:

We have a shortage of classrooms and workshops especially for Catering and Hotel management where a lot of students have been enrolled for this program due to the mushrooming of hotels and lodges in the district. But we only have one room for this program which does not even have the store room. Under normal circumstances hotel management and catering is supposed to have three rooms; a theory room, practice room and a laundry room. As a result some of the machines that we have are not even being used because we cannot find space, for example TEVETA donated to us a washing machine and a drying machine but they are just packed because of lack of space. For metal fabrication we managed to do something because previously metal fabrication used to share a workshop with carpentry which was very congested (Principal, November 2015: Interview).

Conversely, the Principal for SOTTI stressed that the school had sufficient classroom accommodation but the challenge was with poor enrolments due to the negative attitude that people have towards vocational and technical programmes. These contrary views by the two principals on the sufficiency of classroom accommodation suggest that the majority of students who expressed satisfaction on the availability of enough classroom accommodation were from SOTTI while those from SOSTI were dissatisfied.

4.2.8 Comparison of the Nature of Infrastructure between SOTTI and SOSTI

a. Mann-Whitney - U- Test

- i. Null Hypothesis (H_0):** There is no statistically significant difference between the availability of effective workshop tools at SOTTI and SOSTI
- ii. Alternative Hypothesis (H_1):** There is a statistically significant difference between the availability of effective workshop tools at SOTTI and SOSTI

Table: 4.5 : Rank Table				
Variable	Name of Institutions	N	Mean Rank	Sum of Ranks
The availability of effective tools in the workshops.	SOTTI	174	124.93	21737.00
	SOSTI	68	112.74	7666.00
	Total	242		

Table 4.6: Test Statistics ^a	
	The availability of effective tools in the workshops.
Mann-Whitney U	5320.000
Z	-1.271
Asymp. Sig. (2-tailed)	.204
a. Grouping Variable: Name of Institutions	

iii. **Interpretation of results:** The results show that the mean Rank for SOTTI is 129.93 which was higher than that of SOSTI of 112.14. The decision box shows the Mann-Whitney score of 5320.00 which is associated with the significance value of -1.271.

iv. **Decision:** Since the significance value (-1.271) is less than 0.05 we reject the Null hypothesis. This implies that SOTTI had significantly effective workshop tools compared to SOSTI,

b. Mann-Whitney - U- Test

i. **Null Hypothesis (H_0):** There is no statistically significant difference between the exposure of students to modern technology at Solwezi Trades Training Institute And Solwezi Skills Training Institute

ii. **Alternative Hypothesis (H_1):** There is a statistically significant difference between the exposure of students to modern technology at SOTTI and SOSTI

Table 4.7 : Ranks				
	Name of Institutions	N	Mean Rank	Sum of Ranks
Your exposure to modern technology during your practical work.	SOTTI	172	124.01	21330.50
	SOSTI	68	111.61	7589.50
	Total	240		

Table 4.8 : Test Statistics ^a	
	Your exposure to modern technology during your practical work.
Mann-Whitney U	5243.500
Z	-1.307
Asymp. Sig. (2-tailed)	.191
a. Grouping Variable: Name of Institutions	

- iii. **Interpretation of Results:** The results show that the mean Rank for SOTTI is 124.01 which is higher than that of SOSTI of 111.61. The decision box shows the Mann-Whitney score of 5243.500 which is associated with the significance value of -1.307.
- iv. **Decision:** Since the significance value (-1.307) is less than 0.05 we reject the null hypothesis. Therefore, Students at SOTTI are statistically more exposed to modern technology compared to students at SOSTI.

4.3 FINDINGS ON THE RESPONSIVENESS OF THE CURRICULUM

4.3.1 Course Content

This variable sought to determine if the course content of the TEVET programs met the expectations of students in their respective programmes of study. The most common (mode) response was 4 corresponding to the response on the likert scale while the mean response was 3.55 with Standard deviation of 1.441 which shows that most of the responses were on the upper side of the scale. (See fig: 4.8).

Therefore, it is worth noting that the course content of various programs offered at the training institutions met the expectations of the general student populace. This is a clear indication that the programs offered were in line with the labour market requirements, high proportion of students included in the survey were apparently satisfied with their course contents.

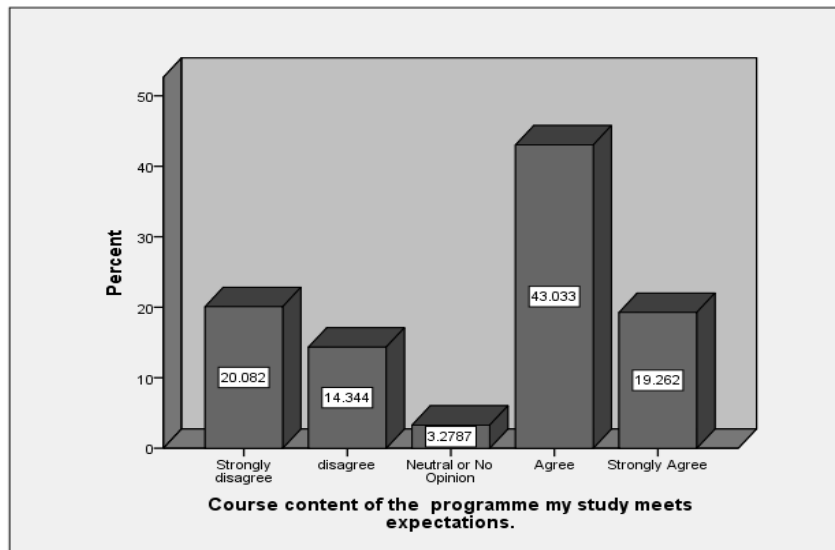


Fig 4.8: students' responses on curriculum content

4.3.2 Updated TEVET curriculum.

Students were asked to express their levels of agreement on the statement that the TEVET curriculum is updated. The responses are shown below:

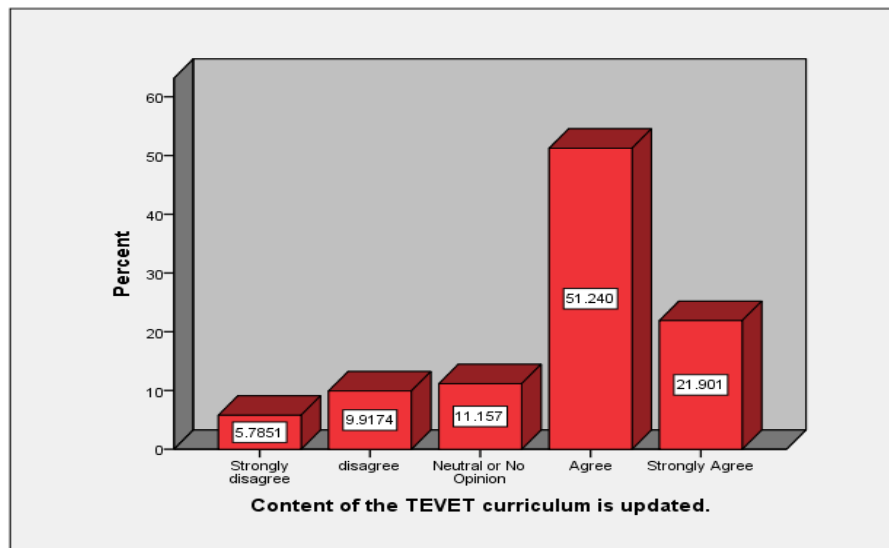


Fig 4.9: students' responses on the up datedness of the curriculum

The mean response was 3.74 with the standard deviation of 1.088 this indicates that most of the respondents were of the view that the TEVET curriculum was updated shown by the mean response which closely corresponded with the response “*agree*” on the likert scale.

4.3.3 Duration of Programmes

When asked if the duration of their programs was too short for them to be highly skilled 40 (16.4 %) of the students *strongly disagreed* with the statement, 85 (34.8 %) *disagreed*, 14 (5.7%) were neutral, 72 (29.5 %) *agreed* while 33(13.5 %) strongly agreed. The mode response was 2 (*disagree*) and the mean response was 2.89 with the standard deviation of 1.355. The measures of central tendency and dispersion on this particular question clearly show that students generally expressed mixed feeling with the number of those that disagreed almost equal to those that agreed. Appendix 11 shows the frequency distribution table. Therefore, a cross-tabulation was used for further analysis.

4.3.4. Duration of Program * the duration of my Program is too Short for me to be Highly Skilled Cross-Tabulation

The cross- tabulation of the duration of the program and the perception that the length of the program had an impact on the acquisition of effective skills showed that all the 8 (100%) students perusing three months programs *agreed* with the statement that the duration was too short for them to be highly skilled. Out of 75 students pursuing six months programs 8 (10.7%) *strongly disagreed*, 18 (24. %) *merely disagreed*, 25 (33.3%) *agreed* 24 (32.0 %) *strongly agreed* and 4(5.33%) were not decided.

For those pursuing one year programs 67 8 (11.9%) *strongly disagreed*, 27 (29.6%) *disagree*, 4 (5.8 %) expressed no opinion, 19 (28.4%) *agreed*, 9 (13.4%) *strongly agreed*. In addition, from the students pursuing 2 years programs 21 (28%) *strongly disagreed*, 28 (37%) *disagreed*, 10 (13.3%) expressed no opinion 16 (21%) *agreed*. For three years programs 3 (15.8%) of the students *strongly disagreed*, 12 (63.2 %) *strongly disagreed* and 4 (21.1%) *agreed*.

Table 4.9 : Duration of program * The duration of my program is too short for me to be highly skilled. Cross-tabulation							
Count		The duration of my program is too short for me to be highly skilled.					Total
		Strongly disagree	disagree	Neutral or No Opinion	Agree	Strongly Agree	
Duration of program	3 months	0	0	0	8	0	8
	6 months	8	18	0	25	24	75
	1 year ,	8	27	4	19	9	67
	2 years	21	28	10	16	0	75
	3 years	3	12	0	4	0	19
Total		40	85	14	72	33	244

From this cross-tabulation it is worth noting that most of the respondents pursuing short course programs especially for three months and six months perceived the durations of their programs to be too short for them to be highly skilled. To this end, TEVET institutions should consider allocating more hours of learning and practical work for such programs. As for 2 years and 3 years programs the majority of the respondents were comfortable with the length of their programs and they felt that the duration was adequate for them to possess the relevant skills.

4.3.5 Field Trips

This variable intended to determine if the training institutions were using practical pedagogical approaches such as field trips in the implementation of the curriculum. Asked if the institutions were organizing adequate field trips to different work sites, the responses were as shown on Fig 4.10.

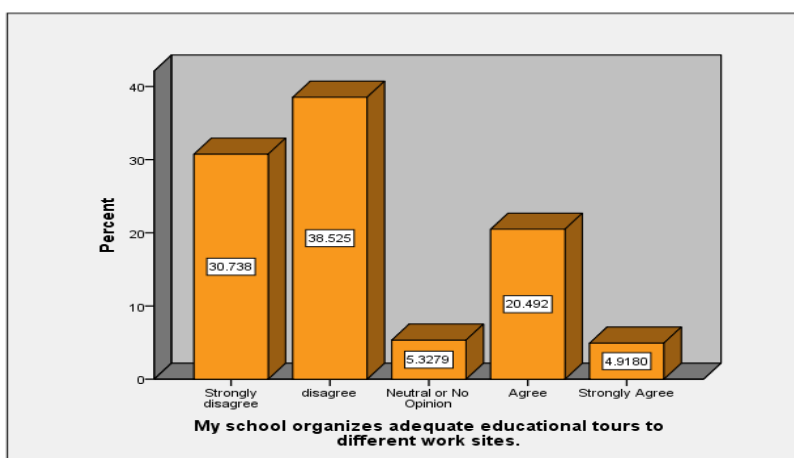


Fig 4.10: Students' responses on field trips.

The most frequent response was 2 corresponding with the response *disagree* on the likert scale while the mean response was 2.27 with the standard deviation of 1.217, this means that the majority of the responses leaned towards lower side of the likert scale, expressing disagreement with the statement that the colleges were organizing adequate field trips to different work sites.

4.3.6 Use of projects when teaching

The adoption of the diverse pedagogical approaches has been identified as a strong characteristic of the current TEVET model. Therefore, this variable intended to determine if projects were used as a method of teaching or assessment 3(11.1%) of the instructors *strongly disagreed* with the statement that projects were mostly used as a method teaching, 15 (55.6 %) *disagreed*, 6(22.2%) *agreed* while 3 (11.1%) *strongly agreed*. The mode response was 2 which corresponded with the response *disagree* while the mean response was 2.67 with the standard deviation of 1.271 meaning that generally projects were not mainly used as a method of teaching. Appendix 12 shows the frequency distribution for the responses.

4.3.7 Industrial Placements

Industrial placements increase the practical element in the curriculum and encourage students to increase their knowledge and skills by following up any new developments in their fields and in information technology. To this effect, this variable sought to determine if the students had ever gone on industrial placements since the inceptions of their respective programmes. The responses showed that 82 (33. %) *strongly disagreed*, 95 (38.9%) *disagreed*, 5 (2.0%) *were not decisive*, 14 (5.7%) *agreed* and 48 (19.7%) *strongly agreed*.

The mode response was 2 associated with the response *disagree*, while the mean response was 2.21 with the standard deviation of 1.488 implying that the major of the respondents *disagreed* with the statement that they had gone for any industrial attachments since they started their programs.

The training engineer for Kansanshi was asked if the SOTTI and SOSTI were sending students on industrial placements to which he agreed and raised a very serious concern:

students come but the only problem that I have seen is that when these institutions send their students on attachments, their instructors do not make follow ups to come and see what their students are doing because this is a robust plant with high technology. Therefore, the machinery is quite new to them hence there is need for the instructors to come so that they marry the theory that they teach them with the practical that is here. (Training Engineer, November 2015: Interview).

4.3.8 Tracer Mechanism

Contact with graduates after they graduate is a very important component of the TEVET curriculum that helps to determine if the training institutions are feeding the industry with the right skills. The curriculum further, emphasizes relevance to the world of work which can be brought about by ensuring participation of the industry experts in curriculum development to articulate the best practice at the work place. To this effect instructors were asked if there was effective tracer mechanisms put up by the institution to track the graduates after they had finished their programs, 7 (25.9 %) of the respondents *strongly disagreed*, 12 (44.4 %) merely *disagreed* resulting in the cumulative frequency of 70.4 %. In addition 3 (11.1 %) expressed no opinion and 5 (18.5 %) *agreed*. The mode response was 2 corresponding with the response *disagree* on the likert scale. The mean response was 2.22 closely associated with the response *disagree* with the standard deviation of 1.050 implying that generally the training institutions lacked proper tracer mechanism to track their graduates' students.

In addition, an interview with the principal for SOTTI he pointed out the lack of lack industrial tracer mechanisms.

In the past we did not bother to find out where our students went after graduating and that was a challenge because we did not know whether we are feeding the industry accordingly but we have right now instituted an office called the industrial liaison office which is aimed at keeping statistics of the graduates and where they were placed two years after they had graduated (Principal, November, 2016).

4.3.9 TEVET Reducing Poverty

Instructors were asked if the TEVET programs offered had the potential to reduce poverty. The findings revealed that 2 (7.4%) of the respondents *strongly disagreed*, 2 (7.4%) were not decisive on the matter, 10 (37.0%) *agreed* while 13 (48.1%) *strongly agreed*. The most frequent (mode) response was 4 corresponding to the response *agree*. The mean response was 3.78 close to the response *agree* while the standard deviation was 1.340 implying that the majority of the respondents felt that the programs offered had the potential to reduce poverty. (See appendix: 8)

4.3.10 Entrepreneurship Skills

Instructors were asked to express their opinion on the capacity of the graduates to establish their own enterprises, the findings reviewed that 1(3.7%) *strongly disagreed*, 5 (18.5%) *disagreed* 6 (22.1%) expressed *no opinion*, 13 (48.1%) *strongly agreed* while 2 (7.4%) *strongly agreed*. The mode response was 4 associated with the response *agree*. The Mean response was 3.37 close to the neutral opinion on the likert-scale while the standard deviation was 1.006 this means that the number of respondents that agreed was almost the same as those that disagreed. When asked if the graduates were capable of establishing their own enterprises the principal for SOTTI replied:

So far no, there have been some initiatives in the past to have some graduates to team up and form cooperatives then some donor agencies provide them with tool boxes... But that did not seem to work quit well if it did just a few graduates managed to do that. But with the industrial liaison office that is where we want to follow it up, if we find that after students that have graduated and have not been absorbed by the industry those should be allowed to team up and start some entrepreneurship (Principal, November 2015: Interview).

When asked the same question the principal for SOSTI indicated that the school was trying by all means to inculcate some entrepreneurship practices in the students while they were still at the college, like for example metal fabrication students make products such as window frames and door frames for sale. Additionally, students pursuing hotel management and catering also make various food products that they sale.

4.4 FINDINGS ON FUNDING CONSTRAINTS

The principal argued that SOTTI was a government institution that operated under a management board meaning that was supposed to be financially self-sustainable with little support from government. He further, indicated that government monitored its operation but the mandate was that the institution was supposed to generate income to sustain its training programmes. However, government provided what he termed as a grant which had not been increased for the past three years. This had an impact on the operation of the institution; he however, admitted that financial constraints should be blamed on the school board and not government.

You see making noise that government must support and give us money I don't think will help because the mandate is very clear we are supposed to generate our own income therefore financial constraints should be blamed on us as an institution, it is our problem to mitigate. We need to engage in activities such as introducing new programs, increasing enrollment and do other business to generate income (principal, November 2015: interview)

The Principal further acknowledged that the institution had no capacity to raise funds for capital projects such as infrastructure because of their huge cost and it's such projects that government needed to help. When asked if the institution was involved in some revenue diversification activities to cushion the impact of insufficient funding. He responded;

Right now yes, for example we converted one facility which was a library into an activity hall and out of it we are generating income through renting and hiring to the churches and other business organizations come to have their conferences. Therefore every weekend we are generating income out that. But in addition we also conduct some production unit activities through growing of crops for sale (Principal, 2015: Interview)

The accounts officer from SOTTI reported that the institution had two major sources of funding, government funding and tuition fees through which it received k98, 000 per month and k400,

000 per term respectively. He further argued that government funding had been not been increased for the past three years which had proved to be a major challenge because the cost of running the institution had risen over the years.

We are really affected by insufficient funding because most of the resources we mobilize go to pay the wage bills and as a result we sometimes fail to even pay gratuities to the staff members (Accountant, 2015: interview).

When asked if the institution was engaging in any revenue diversification activities he highlighted that the institution was engaged in production of various agricultural products. In the same vain the Training manager raised similar concerns of the high wage bill for the staff which was beyond the institutional capacity to pay this resulted in the members of staff going for months without getting paid, the Training manager also made an appeal to the government to consider putting the staff members on government payroll so as to relieve the burden of insufficient funding.

In the same way the Principal for SOSTI when asked how funding had been a constraint to the operations of the college she responded;

There are basically two major sources of our finding; we have tuition fees and GRZ (government funding). Government funding comes in quotas of about 3 or 4 per year, but it is not consistent and this has proved to be a big challenge. Therefore, our operations are drastically affected when funding does not come we have a problem especially where procurement of training materials is concerned” Principal, November 2015: Interview).

In the same vain the accounts officer cited erratic government funding as the biggest challenge the institution was facing.

Government gives us a total of k68,000 every quarter of the year but sometimes this money does not come which becomes a big challenge because this is the money we depend on for administrative functions, procurement of materials such as books and workshop materials (Accountant, November 2015: Interview).

When asked if the institutions were engaged in any other revenue diversification activities that could reduce the impact of insufficient funding, the principal stated that the school had been writing proposals to TEVETA to sponsor some students citing an example of 2013 when TEVETA sponsored 25 students for metal fabrication and 12 students for power electric. Furthermore, the school wrote another proposal in 2014 from which TEVETA sponsored 50 students in food production.

When questioned if the instructors were on government payroll she admitted that the instructors were paid by the government this was a different case with SOTTI where the instructors were paid by the institution. She however, highlighted that they were instances when government employed instructors fell short of skills required in certain courses then institution would look for trainers from the industry to train students who are paid from the institutional coffers, which had an impact on the limited resources generated by the institution.

The document analysis of the 2014 financial report on production unit activities revealed that SOTTI was involved in the production of vegetables such tomatoes, cabbage, onions as well as poultry and piggery farming from which they generated extra income to supplement their funding. On the other hand the documents from SOSTI indicated that the institution generated income from making of doors, door frames, baking and hiring of students to electrify some houses.

4.5 Summary of the Chapter

Chapter four provided the presentation of findings; various items relating to the nature of infrastructure among others workshop tools, modern equipment, internet connectivity and library facilities have been presented. Additionally, items on the curriculum which include up-datedness of the content, use of practical pedagogical approaches and the ability of the curriculum to address issues such as poverty have been presented. The chapter also presents data on funding constraints faced by training institutions. The next chapter is the discussion of the findings presented in chapter four.

CHAPTER FIVE: DISCUSSION

4.0 Overview

In the previous chapter, the questionnaire, interview, document and observation data were presented and analyzed. This chapter discusses the findings presented in chapter four. The chapter is divided into parts such as social demographic characteristics, old and outdated infrastructure, responsive but poorly implemented curriculum and inadequate funding. Based on the findings presented in the previous chapter, specific points have been identified and discussed in the following paragraphs.

5.1 Social Demographic Characteristics

The findings on gender of students showed that there was a huge disparity between the ratio of male to female students' enrolment at both SOTTI and SOSTI. Males dominated the majority of the programmes representing 69.35% of the respondents while females recorded 30.7% of the respondents. These findings on gender disparity at TEVET institutions are in line with Mwaba (2010) who reported that the policy of TEVETA on training is silent on gender specific objectives and on the aspect of collecting sex disaggregated data to facilitate gender responsive planning and policy formulation. The findings on the gender bias of students at training institutions was further strengthened by a Chi-Square test that showed a statistical association between the type of programme pursued and the gender of students.

From these findings, it can be argued that TEVET institutions should offer gender-inclusive learning programmes and initiate measures to attract females into previously male-dominated training and careers and vice-versa. Gender stereotyping influenced the choice of carrier path not only in secondary schools but in TEVET colleges where access and participation followed the traditional gender biases. Girls are underrepresented in TEVET education generally. However, girls pursuing TEVET programmes virtually chose professions that were traditionally and typically occupied by women such as Hotel Management, Stores Management and Tailoring, with more physically demanding and prestigious industrial sector programmes such as Power Electrical, Carpentry and Joinery, Metal Fabrication, Auto-Mechanics, Information Technology and Metal Fabrication reserved for the boys. It is therefore, importunate that favorable initiatives are put in place to encourage girls to take up male dominated programmes so that they can fairly

compete for job opportunities in the industrial sector. Women organizations should also come on board to encourage females and also sponsor girls where possible to pursue TEVET programmes.

According to age profile, the absolute majority of students were aged between 20–27. From these findings it could be noted that TEVET in Solwezi district was according youths with the opportunities to acquire skills to address various social and economic challenges they were facing; thereby, reducing unemployment which was rampant among youths.

The programmes offered at the training institutions suggested that SOTTI and SOSTI had not done much to introduce demand driven programmes such as heavy-duty repair and automotive mechanics which were very much on demand in the mines. However, the Principal for SOTTI acknowledged that the institution was in the process of introducing heavy duty repair in January 2016 despite being faced with the challenge of lack of a workshop for the programme. This therefore, meant that even when the programme was introduced the quality of the graduates might be compromised due lack of necessary equipment needed to run the programme effectively. These findings are in consonant with the findings by Hamweete (2008), who revealed that TEVET programmes continued to be supply driven in most institutions. This could be attributed to lack of sufficient resources meant to procure new machinery for the introduction of new programmes that are required for the ever changing economic demands.

The findings on the qualifications of instructors showed that 14.8 % of them did not possess the relevant qualifications to teach their respective courses. The role of vocational trainers in curriculum implementation and delivery cannot be overemphasized. Korthagen *et al* (2009) advised that the instructors' capabilities, knowledge and expertise must be prudently scrutinized, stated and communicated for the importance of the trainers' role to be more appropriately acknowledged and understood in the vocation. In addition, Khasawneh *et al* (2008) recommended that vocational teachers should adhere to established standards of teaching quality, develop competency records for their students during their programme of study, and use technology tools to improve their instruction and, ultimately, the learning of the students. It is therefore, important TEVET colleges should promote in-service profession training especially for the instructors that do not meet the minimum qualification such as those for bricklaying and plastering, Auto-Mechanics and Tailoring so as to raise the standards of training.

Gomes (2011) reported that in Botswana and Zambia unqualified trainers affected the quality of TEVET. Lack of qualified trainers could be attributed to limited resources to support staff development at the training institution.

The findings on the work experience of instructors indicated that 88.9% of them had less than 10 years' work experience. This implied that there were high instructor attrition rates from the TEVET institutions to other professions in search of greener pastures. High attrition of instructors could be attributed to lack of satisfaction with their condition of service such as monthly remunerations. The researcher was of the view that instructors needed to be well grounded in subject-matter competencies in order to be effective with their learners. TEVET would be effective in proportion if the instructors had successful experience in the application of skills and knowledge to the operations and processes they undertook to teach.

These findings were in line with Grollman (2009) who argued that globally, the TEVET teaching profession faced both the challenges of its low status and the emphasis on factors that served to maintain it at this low level. He proposed that the key to enhancing the status of the profession is through a process of professionalization that needed to be enacted by individuals themselves and supported by TEVET institutions which provided the conditions of service and granted an appropriate level of status and freed for those in the profession.

5.2 Old and Outdated Infrastructure

Both the interview and questionnaire data suggested that SOTTI and SOSTI were characterized with lack of effective workshop tools for the majority of the programmes offered, 75 (66.7%) of the students expressed dissatisfaction with the effectiveness of workshop tools, the mean response on the likert scale was 2.23 with the standard deviation of 1.205. Similarly 11(55.6%) of the instructors deemed the workshop tools as poor. Statistical analysis of questionnaire data also indicated 97 (70. 2%) of the students perceived the training equipment as outdated while 14 (74.1%) of the instructors perceived the teaching materials as obsolete.

Outdated training equipment reflected the scenario where training sessions were undertaken without the expedient practical activities that might be necessary to bring out the best of students' talents. Additionally, obsolete equipment and machinery which were in state of

disrepair resulted in overburdening the industry trainers as they have more work to deliver, some of which could have been covered if the training institution had updated equipment. These findings confirm Hamweete (2008)'s previous findings that management boards in TEVET institutions were unable to provide the required training facilities due to lack of finances.

The effectiveness of the workshop tools at the two institutions was compared using the Mann-Whitney U-test. The results suggested that there was a statistically significant difference between the effectiveness of workshop tools between SOTTI and SOSTI. SOTTI having a higher mean rank had more effective workshop tools than SOSTI. A further statistical comparison of exposure of students to modern equipment between SOTTI and SOSTI indicated that students at SOTTI were statistically more exposed to modern equipment than at SOSTI.

It could be argued that the more effective tools and much exposure of students to modern equipment at SOTTI could be attributed to the partnership of the institution with Kansanshi Mine which had resulted in the construction of modern workshops under the project called Kwambula. The initiative was aimed at scaling up the training of human capital specifically for Kansanshi mines. The constructed workshops were well equipped with modern machinery that was in line with the industrial mine equipment. However, the workshops for other non-mine related programmes at SOTTI were confronted with a lot of deficiencies in terms of equipment. The researcher was of the view that partnership with industrial sector through initiatives like the Kwambula project should be enhanced between the training institutions and the industries in order to increase the linkage between the training provided and the industrial demands.

In order to overcome the mismatch of skills, Kingombe (2012) argued that the private sector must partner with institutions of higher learning to support the curriculum development process. Public providers of education and training must also better consider how to deliver those skills which were crucial to all private enterprise, such as those relating to management and entrepreneurialism. The researcher was of the view that this study brings to the fore how partnership with the industrial sector can abate most of the infrastructural challenges faced by the training institutions.

The findings on the effectiveness of workshop tools and exposure of students to modern equipment were in concord with Nkanza (2007)'s report on the nature of infrastructure in Zambian TEVET colleges.

The physical structures of most TEVET institutions were dilapidated, insufficient, and fully utilized. The training and materials were inadequate. The training equipment and workshop tools were worn out. There was a mismatch of knowledge and skills gotten from TEVET colleges to the equipment found in the industry, in most cases graduates were given on-job-training to enable them perform to the expected standard (Nkanza, 2007).

On availability of adequate classroom accommodation, the results suggested that SOTTI had sufficient accommodation while SOSTI was facing serious challenges. Lack of enough classroom and workshop accommodation at SOSTI had an adverse effect on the effective skills delivery at the institutions. Crowded classrooms at the college might not only make it difficult for students to concentrate on their lessons, but inevitably limit time instructors spend on innovative teaching methods such as cooperative learning or group work or indeed on teaching on anything beyond the barest minimum of the required materials. Shortage of classroom accommodation can also limit the learning hours allocated to each course. The researcher felt that this situation needed to change in order to graduate technicians with the knowledge and practical experience to qualify them better than at present for recruitment in the industry.

Internet services play a critical role in modern learning approaches. The findings on the provision of internet services revealed that the majority of the students and instructors were dissatisfied with their access to internet services. This demonstrated that the institutions were characterized with poor internet connectivity. The rapid spread of electronic communications has the capacity to affect the quality and efficiency of technical and vocational education throughout the world. The ease with which teachers and students can gather information over the Internet on virtually any topic has the potential to transform instructional content and pedagogical practice. To this end SOTTI and SOSTI were missing out on these huge benefits that come with effective access to internet in educational institutions.

Results on the presence of a well-stocked library revealed that 153 (65.1 %) of the students and 22 (81.5%) of the instructors were *dissatisfied* with the library facilities. The role and relevance of libraries in technical and vocational education institutions cannot be overemphasized. The overwhelming argument is that TEVET institutions have the core objective of endowing students with appropriate skills, experiences and competences. Therefore, the fact remains that this objective cannot be realized without the supporting role of the library for the purpose of research and provision of a variety of teaching and learning materials. This, therefore, means that the institutions did not provide well stocked library facilities to the students which would affect their levels of innovation. This had resulted in reliance on old and obsolete literature thereby, denying students and staff opportunities research and familiarize themselves with more recent developments in various spheres of knowledge.

[New York Comprehensive Center (2011) reported that there is evidence of increased student achievement as well as more active teacher leadership in school environments where school libraries assist in the alignment of curriculum to set standards and in school-wide professional development activities. These functions are more critical with the shift to the common core standards and the attendant focus on 21st century skills.

The researcher understands that the nature and operating environment of industry at present is founded on knowledge and human capital. Nonfunctional infrastructure and regulatory institutions, as well as lack of employability and entrepreneurial skills, can be noted as bottlenecks to the investment in the stock of knowledge, habits, social and personal attributes, including creativity embodied in the students' ability to perform labour so as to produce economic value as espoused by the human capital theory.

5.3.0 Responsive but Poorly Implemented Curriculum.

The TEVET curriculum is supposed to meet the aspirations of the stakeholders. Students were therefore, asked if the course content of the TEVET programmes met their expectations. The results indicated that 174(71.3%) of them agreed with the statement. The mode response was 4, corresponding with the response *agree* on the likert scale, while the mean response was 3.55 with Standard deviation of 1.318. This indicated that most of the responses were on the upper side of the scale. To this end, it was worth noting that the course content of various training

programmes offered at the two colleges met the expectations of the general student populace. This means that the TEVET curriculum was in line the labour market demands as it met the expectations of 71.3% of the respondents. It is also important to note that the course content should take into account the local context aspects in order to focus on the development of skills that were relevant to the local community.

Students were asked to express their opinion on the up-datedness of the curriculum, 177 (72.7%) stated that the TEVET curriculum was updated similarly, the Training Engineer for Kansanshi Mine mentioned that the curriculum was updated but faced challenges with implementation due to poor infrastructure. These findings are similar to Awoniyi and Miyanda (2013)'s report on the assessment of the power electrical technician programme in the technical colleges in Zambia. They revealed that:

The curriculum is relevant and appropriate to the needs of industry as well as geared towards the changing needs of the industry. However, the skills and knowledge acquired by students do not meet the needs and expectations of industries. This is due to the fact that Technical Colleges are not equipped with the state of art training facilities. The training institutions were found to be using obsolete training equipment and as such industries take up the challenge of training the new employees on the use of latest machines (Awoniyi and Miyanda,2013).

Instructors were asked if the TEVET programmes offered had the potential to reduce poverty. The mean response was 3.78 close to the response *agree* while the standard deviation was 1.340 implying that the majority of the respondents felt that the programmes offered had the potential to reduce poverty. The cumulative frequency for the instructors that agreed amounted to 85.1%. TEVET is expected to play a critical role in economic growth and poverty alleviation through the following roles: absorb those students who cannot continue to secondary schools and universities; equip learners with skills that can be used to find jobs and improve productivity; raise income levels by upgrading the skills of existing workers; and provide chances for self-employment and income generation activities (Nyerere,2009). These activities are expected to develop human capital through reduction in crime rates, youth and women's empowerment, and social and economic mobility. Being self-reliant can enable youths to improve their living

conditions as well as take the risks to become creative and innovative in creating employment for others in the society.

Adoption of the diverse pedagogical approaches had been identified as a strong characteristic of the current TVET model (Chen, 2011). Students were asked if institutions were organizing adequate field trips to different work sites as a teaching approach. The mean response was 2.27 with the standard deviation of 1.217; this means that the majority of the responses leaned towards the lower side of the likert scale, expressing *disagreement* with the statement that the colleges were organizing adequate field trips to different work sites.

Field trips form an effective pedagogical approach in the implementation of the TEVET curriculum; this is because they create an exciting and rewarding learning experience to students. Further, field trips accord students and instructors a practical experience of how various skills learnt at the colleges are being applied in the industries, in addition to exposing students to modern technology. Lack of adequate field trips impacts negatively on ensuring that the training institutions and their programmes keep close contact with local industries, which would help keep them up to date, provide opportunities to students, and staff professional development training on advanced, state-of-the-art equipment, systems and practices. This situation could be attributed to the lack of a school bus in the case of SOSTI which made it very expensive to hire a bus whenever field trips were organized. Conducting field trips was indeed an expensive venture that needed budgetary planning. It therefore, imperative that institutions consider allocating enough resources for field trips so as to enhance the contact of the students with the industry.

Similarly, instructors were asked if they were using projects as a method of teaching or assessment. The cumulative frequency for instructors who felt that projects were not mostly used amounted to 18 (66.6%). The mode response was 2 which corresponded with the response *disagree*. The minimal use of projects as a teaching approach had reduced on the practical side of the courses that were being offered at the training institutions. This could be attributed to lack of adequate instructors at the colleges because the TEVETA requirement stipulates that there should be two instructors for each course, one for theory and one for practical. However, the prevailing situation was that one instructor was handling both the practical and the theory thereby, overloading them with work. This state of affairs coupled with shortage of training equipment for students meant that delivery strategy was basically inclined towards theory. These

findings contradicts with Mussmari (2002) who attributed the dissatisfaction with vocational education among sectors to a number of reasons, one of which was that of the lack of balance in the content of the vocational training programme, indicating that more emphasis was placed on the theoretical element of the training programme. He stressed that there is a clear lack of planning and organisation, and as a consequence unbalanced curriculum was created. Contrary to Mussmari's views, the findings of this study point to the fact that the curriculum was balanced but its implementation was biased towards theory due to lack of necessary training equipment.

Mussmari (2002) further, indicated that the notable imbalance between the practical and theoretical constituents of the courses left the vocational graduates lacking practical skills as well as the level of technical knowledge necessary for their vocational professions at work.

It can be argued that the failure to use diverse pedagogical approaches which are more practical like the projects and field trips was the major reason while TEVET programs tended to be biased towards theory. Nonetheless, contrary to the previous study exploited by Chen, Gomes and Brizuela (2011) with the purpose of examining how TEVET curricula could be reoriented towards sustainable development (ESD). The results in Mauritius showed diversified approaches were being used to deliver ESD in the Tourism course offered by University of Technology of Mauritius (UTM). Some of them are: placement in hotels and travel agencies; participation in educational tours; focus-group interviews; distance learning; e-learning; case studies; extra-curricular activities; talks by professionals; study trips and industrial attachments; interaction with industry; empowerment of trainees; site visits and evaluation exercises; and class discussions on the subject. The difference on findings on the use of diverse pedagogical approaches in countries like Mauritius can be attributed to the priority that government has given to skills development in that particular country, because this study indicates that institution were unable to use approaches such as projects and field trips due to limited equipment and resources. Huge Investment in TEVET can result in many social and economic benefits as reported by European Union Report (2015) in countries like Denmark, France and Germany which cites crime reduction, inclusion of disadvantaged groups, increased productivity and economic growth among other benefits.

Industrial placements increase the practical element in the curriculum and encourage students to increase their knowledge and skills by following up any new developments in their fields and in information technology. To this effect, students were asked if they had ever gone on industrial placement since the inception of their respective programmes. The responses showed that 177 (71.9%) of the students had not gone on any industrial placements since the inception of their programmes.

It can be argued that industrial placement helps trainees to acquire further knowledge and skills relating to the nature of their jobs, and hence those who have done industrial placements would be more productive and more efficient in carrying out their jobs upon return to their places of work. In same regard, the training engineer from Kansanshi mine suggested that even when training institutions sent their students on industrial placements, their instructors did not follow them up to see what they were doing in the industries.

Undeniably, it is imperative that instructors follow their students in the field when they are on industrial placements so as to reconcile the theory learnt at the training institutions and the practical work at the industry. This would also accord the instructors the opportunity to modify their methods of giving instructions and reshape them in line with the dynamics of the industrial demands. In addition, regular in-service and workplace exposure by the trainers ensure relevancy of the training offered. Lack of liaison between the industry and the institutions meant that there was a gap between what the industry wanted and what the institution were able to offer. The result was the production poor caliber of graduates that who fail to meet the expectations of the industry.

Entrepreneurship is one key component that has been emphasized in the TEVET curriculum. The study established that students were not adequately prepared with entrepreneurship skills. This could be attributed to the fact that despite entrepreneurship being an embedded course in all the training programmes it was still running as a non-examinable course. Therefore, this reduced the attention that students and instructors gave to entrepreneurship because priority was given to examinable courses. In addition, the ability to set up business enterprises was be jeopardized by lack of capital for the graduates, an area that should be looked into by stakeholders. Moreover, promoting African entrepreneurship was a long term process, involving overcoming negative

cultural perceptions regarding entrepreneurship, which was often seen as something to be engaged in only by those who have failed in other ventures.

5.4 Inadequate Funding

With regards to the funding constraints experienced by the two institutions, the study revealed that apart from government funding, tuition fees were identified as another major source of funding for the institutions. Findings however, indicated that revenue generated from tuition fees was insufficient because institutions were charging non-commercial fees. The institutions, however, tried to supplement their income by engagement in revenue diversification through activities such as production of crops in programmes like general agriculture and renting out the activity hall at SOTTI for conferences and weddings.

Inadequate funding and lack of emphasis on technical and vocational education and skills training were among the reasons Solwezi district lacked highly skilled technical manpower. Evidence showed that the government was not investing enough in technical and vocational education. Findings of this study confirm that the Zambian government's limited level of support for TEVET schools and programmes was a major challenge for the TEVET schools. The respondents acknowledged that the government's limited support faced by TEVET institutions and its programmes was negatively affecting both the quality of the skills of TEVET graduates as well as the institutions. In addition, erratic and insufficient funding resulted in lack of proper motivation in terms of payment of salaries and other benefits for members of staff. This could be among the major reasons TEVET schools could not hire and retain competent, talented instructors. Therefore, adverse implications of such deficiencies would be on the morale and productivity of the instructors as well as on the quality of TEVET graduates.

These findings are supported by Atchoarena (1997) who argued, that public-sector financing of training tended to suffer from under financing, the lower-income countries in Sub-Saharan Africa relied primarily on duties and excise taxes for revenues, whereas middle income countries often had inefficient tax-collection systems. What the public system received was often not sufficient to maintain reasonable standards. Another weakness was instability as government budgets for VET tend to fluctuate with variations in the business cycle and natural calamities. In times of financial shortages, although public training programmes continued, inputs that were essential for maintaining adequate quality were invariably cut.

The researcher also noted that the poor status of TEVET schools and programmes which resulted from inadequate funding contributed to the low social acceptability for TEVET schools and programmes. This discouraged parents and youths from pursuing vocational and technical programmes.

Additionally, Osuanyi (2014) argued that as a result of insufficient funding TVET fail to acquire needed state-of-the-art teaching and learning facilities. Therefore institutions, fail to produce employable and or self-employable graduates. Graduates from these institutions did not possess the required quality skills for their absorption into industries. This greatly added to TVET stigmatization in developing countries like Ghana.

The researcher understands that choosing a mode of financing and an institutional pattern to manage training represented a challenging item on governments' policy agenda. International and sub-regional comparisons showed that 'pure' models do not exist; countries rather combine different approaches and instruments according to their specific environment. Apart from the prevailing socio-economic conditions, the mixture of policy measures depends very much in each case on the structure of the TEVET system (respective share of public schools, training centres, private institutions, in-plant training) as well as the objectives pursued.

The findings were in conformity with Dasmani (2011) who reported that despite the importance given to TVET by many governments, the training system in Africa was largely underfinanced. Generally, the provision of technical and vocational skills and especially formal TEVET was expensive, since facilities, material, equipment and maintenance costs were high. Similarly Hamweete (2008) reported that TEVET management boards were hit by lack of finances and appeared to be far from becoming fully and financially self-sustaining.

In the case of human capital theory, investments financing is generally an important aspect of any investment decision. To this effect poor funding to the two TEVET institutions contravenes the core principle of the human capital theory as it prevents many students from acquiring the amount of education and skills that would maximize their net present value of lifetime earnings.

5.5 Summary of the Chapter

The chapter discussed the research findings, the researcher makes an inference that inadequate funding has been at the centre of the infrastructural challenges faced by the training institutions as they were unable to make meaningful investment in procurement of modern training equipment equivalent to the industrial equipment. The researcher also deduced that the curriculum was updated but poorly implemented due to lack of updated training equipment. The next chapter concludes and gives the recommendations.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.0 Overview

The previous chapter discussed the findings on the effectiveness of TEVET in Solwezi District. These were discussed according to the objectives of the Study. Chapter Six, however, makes a conclusion of the dissertation and also makes some recommendations and suggestions for future research. The study was explored with a focus on three objectives: to assess the nature of infrastructure at Solwezi Trades Training Institute (SOTTI) and Solwezi Kills Training Institute (SOSTI) in supporting skills acquisition, to evaluate the responsiveness of the TEVET curriculum to the labour market demands of Solwezi district and to establish to what extent funding has been constraint to the provision of education and skills development at SOTTI and SOSTI. From the findings the researcher makes the following conclusion.

6.1 Conclusion

Nature of Infrastructure: The findings revealed that the training institutions were confronted with infrastructural challenges such as outdated and inadequate workshop tools, shortage of workshop and classroom accommodation, poor library facilities and poor internet connectivity. These were established to have an effect on skills acquisition because the equipment at the institutions did not match with modern equipment in the industries.

Responsiveness of the curriculum: Contrary to the majority of previous studies, this study established that the TEVET curriculum content was updated and met the expectation of the stakeholders. Hence, responsive to labour market demands. However, despite the curriculum being up to date, its implementation fell short of the standards largely because the old and obsolete training equipment at the training institutions which did not match with the modern equipment that was being used in the industry. This situation resulted in the skills mismatch between the training offered and the skills requirements by the industry.

Funding Constraints: The study findings revealed that institutions mainly relied on tuition fees and government funding for their operations. The funding was however, inadequate to cater for all the operational costs. To that effect, institutions were unable to make meaningful investment in building of capital projects and procurement of modern efficient machinery that could support

the acquisition of a stock of knowledge, habits, social and personal attributes including creativity embodied in the ability to perform labour so as to produce economic value as espoused by the human capital theory.

TEVET is an expensive undertaking that requires huge investment in training equipment. The institution also engaged in small scale agricultural production for generation of supplementary revenue. However, very little was generated from such activities. For SOTTI the problem of insufficient funding was exacerbated by the fact that the institution was mandated to settle the entire wage bills and other emoluments for all the members of staff. This situation resulted in some cases where management failed to pay monthly salaries and other benefits to members of staff.

Going by the findings of this study, it was very evident that TEVET was not getting full attention that it deserved. Such a situation made TEVET continue to suffer setbacks that it had been suffering since the colonial times. This being the case, there was a danger that the Zambian education system would continue to produce graduates that were theory oriented and devoid of any useful skills that would make them self-reliant and work effectively in the emerging industries.

6.3 Recommendations

The study therefore makes the following recommendations;

- ❖ Training institutions should enhance cooperation with the mines and other industries to foster public-private partnerships projects such as the Kwambula project which resulted in the construction of modern workshops at SOTTI by Kansanshi Mine so as to train students in specific needy areas for the industrial sector.
- ❖ Training institutions should ensure that students are often exposed to modern technology in industries through industrial placements, field trips and site visits. Additionally, instructors should also be visiting students on industrial placements so that they reconcile the practical and the theory.

- ❖ TEVETA should introduce examinations for entrepreneurship courses so that instructors and students can give it the seriousness that it deserves.
- ❖ The government should consider putting instructors in rural TEVET institutions on government payroll in order to reduce the burden on the institutional coffers because the wage bill for members of staff claimed more than 75% of the institutional recourses. This resulted from the fact that rural TEVET institutions are unable to engage in lucrative revenue generation activities due to limited business opportunities and low student enrollments.
- ❖ The TEVET stakeholders should enhance sensitization of parents and youths about the value of skills training so that it can be considered a priority as opposed to white-collar study programmes.
- ❖ The government should increase the grant given to TEVET institutions which has been constant for the past three years despite the rise in operational costs.
- ❖ The government should support staff development for instructors to upgrade their qualifications.

6.4 Suggestions for Possible Future Research

This study was an examination of the effectiveness of TEVET in Solwezi district. The study was confined to Solwezi district of northwestern province. A similar study can be extended to other provinces to ascertain how TEVET institutions were responding to the rising social and economic challenges in the country such as job losses and increasing poverty levels. Further research could be conducted to establish how revenue diversification can be expedited in TEVET institutions as a funding modality in order to reduce over reliance on government funding which has always proved to be inadequate.

REFERENCES

Andrews, D.H. and Goodson, L.A. (1980). A Comparative Analysis of Models of Instruction Design. *Journal of Instructional Development*, 3(4): 2-16.

Atchoarena, D. (1997). *Revisiting Technical and Vocational Education in Sub-Saharan Africa*. Paris: UNESCO.

Becker, G. (1975). Investments in human capital: a theoretical analysis. *Journal of Political Economy*, Vol. 70, pp. 9-44.

Bennett, S. and Lockyer, S. (2004). Becoming an online teacher: adapting to a changed environment for teaching and learning in higher education. *Educational Media International*, 4. (3): 231-248.

Bulus, G. (1999). Vocational and Technical Education in Lebanon: Strategic issues and challenges. *International Education Journal*, 7(3): 259-272.

Carmody, P.B. (2009). *The Evolution of Education in Zambia*. Lusaka: Book world publishers

Chen, Gomes and Brizuela. (2011). *Technical and Vocational Education and Training in Support of Strategic Sustainable Development*. Karlskrona: School of Engineering, Blekinge Institute of Technology.

Clayton, G. E. (1995). *Economics: Principles and practices*. New York: Glencoe/McGraw-Hill

Creswell, J. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Upper Saddle River, NJ: Pearson Education

Dasmani, A. (2011). Challenges facing technical institute graduates in practical skills acquisition in the Upper East Region of Ghana. *In Asia-Pacific Journal of Cooperative Education*, 2 (2), 67-77.

Dike, V.E. (2007). *Vocational Education missing link in Nigeria's Development Policy*. Retrieved on June 12th 2012 from: <http://www.countrysides.us/Nigeria/56.htm>.

Duku, F. K. (2012). *Pedagogical foundation of Art education in Ghana*. In Arts and Design

Dunbar, K. (2002). *The Curriculum Perspectives on Distance Education: Skills Development through Distance Education*, Vancouver: The Commonwealth of Learning, 31-39.

European Union. (2011). *Development of Vocational Education and Training Standards - the Impact of Labour*. Market Information Volume 3, 2000, Luxembourg: Office for Official Publications of the European Communities.

European Centre for the Development. (2011). *The benefits of vocational education and training*. Luxembourg: European Union.

European Union Report. (2015). *European Community's Development policy and the implementation of external assistance*. Luxembourg: European Union.

Farmer, E.; Walter R. and Paryono P. (2004). A Model for Establishing Workforce Education and Development Programmes in Developing Countries. *International Journal of Vocational Education and Training*, 12(2): 106-120.

Greene, J. C. (2007). *Mixed Methods in Social Inquiry*. San Francisco: Jossey-Bass

Hamweete, W. (2008). *Performance of selected Technical, Vocational and entrepreneurship management boards in Luanshya District*. Lusaka: MA Dissertation UNZA.

Hansen, K.T. (1980). *The Urban Informal Sector as a Development Issue: Poor Women and Work in Lusaka, Zambia*. *Urban Anthropology* 9 pp.199-225.

Hanushek, E. A. (2005, June). Why quality matters in education. *Finance and Development. international journal of financing of TVET*, 42(2), 15-19.

Howell, k.E. (2013). *An Introduction to the Philosophy of Methodology*. London: Sage publication

ILO. (2007). *Strategies for skills acquisition and work for people with disabilities in Southern Africa. Synthesis report: Malawi, South Africa and Zambia*. ILO: Geneva

Kakwagh, V. V., & Ikwuba, A.(2010). Unemployment in Nigeria: Causes and related issues. *Canadian Social Science*, 6(4), 61-67.

Kingombe, C. (2012). *Lessons for Developing Countries from Experience with Technical and Vocational Education and Training*.UK: International growth centre.

Kombo, D.K. & Tromp, D.L. (2006). *Proposal and thesis writing: An introduction*. Nairobi: Pauline's publishers.

Kothari, C.R. (2004). *Research Methodology: Methods and Techniques*. New dehili: New age International publishers.

Lehto, S. (2003). Restructuring Engineering Education for the 21st Century. *World Transactions on Engineering and Technology Education*, 2 (1): 53-60.

Mahomend, J.F. (1973). *Foundations of Vocational Education: Social and Philosophical Concepts*. New Jersey: Prentice-Hall, Inc.

Maiga, E. (2013). *Making skills development work for economic transformation in Africa: Demystifying the suit and de-stigmatizing vocational and technical education*. Retrieved on 10/05/2014 14:06 from <http://acetforafrica.org/making-skills-developmentwork-for-economic-transformation-in-africa-demystifying-the-suit-and-de-stigmatizingvocational-and-technical-education/06-2013>.

Masri, M. W. (2009). The Changing Demands of the 21st Century: Challenges to Technical and vocational education development. *Studies in Higher Education*, 19 (2): 151-161.

Mincer, P. (1958), “An investment model for the supply of training by employers”, *The Economic Journal*, Vol. 104, pp. 556-570.

Morse, J. M. & Niehaus, L.(2009). Mixed methods design: Principles and procedures. Quantitative Social Research. *Open Journal System*. 4, 32 – 42.

Muijs, D. (2004). *Doing Quantitative research in Education*. New Delhi Sage Publications: London.

Mussmari, A. (2002). *Technical and Vocational Skills and the Impact upon Firms in the Libyan Labour Market*. PhD. Thesis, University of Wales College of Cardiff.

Mwaba, K. (2010). *The Informal Economy and Entrepreneurship Training in Zambia: Can it lead to the Empowerment of Women?* Netherlands: Hague.

New York Comprehensive Center. (2011). *Informational Brief: Impact of School Libraries on Student Achievement*. New York: Oxford University.

Nkanza, P.K. (2007). *The TEVET Qualifications Framework—a tool for economic growth*. Lusaka: A paper presented at a workshop 2007.

Norton, R.E. (1993) SCID: *Model for Effective Instructional Development*. Conference Paper; Presented on June 9-11, Mid America.

Nyerere, J. (2009). *Technical & Vocational Education and Training (TVET) Sector Mapping in Kenya*. Nairobi: Shrend Publishers.

Nyirenda, E. J and Shikwe, S. (2003). *Trade Union Country Report Zambia*. Lusaka: Friedrich Ebert Stiftung.

Osuanya Q, E. (2014) *TVET Stigmatization in developing countries is it a reality or Fallacy?* UK: European Centre for research and Development.

Piazza-Georgi, B. (2002). The role of human and social capital in growth: Extending our understanding. *Cambridge Journal of Economics*, 26, 461-479.

Rafik, T. (2009). *Design of a Work-based Engineering Degree to Up-skill the Workforce in the Northern Sector of the Kingdom of Saudi Arabia. International Conference on Engineering Education and Research, "Engineering Education and Research under Knowledge Based Society", 23-28 August 2009 Seoul-Korea.*

Rodrigues, L. and Chincholkar, A. (2005). *Benchmarking the HR Practices of Engineering.* Oxford UK: Blackwell publishing.

Saunders, M., Lewis, P. and Thornhill, A. (2007). *Research Methods for Business Students.* Harlow, England: Financial Times/prentice Hall.

Schutz, T. W. (1961). *Investment in Human Capital: A theoretical and Empirical Analysis with special reference to Education.* Chicago: The American Economic Review.

Silverman, D. (2004). *Qualitative Research: Theory Method and Practice.* New York: Sage publications

Smith, A. (1776). *The Wealth of Nations*, New York: The Modern Library, 1937

Tembo, V. M. (2005). *The Role of Education in Development.* Module EDAE7 1st edition.

TEVETA Annual Report. (2013). *Skills or Development.* Lusaka: TEVETA

UNESCO-UNEVOC (2006) *Orienting Technical and Vocation Training towards Sustainable development* Bonn, Germany: UNESCO-UNEVOC, Bureau of Public Information.

UNESCO-UNEVOC (2008). *Vocational Education and Training: A Come-back to the Walnut Creek, CA: Left Coast Press.*

UNESCO-UNEVOC. (2010). *Orienting technical and vocational education and training for sustainable development: A discussion paper.* Bonn, Germany: UNESCO

Wals, T. & Arjen, R. (2009). *Review of Contexts and Structures for Education for Sustainable Development.* Paris: UNESCO

World Bank. (2005b). *A Better Investment Climate for Every One, World Development Report*. New York: Oxford University.

Yukani .(2013). *Factors Affecting Teaching of Vocational Skills in Selected Primary Schools in Solwezi*. Lusaka: Dissertation.

Zizwa, M. (2015), *Reforming the TEVET system: Challenges and Interventions the Case of Malawi*. Zomba: Government Press.

APENDIX 1: QUESTIONNAIRE FOR INSTRUCTORS

Section A: Social Demographic Characteristics {Tick the response that best suit you}

1. Gender: i. ☐ Female ii. ☐ Male iii. ☐ Intersex
2. Age:.....
3. Marital status: i. ☐ single ii. ☐ Married iii. ☐ Divorced iv. ☐ Widowed
4. Name of Institution i. ☐ Solwezi Trades Training Institute
ii. ☐ Solwezi Skills Training Institute
5. What is your highest professional qualification?
i. ☐ Trade Test level one Certificate ii. ☐ Trade test level Two certificate
iii. ☐ Trade test level three Certificate iv. ☐ Craft Certificate.
v. ☐ Advanced certificate vi. ☐ Diploma vii. ☐ Bachelor's Degree
viii. ☐ Master's degree ix. Others specify
6. Name the course you offer. i. ☐ Power Electrical ii. ☐ Carpentry and Joinery
iii. ☐ Brick laying and Plastering iv. ☐ Tailoring v. ☐ General Agriculture
vi. ☐ Auto-Mechanics vii. ☐ Information Technology viii. ☐ Metal Fabrication
ix. ☐ Stores Management x. ☐ computer appreciation xi. ☐ Hotel Management
xii. ☐ others specify
7. For how long have you been an instructor/trainer at the college?
i. ☐ Less than 1 year ii. ☐ 1- 3 years iii. ☐ 4 - 6 years
iv. ☐ 7- 9 years v. ☐ more than 10 years

Section B: Curriculum

The Government of the Republic of Zambia embarked on major reforms to review the TEVET curriculum in order to make it more responsive to the current training demands in the economy.

The current TEVET policy declares, in general terms, Government's intention to develop a TEVET that will satisfy the real demands and requirements of the labour market and socio-economic conditions, all of which have been recognized to be in a state of constant change.

Curriculum refers to the subjects taught or elements of the subject taught at an educational institution.

Below are series of questions regarding the TEVET curriculum and its responsiveness to the current demands of the labour market. Please read each statement and carefully circle the number that suits your opinion on a 5 point scale.

1 = Strongly disagree, 2 = disagree, 3 = Neutral or No Opinion, 4 = Agree, 5 = Strongly Agree.

	Statements on the TEVET Curriculum	Five point scale				
8	The TEVET curriculum addresses the current labor market demands in Solwezi district.	1	2	3	4	5
9	Students who graduate from this college are capable of setting up their own enterprises.	1	2	3	4	5
10	Students are allowed to go on industrial attachments before they graduate.	1	2	3	4	5
11	Courses offered at the college have the potential to address unemployment.	1	2	3	4	5
12	We rarely use field trips as a method of teaching.	1	2	3	4	5
13	Projects are mostly used as a method of teaching.	1	2	3	4	5
14	TEVET programs offered at the college can reduce poverty.	1	2	3	4	5
15	Some instructors at the college are not qualified.	1	2	3	4	5
16	The current TEVET curriculum is difficult to implement.	1	2	3	4	5
17	The course contents of the TEVET curriculum are outdated.	1	2	3	4	5
18	The durations of the TEVET programs are too short for us to teach all the course contents.	1	2	3	4	5
19	There is need to revise the current TEVET curriculum.					
20	The TEVET curriculum is too basic to make students innovative.	1	2	3	4	5

Section C: Nature of Infrastructure

Quality infrastructure is key in effective delivery of skills development at TEVET Institutions, in this case the nature of infrastructure is taken to imply the basic physical, organizational structures and facilities needed for the operation of the institutions.

Below are series of questions regarding the nature of infrastructure at your College. Please read each statement carefully and circle the number that best suits your opinion on a 5 point scale where; 1 = very poor, 2 = poor, 3 = neutral or no opinion, 4 = good, 5= very good.

	Statements on Nature of Infrastructure	S	C	A	L	E
21	Teaching and learning environment.	1	2	3	4	5
22	Effectiveness of the workshop tools available for skills transfer at college.	1	2	3	4	5
23	The adequacy of the required training equipment at the college.	1	2	3	4	5
24	Collaboration between the college and the industries in exposing students to new technologies.	1	2	3	4	5
25	Availability of updated teaching materials at the college.	1	2	3	4	5
26	Exposure of students to modern training equipment.	1	2	3	4	5
27	Availability of a well-stocked library at the college.	1	2	3	4	5
28	Availability of a well-equipped computer laboratory.	1	2	3	4	5
29	Availability of adequate and clean toilets.	1	2	3	4	5
30	Availability of sanitary rubbish bins and pits	1	2	3	4	5
31	Your access to internet facilities at the college.	1	2	3	4	5
32	Running of the college by the college management.	1	2	3	4	5
33	The instructor to student ratio at the college.	1	2	3	4	5
34	Your satisfaction with your monthly remuneration.	1	2	3	4	5

THANK YOU FOR YOUR RESPONSES

APPENDIX 2: QUESTIONNAIRE FOR STUDENTS

Section A: Social Demographic Characteristics {Tick response that best suit you or fill in the spaces provided}

1. Gender: i. ☐ Female ii. ☐ Male iii. ☐ Intersex
2. Age:.....
3. Marital status i. ☐ single ii. ☐ Married iii. ☐ Divorced iv. ☐ widowed
4. Name of Institutions. i. ☐ Solwezi Trades Training Institute
ii. ☐ Solwezi Skills Training Institute.
5. Program of study. i. ☐ Power Electrical ii. ☐ Carpentry and Joinery
iii. ☐ Brick laying and Plastering iv. ☐ Tailoring v. ☐ General Agriculture
vi. ☐ Auto-Mechanics vii. ☐ Information Technology viii. ☐ Metal Fabrication
ix. ☐ Stores Management x. ☐ Computer Appreciation xi. ☐ Hotel Management
xii. ☐ others specify
6. Year of study? i. ☐ 1st ii. ☐ 2nd iii. ☐ 3rd
7. What is the duration of your program? i. ☐ 3 months ii. ☐ 6 months
iii. ☐ 1 year iv. ☐ 1 year 6months v. ☐ 2 years vi. ☐ 3 years
8. Qualification to be obtained at the end of the program.
i. ☐ Trade Test level one Certificate ii. ☐ Trade test level Two certificate
iii. ☐ Trade test level three Certificate iv. ☐ Craft Certificate.
v. ☐ Advanced certificate vi. ☐ Diploma

Section B: Responsiveness of the Curriculum

The Government of the Republic of Zambia embarked on major reforms to review the TEVET curriculum in order to make it more responsive to the current training demands in the economy. The current TEVET policy declares, in general terms, Government's intention to develop a TEVET that will satisfy the real demands and requirements of the labour market and socio-economic conditions, all of which were recognized to be in a state of constant change. The curriculum refers to the subjects taught or elements of the subject taught at an educational institution.

Below are series of questions regarding the TEVET curriculum and its responsiveness to the current demands of the labour market. Please read each statement and carefully circle the number that suits your opinion on a 5 point scale where;

1 = strongly disagree, 2 = disagree, 3 = Neutral or No Opinion, 4 = Agree, 5 = Strongly Agree.

	Statements on the Curriculum	Five point scale				
9	The course content of my program of study meets my expectations.	1	2	3	4	5
10	The instructors at my college are not highly qualified.	1	2	3	4	5
11	The content of my course is Not easy to understand.	1	2	3	4	5
12	The duration of my program is too short for me to be highly skilled.	1	2	3	4	5
13	I have acquired enough skills to open my own enterprise when I complete this program.	1	2	3	4	5
14	I have never gone for any industrial attachment since I started my program.	1	2	3	4	5
15	The time spent on practical work is not enough for me to grasp the skills in my program.	1	2	3	4	5
16	I will easily find a job after completing my program.	1	2	3	4	5
17	My program of study contains adequate entrepreneurship skills.	1	2	3	4	5
18	My school organizes adequate educational tours to different work sites.	1	2	3	4	5
19	TEVET programs have reduced unemployment among youths in Solwezi district.	1	2	3	4	5
20	The TEVET curriculum is updated	1	2	3	4	5

Section C: Nature of Infrastructure

Quality infrastructure is key in effective delivery of skills development at TEVET Institutions. In this case the nature of infrastructure is taken to imply the basic physical, organizational structures and facilities needed for the operation of the institutions. Below are series of questions regarding the nature of infrastructure at your college please read each statement carefully and circle the number that best suits your level of satisfaction on a five point scale where; 1= very dissatisfied, 2 = dissatisfied, 3 = Neutral or No Opinion 4, = satisfied 5= very satisfied.

	Statements on the Nature of Infrastructure	Five point scale				
21	The learning environment at the college.	1	2	3	4	5
22	The availability of effective tools in the workshops.	1	2	3	4	5
23	The cleanness of sanitary facilities (toilets).	1	2	3	4	5
24	Availability of sanitary rubbish bins and pits	1	2	3	4	5
25	Availability of enough classroom accommodation.	1	2	3	4	5
26	Availability of a well-stocked library facility.	1	2	3	4	5
27	Access to internet services.	1	2	3	4	5
28	Your exposure to modern technology during your practical work.	1	2	3	4	5
29	The rehabilitation of dilapidated (damaged) infrastructure at the college.	1	2	3	4	5
30	The running of students' affairs by the college management.	1	2	3	4	5
31	The availability of enough instructors for your program.	1	2	3	4	5

THANK YOU FOR YOUR RESPONSES

Appendix 3: INTERVIEW GUIDE FOR PRINCIPALS OF TEVET INSTITUTIONS

Interviewee's Details

Name of institution:

Gender:

Date of interview:.....

Time of the interview:

Duration of the interview:.....

1. What is the nature of infrastructure in supporting skills transfer at the college?
2. Do you have enough teaching and learning facilities at the college?
3. How modern is the training equipment at the college?
4. Do you think the TEVET curriculum is responsive to the current training demands of the labour market especially in Solwezi district?
5. Where do your graduates go after completing their programs?
6. How easy is it for your graduates to establish their own enterprises?
7. To what extent has funding been a constraint to the operation of the college?
8. Is the college capable of conducting some revenue generation activities to cushion the impact of financial challenges?
9. What are your sources of funding?
10. What recommendation would you make to various stakeholders of TEVET that can enhance skills development?

APPENDIX 4: INTERVIEW GUIDE FOR CHIEF OPERATIONS OFFICER (ZESCO) AND TRAINING ENGINEER (KANSANSHI MINE)

Interviewee's Details

Name of institution:

Gender:

Position held:

Date of interview

Time of the interview

Duration of the interview.....

1. To extent what is the TEVET curriculum relevant to the current labour market demands of your company?
2. How has been the work performance of the graduates from Solwezi trades and Solwezi Skills Training Institutes?
3. Are TEVET graduates trained according to expected standards?
4. How do you collaborate with the TEVET colleges to ensure effective skills development that are required by your company?
5. What recommendation can you make to various TEVET stake holders that can enhance effective skills delivery as demanded by the labor market?

Appendix 5: Work Plan

Activity No	Activity	JUN 2015				JULY 2015				AUG 2015				SEP 2015				OCT 2015				NOV 2015				DEC 2015				JAN 2016			
		WEEK				WEEK				WEEK				WEEK				WEEK				WEEK				WEEK				WEEK			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	Submission of final Research proposal																																
2	Defence of the research proposal																																
3	Approval of Research proposal																																
4	Standardizing of interview guides and questionnaires																																
5	Pilot Research data collection																																
6	Analysis of Pilot data																																
7	Refining of Questionnaires																																
8	Field Data collection																																
9	Organization of and entry of data																																

Activity No	Activity	FEB 2016				MAR 2016				APR 2016				MAY 2016				JUN 2016				JULY 2016				AUG 2016				SEP 2016				OCT 2016			
		WEEK				WEEK				WEEK				WEEK				WEEK				WEEK				WEEK				WEEK							
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
10	Data Analysis																																				
11	Presentations of research findings to the supervisor																																				
12	Oral and Poster presentations																																				
13	Report writing																																				
14	Submission of final dissertation for examination																																				
15	Defense of the Dissertation																																				
15	Graduation																																				

Appendix 6: Research Budget

S/N	DESCRIPTION	QUANTITY	UNIT COST	SUB- TOTAL
1	Toner	1	K 900	K 900
2	Printer	1	K 400	K 500
3	Duplicating paper	3 reams	K30	K 90
4	Transport to the station/fuel	80 litres petrol	K 9.30	K 744
	Recorder	1 set	K 4000	K 400
5	Binding	2 draft reports 4 final reports	K 100 K200	K 300
6	➤ Pens ➤ Note books	5 pens 2 note books	K 5 K10	K45
7	Lodging	21 days	K80	K 1,680
8	Food	21 days	K 75	K 1,575
8	Contingences	-	-	K 400
TOTAL				K 6,634

Appendix 7: Industrial Placements

I have gone for industrial attachment since I started my program.						Mean	Mode	St. Deviation
		Frequency	Percent	Valid Percent	Cumulative Percent			
Valid	Strongly disagree	82	33.6	33.6	33.6	2. 21	2	1.488
	Disagree	95	38.9	38.9	72.5			
	Neutral or No Opinion	5	2.0	2.0	74.5			
	Agree	14	5.7	5.7	80.2			
	Strongly Agree	48	19.7	19.7	100			
	Total	244	100.0	100.0				

Appendix 8 : Ability of the curriculum to address poverty

TEVET programs offered at the college have the potential to reduce poverty						Mean	Mode	Std. Deviation
		Frequency	Percent	Valid Percent	Cumulative Percent			
Valid	Strongly disagree	2	7.4	7.4	7.4	3.78	4	1.340
	Neutral or No Opinion	2	7.4	7.4	14.8			
	Agree	10	37.0	37.0	51.9			
	Strongly Agree	13	48.1	48.1	100.0			
	Total	27	100.0	100.0				

Appendix 9: Chi-Square cross-tabulation

program of study * Gender Cross-tabulation					
			Gender		Total
			Female	Male	
Program of study	Power Electrical	Count	23	26	49
		% within Gender	30.7%	15.4%	20.1%
	Carpentry and Joinery	Count	2	10	12
		% within Gender	2.7%	5.9%	4.9%
	Tailoring	Count	10	7	17
		% within Gender	13.3%	4.1%	7.0%
	General Agriculture	Count	9	17	26
		% within Gender	12.0%	10.1%	10.7%
	Auto-Mechanics	Count	0	34	34
		% within Gender	0.0%	20.1%	13.9%
	Information Technology	Count	1	3	4
		% within Gender	1.3%	1.8%	1.6%
	Metal Fabrication	Count	6	62	68
		% within Gender	8.0%	36.7%	27.9%
	stores management	Count	2	0	2
		% within Gender	2.7%	0.0%	0.8%
	Hotel Management	Count	15	2	17
		% within Gender	20.0%	1.2%	7.0%
	Procurement and supply	Count	7	8	15
		% within Gender	9.3%	4.7%	6.1%
Total		Count	75	169	244
		% within Gender	100.0%	100.0%	100.0%

Appendix 10: teaching materials

Table 4.6.2: Availability of updated teaching materials at the college.								
		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Mode	Std. Deviation
Valid	Very poor	6	22.2	22.2	22.2	2.15	2	.907
	Poor	14	51.9	51.9	74.1			
	Neutral or No Opinion	4	14.8	14.8	88.9			
	Good	3	11.1	11.1	100.0			
	Total	27	100.0	100.0				

Appendix 11: Duration of Programmes

The duration of my program is too short for me to be highly skilled.								
		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Mode	Std. Deviation
Valid	Strongly disagree	40	16.4	16.4	16.4	2.89	2	1.355
	Disagree	85	34.8	34.8	51.2			
	Neutral or No Opinion	14	5.7	5.7	57.0			
	Agree	72	29.5	29.5	86.5			
	Strongly Agree	33	13.5	13.5	100.0			
	Total	244	100.0	100.0				

Appendix 12: Use of projects when teaching

Projects are mostly used as a method of teaching.								
		Frequency	Percent	Valid Percent	Cumulative Percent	Mean	Mode	SD. Deviation
Valid	Strongly disagree	3	11.1	11.1	11.1	2.67	2	1.271
	Disagree	15	55.6	55.6	66.7			
	Agree	6	22.2	22.2	88.9			
	Strongly Agree	3	11.1	11.1	100.0			
	Total	27	100.0	100.0				