STUDENTS' COMPETENCY ACQUISITION IN TECHNICAL COURSES: AN ANALYSIS OF TVET INSTITUTIONS CURRICULUM IMPLEMENTATION IN EASTERN PROVINCE, ZAMBIA

By

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A dissertation submitted to the University of Zambia in fulfilment of the requirements for the degree of Master of Education in Curriculum Studies

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DECLARATION

I, **Edward Kings Chileshe,** do hereby solemnly declare that this dissertation represents my own work, except where otherwise acknowledged, and that it has never been previously submitted for a degree or any other qualification to the University of Zambia or any other university for similar purpose.

Signed: …….. Date: ……

APPROVAL

This dissertation of **Edward K. Chileshe** has been hereby approved as fulfilling the requirements for the award of the degree of Master of Education in Curriculum Studies by the University of Zambia.

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ABSTRACT

Technical and Vocational Education Training (TVET) institutions in most countries play an important role in the social, economic, and political development of a nation through empowering the youths with necessary competencies. However, in Zambia, despite some youths having been through TVET institutions where they are to acquire vocational knowledge and survival skills which could possibly make them self-reliant the levels of incomptencies among trained young people are still very high. Such a situation seems to put, the improvement of student's competency acquisition based on TVET programme on the spot light. Moreover, there is an outcry by the industry that there is a skills mismatch between what students are expected to get from TVET institutions and this study therefore, sought to analyse student's competency acquisition based on TVET institutions curriculum implementation in Eastern Province.

In this study, the mixed method research approach in particular the convergent parallel design was used to analyse this phenomenon. Interview guides were used to collect data from the Director Curriculum Development at TEVETA, the Manager Curriculum Development at TEVETA and two college Vice Principals. Additionally, a questionnaire was used to collect data from lecturers, while observation check list was used to collect data from students. Qualitative data was analysed using themes while quantitative data was analysed through the use of statistical package for social sciences (SPSS) and Excel where descriptive statistics were employed.

The findings of this study suggested that students in TVET institutions were not competent in various hands on skills but most of such competencies were not what industry needed. Findings revealed that the gap in skills was as a result of advancement in technology and lack of exposure by lecturers to modern equipment that the industry was using. Industries had advanced equipment whereas vocational colleges were still using obsolete equipment which was not also adequate for all students. The study also revealed that TVET institutions had enough qualified lecturers though in some new courses such as creative digital media and refrigeration, colleges did not have qualified lectures to teach. Findings in the study further revealed that the TVET curriculum in all courses was tailored to the demand of the labour market but the major challenge was the absence of appropriate teaching and learning resources. It was further revealed that due to a small industrial base in Zambia some students found it difficult to do industrial attachment even though it is a vital requirement for all vocational programmes.

Hence, it was concluded that the two TVET institutions did not focus on student competency acquisition which could bridge the skills gap. It was further concluded that despite the TVET curriculum being up to date with technological advancement, it was implemented in unconducive environments characterised with obsolete equipment's and facilities. Thus, TVET institutions should have appropriate equipment and introduce apprentice training in technical courses, effectively enhance industrial attachments and upskilling lecturers with current technological knowledge and skills. Further, industries should be involved in assessing student's competency.

Keywords: Competency, Skills mismatch, Curriculum

DEDICATION

This dissertation is dedicated

To the gracious memory of my late mother and my grandparents;

My Mother, *Bamayo ba Thereser Chileshe* whose heroic struggle and sacrifice made as a single parent were not in vain to educate me. You mother and grandparents laid an everlasting foundation that will be proudly passed on to your grandchildren and you will forever be remembered for your encouragement and the only true love, care and smile you showered me in time of difficulties. I am proud of you and no any word can measure my indebtedness to you mother. May your soul rest in everlasting and internal peace.

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Finally, I would like to express my profound gratitude to all respondents who participated and contributed immensely to the success of this study. However, their identity has been withheld due to ethical reasons.

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ACRONYMS AND ABBREVIATIONS

AU	African Union
CEDEFOP	European Centre for the Development of Vocational Education
CIDA	Canadian International Development Agency
CTVET	Commission for Technical Education and Vocational Training
ICT	Information and Communication Technology
ILO	International Labour Organizations
KRIVET	Korea Research Institute for Education and Training
MoE	Ministry of Education
MoESVTEE	Ministry of Education Science Vocational Training and Early Education
MoLSS	Ministry of Labour and Social Securities
MoU	Memorandum of Understanding
NICHE	Netherlands Initiatives for Capacity Development in Higher Education
NQF	National Qualification Framework
OECD	Organisation for Economic Co-operation and Development
SBA	School Based Assessment
SNDP	Seventh National Development Plan
SPSS	Statistical Package for Social Science Software
TEVETA	Technical Education, Vocational and Entrepreneurship Training Authority.
TVET	Technical and Vocational Education and Training.
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UN	United Nations

CHAPTER ONE: INTRODUCTION

1.1. Overview

In this chapter an introduction to the study is presented. In it, the subsections include: the background of the study, statement of the problem, purpose of the study, objectives and research questions, theoretical framework, conceptual framework, significance of the study, delimitation, and limitations of the study as well as operational definition of terms. Finally, a brief summary is given to conclude the chapter.

1.2. Background

The Universal Declaration on Human Rights adopted by the United Nations General Assembly in December 1948 guaranteed for the individual a whole range of basic freedom with education serving as a basic human right necessary for the achievement of all other freedoms. The achievement of the right to education requires that young people be given the opportunity necessary for the acquisition of knowledge, skills, attitudes and values which will enable them lead a productive life as individuals and discharge their social duties for the betterment of life in society (UN, 2015).

Moreover, education plays a great role in contributing to the economic development of both developed and developing countries. Especially sustainable economic development, environmental protection, social and political development of a nation directly and indirectly depends on education (MoE, 1996). In the same way, TVET institutions also play an equally important role in social, economic, and political development of a nation together as well as providing necessary competencies among youths. Further, TVET plays a crucial role in human resource development of the country by creating skilled human resource, enhancing industrial productivity and improving the quality of life (TEVETA, 2016). Stressing the importance of TVET, Sharma (2008) indicated that education is considered as a key to development whereas TVET is a master key because it has the ability to open all doors of lifelong learning, reduce unemployment and improve the quality of living. These roles can be realised when student's competencies are improved based on TVET programmes in TVET institutions.

The improvement of student's competency acquisition based on TVET programmes is becoming popular nowadays in the world especially with the demand for the new knowledge-based economy in the labour market (Shama, 2008). Competency acquisition is aimed at making TVET much more relevant to meeting the needs of industry and user agencies. Regarding the relevance of competency acquisition, Dakmara (2008), emphasised that, there is a growing interest of community of educators and curriculum developers in enhancing competencies and competence-based curriculum because competency-based approaches are increasingly regarded as adequate solutions for reshaping the education system in its ability to empower educators and curriculum developers to adapt their roles to new circumstances and respond to constantly rising new situations in a rapidly changing world.

In the first instance, the 21st century has come up with complex frameworks in the new economic and social aspects of the world and these have a profound implication on TVET institutions. The globalisation of trade and commerce, the rapid technological changes, the emergence of new technologies, the information and communication technology (ICT) revolution, and the emergence of knowledge economy are bringing about new challenges around the world (Dadi, 2014). These changes and intense international competition have forced countries to give attention once again to the roles of TVET programmes in preparing the youth for productive employment (Khembyat & Shaymal, 2010). For the realisation of this, the relevance and effectiveness of student's competency acquisition in TVET institutions is very crucial because it is dependent on the philosophy of curriculum design followed. It is therefore argued that competent based curriculum which is designed for most TVET institutions, trainers have a tendency of not following it and in many instances, do complain of its bulkiness of content in the teaching modules (Kufaine & Chitere, 2013). In that case, students are not equipped with relevant competencies that could see them have a competitive employment in industries.

Similarly, youth unemployment is a critical issue in Zambia and many African countries (UNESCO, 2016). In the same context, it was confirmed that, the overall youth unemployment rate in Zambia was at 10.5 percent, with higher youth unemployment rates of 17.1 and 13.8 percent observed in age groups 15-19 and 20-24, respectively (Republic

of Zambia, 2015). In the same document, it was further confirmed that, the age group with the lowest employment-to-population ratio was 15 - 19 years at 27.9 percent while the highest employment-to-population ratio was recorded in the age group 45 - 49 years at 95.1 percent. In rural areas, the age group with the highest employment-to-population ratio was 50 - 54 years at 96.8 percent while in urban areas the age group 45-49 years had the highest employment-to-population ratio at 93.2 percent as illustrated in Table 1.1.

Table 1. 1: ***Employment to population ratio by age group, sex and Rural/Urban, Zambia 2014***

Age Group	**Total**			**Rural**			**Urban**		
Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total	**71.9**	**70.6**	**73.1**	**76.8**	**74.7**	**78.9**	**66.0**	**65.8**	**66.3**
15-19	27.9	24.5	31.2	34.4	29.7	39.4	19.7	17.7	21.6
20-24	68.4	63.0	73.2	77.2	71.5	82.3	59.2	53.8	63.8
25-29	84.7	83.3	85.8	91.3	90.5	92.0	78.7	77.0	80.2
30-34	90.5	91.0	90.1	94.0	93.8	94.1	86.9	88.4	85.7
35-39	92.0	92.4	91.5	94.7	94.3	95.1	88.9	90.3	87.2
40-44	93.4	93.6	93.1	96.4	96.5	96.4	89.7	90.6	88.6
45-49	95.1	95.0	95.2	96.5	96.6	96.5	93.2	92.9	93.4
50-54	93.3	94.9	91.7	96.8	98.1	95.6	87.4	89.2	85.8
55-59	92.6	93.5	91.8	94.6	97.4	92.3	89.7	88.9	90.8
60-64	79.4	80.9	78.1	90.3	91.0	89.6	63.0	66.4	59.6
65+	63.7	71.2	57.0	68.0	75.1	61.7	52.8	61.5	44.9

Source: 2014 Labour Force Survey, CSO

Furthermore, the situation prevailing in Zambia of high levels of unemployment among youths is documented in the Seventh National Development Plan of the Republic of Zambia, (2017) that, the inability of the recent economic growth to significantly impact on poverty reduction is largely as a result of low employment creation. This was also in line with UNESCO (2016) report in which it was reported that, in almost all African countries, large numbers of graduates coming out of TVET institution are unemployed, although opportunities for skilled workers do exist in their economy. This situation has brought into sharp focus on the skill mismatch between the curriculum taught in TVET institutions and labor market demand.

However, Dadi (2014) reported that, one of the main ways used to fill the gap in skills mismatch between curriculum, labor market and unemployment crises for African countries is to develop competency-based TVET curriculum which will facilitate the acquisition of competencies among students from TVET institutions. The solution suggested was important in this study and it was necessary to investigate how students acquire competence in TVET institutions during their course induction

The point to note is that, if unemployment in Zambia continues to escalate, then it will make logical sense to increase access to TVET so that graduates can engage more profitably in the informal sector so that they can be self-reliant. It is better to be skilled and unemployed, than to be unskilled and unemployed as suggested by Dadi (2014). Hence, investigating student's competency acquisition could have been the only road map towards the reduction of unemployment levels in the country.

Similarly, the issue of poverty among the youths in developing countries particularly in Zambia is growing steadily, leading to an increase in the size of poor society. Poverty is not simply an absence of financial resource. It is a lack of the capability to function properly in a society as documented in Vision 2030 the Republic of Zambia (2006). In view of the same ideal, it was documented in the Sixth National Development Plan of the Republic of Zambia (2011: 6) that;

> *The economic growth experienced during the last decade has not translated into significant reductions in poverty and improved general living conditions of the majority of Zambians. Job creation was not commensurate with the gains registered from the economic growth. Among the factors that attributed to this phenomenon were low labour productivity, low absorption capacity of the labour market for new entrants, particularly the youth and the concentration of growth in highly capital-intensive and urban-based sectors like mining, construction and services.*

With the prevailing situation in the country it is important that TVET is put as a priority by the government of Zambia because it has the potential to drive the economy of the country. This could only be achieved if the students acquire relevant competencies through quality teaching and improved learning approaches that should be delivered by lecturers in TVET institutions.

Mostly, it is important to note that, TVET is an education programme which is mainly designed for learners to acquire the practical skills, know-how, and understanding necessary for employment in a particular occupation, trade or a group of occupations (NICHE, 2010). TVET teaching and learning approaches do not stop at knowledge and information nor at developing skills and competency, but it proceeds to ensure that trainees understand and gain insights that develop the ability to value and to choose freely, to make decisions and to translate knowledge and values into action (NICHE, 2010). Furthermore, according to Sharma (2008), the overall education of the learner should be rebuilt around four pillars, which are learning to know, learning to do, learning to live together and learning to be. It was for this reason that this study was supported by the social constructivism theory which regards knowledge to be socially constructed through interaction particularly during the learning process (Amineh & Asi, 2015).

Moreover, most of the studies that have been carried out in the field of TVET have concentrated on reviewing the challenges of the programme and its performance. For instance, Dadi (2014) carried out a study in Ethiopia which looked on the effectiveness of competency-based TVET curriculum. In that study, the major focus was to improve the TVET programme through the evaluation of the competency-based curriculum which was being implemented in all TVET institutions of the country (Ethiopia). Again, in Malawi, Kufaine and Chitera (2013) in their study revealed competency-based education and training in Technical Education problems and perspectives. In addition, another study was conducted in South Africa by Akoojee (2007) which examined the extent to which the private Technical and Vocational Education and Training (TVET) Sector in South Africa was responsive to national development. In that study, it was revealed that Private providers did not necessarily have more linkages with the formal labour market than do public providers and are not necessarily able to secure more effectively employment opportunities for their pre- and unemployed learners. Thus, this is an indication that students in TVET institutions lack relevant skills and there was a need to investigate how competencies were acquired.

In the Zambian context, some studies that have been carried out about TVET institutions, have also looked at the performance of the TVET programme rather than students' competency acquisition. For instance, Salimu (2007) conducted a study on the evaluation

of the performance of the TVET Management Boards in improving the quality of training. In that study, the results indicated that the management boards were riddled with poor staff retention, were unable to provide the required training facilities and their training continued to be supply-driven, hence the offering of poor-quality training. In the same context, a study was done by Hamweete (2008) which concentrated on the performance of management boards of TVET in Luanshya on the Copperbelt Province and the findings were the same as those by Salimu (2007).

In addition, another study was done by Zulu (2007) on gender imbalance in enrollment and retention in technical and scientific training 2000-2004 and it was revealed that female enrolments where particularly low in technical and scientific courses, making them traditionally male dominated fields. Generally, it is not the female enrolment which was low but the overall candidature sitting for TVET assessments and examinations had in subsequent years been reducing particularly in Zambia as reported by TEVETA (2016).

With view of various literature and studies in Zambia as well as of other countries, it was discovered that there is lack of information on student's competency acquisition. Instead, many researchers and various employers from the industries, have realised and complained of the poor quality of competencies in terms of knowledge and practical skills acquired by students from TVET institutions (TEVETA, 2015). In the same view, Dadi (2013) argued that, in this era of knowledge-based economy, there is more emphasis on the new competencies acquisition that could align to the demand of the labour market though the mismatch in practical skills is evident in graduated students. Hence, a gap the study would investigate.

For Zambia to realise its vision 2030 that is becoming a prosperous Middle-income Nation, as documented in the Republic of Zambia: vision 2030 (2006), there is a need to improve TVET institutions so that the students should be equipped with relevant skills that are needed in society. However, the majority of TVET institutions in Zambia are in grade three as shown in Table 1.2.

Table 1. 2: ***Distribution of TVET institutions in Zambia according to Grades***

Province	Grade 1	Grade 2	Grade 3	Total Number of Schools	% of TVET Institutions per province
Central	1	6	8	15	4.9
Copperbelt	12	26	42	80	26.3
Eastern	0	4	8	12	3.9
Luapula	0	5	5	10	3.3
Lusaka	19	44	56	119	39.1
Muchinga	0	2	3	5	1.6
Northern	0	2	3	5	1.6
North-Western	1	6	7	14	4.6
Southern	7	10	19	36	11.8
Western	0	6	2	8	2.6
TOTAL	40	111	153	304	
Percentage%	13%	37%	50%	100%	

Source: Report to the TEVETA Sub Committee on Training Standards and Accreditation (TEVETA, 2016)

The illustration from Table 1.2 shows the total number of TVET institutions in each province according to the grades from one to three. With this regard, Eastern Province is among the provinces in Zambia which has a large number of grades three TVET institutions which are not developed. Regarding the grade one TVET institutions, these have good administration and management systems in place, qualified lecturers, good infrastructure, modern equipment and facilities for practical trainings. Grade two TVET institutions have some challenges in either one of the areas such as administration system or equipment whereas grade three institutions have a number of challenges in areas of administration and management systems in place, qualification of staff, other relevant facilities and these institutions are situated far from the line of rail which is considered as an industrious economic zone (TEVETA, 2016). Since grade two public TVET institutions have some challenges and have a well-structured management system, it was

necessary to carry out a study in public TVET institutions in Eastern Province so as to investigate how students were trained in technical programmes.

1.3. Statement of the Problem

The African Union report (2007) on strategy to revitalise Technical and Vocational Education in Africa stated that one of the most important features of TVET is to orient students with desirable competencies towards the world of work and the emphasis of the curriculum on the acquisition of employable skills. However, TVET institutions in Zambia seem to be unable to produce the much-needed skilled human resource, such as artisans, craftsmen/women, technicians and technologists (TEVETA, 2015). The 2008 TEVET policy document itemised a number of challenges that TVET institutions have been going through and in particular; lack of staff development policies, stagnation in the provision of infrastructure, lack of teaching and learning resources, poor conditions of services for staff, negative perception and weak management systems. However, these challenges have not been analysed in terms of how they have been affecting the core business of helping students to acquire relevant competencies in technical programmes.

Consequently, this has made it difficult for TVET institutions to implement the existing curriculum in an environment with a lot of challenges and to provide students with relevant as well as survival competencies that could make them self-reliant and meet the labour market demands in Zambia. From the background given in the preceding sections, nevertheless, the question remains; how do students acquire competency in technical courses in TVET institutions? Therefore, it was desirable through this study that some solutions should be provided to address poor competency acquisition among the students pursuing technical programmes in TVET institutions of Eastern Province

1.4. Purpose of the Study

The purpose of this study was to analyse student's competency acquisition in technical courses based on TVET institutions curriculum implementation in Eastern Province.

1.5. Objectives

The objectives of this study were to;

i. determine the adequacy and appropriateness of teaching and learning resources required to improve students' competency in TVET institutions in Eastern Province.
ii. assess the relevance of the TVET curriculum to the needs of the labour market.
iii. investigate the extent to which the lecturer's qualifications and experience enhanced students' competency acquisition in TVET institutions.
iv. establish the extent to which TVET institutions supported industrial attachments as a way of enhancing the acquisition of relevant practical skills in students.

1.6. Research Questions

The study sought to have the following research questions answered;

i. What teaching and learning resources were adequate and appropriate to improve students' competency in TVET institutions in Eastern Province?
ii. How relevant was the TVET curriculum to the needs of the labour market?
iii. To what extent did the lecturer's qualification and experience enhance students' competency acquisition in TVET institutions?
iv. How did TVET institutions support industrial attachments as a way to enhance the acquisition of relevant practical skills of students?

1.7. Significance of the Study

This study is likely to be significant in many ways. Most importantly, the results from the study might provide information which would assist TVET institutions to formulate policies and strategies that could improve student's competency acquisition. Consequently, this is likely to minimise the rate of unemployment and poverty among students graduating from TVET institutions thereby making them well-adjusted individuals who might raise the economic productivity of the country.

The results of the study might also be significant to the Ministry of Higher Education and curriculum developers in TVET institutions. For instance, the findings of the study are likely to inform policy makers in the Ministry of Higher Education to come up with interventions that may improve the quality of educational programmes in TVET

institutions. Further, TEVETA Directors and Principals in TVET institutions might use the findings of this study to provide information on alternative strategies on how to strengthen the linkage between TVET institutions and industries. This study was also timely and useful in providing the much-needed empirical data that might assist curriculum developers in TVET institutions to make a comprehensive and Competency-Based Curriculum which might be responsive to societal needs of the 21st century.

Finally, the study is likely to serve as a reservoir of knowledge in the academic discipline for both scholars' and researchers' who might be interested to stimulate further studies on students' competency acquisition in future.

1.8. Delimitation

The study was confined to two public TVET institutions in Eastern province. These two public institutions at the time of research were well established and offered craft and trade certificates to students who were considered to produce skilled and efficient labour so as to meet the country's labour need. Despite Eastern Province being not an industrious zone, it was selected to ascertain how the students were being trained and how the industrial attachments were supported by TVET institutions and by few industries located in the Province. In addition, this study was delimited to the investigation of students' competencies acquisition and to the research objectives stated in the preceding section.

1.9. Limitations of the Study

Limitations are potential weakness of the study and they are out of the control of the researchers (Kothari, 2004). In this study, only a few technical programmes were looked at which include, General Agriculture, Automotive Mechanics, Carpentry and Joinery, Bricklaying and Plastering, Plumbing and Sheet Metal, Electrical Engineering and Computer Sciences. These programmes could not give an overall representation of the programmes that are offered in TVET institutions in the country because other programmes which include among others; air conditioning, refrigeration, creative digital media, secretariat, health and hospitality programmes were not part of the study. Hence, the results could not be generalised to other TVET institutions in the country.

1.10. Theoretical Framework

This study was guided by the social constructivism theory. Although the concept of social constructivism has become popular only recently, its origin is believed to date back to Socrates who claimed that lecturers and learners should talk to each other, interpret and construct the hidden knowledge by asking questions. Hilav (1990) cited in Amineh and Asi (2015). Leeds-Hurwitz, (2009) also explained that Social constructivism is a theory of knowledge in sociology and communication theory that examines the knowledge and understandings of the world that are developed jointly by individuals.

This theory also assumes that understanding, significance, and meaning are developed in coordination with other human beings. The most important two elements in this theory are; the assumption that human beings rationalise their experience by creating a model of the social world and the way that it functions and, the belief in language as the most essential system through which humans construct reality and search for truth which is socially constructed. In this case, the truth and the reality are embedded in the TVET curriculum that is socially constructed by different stakeholders who include curriculum specialists, industries, TVET institutions and relevant boards. The lecturers are supposed to be qualified so that they could interpret the content in the curriculum through a process of social interaction which is created either in a lecture room or workshop. Content and skills should be made relevant to the learner by lecturers and be understood within the framework of the learners' prior knowledge. This would therefore enable the students to acquire relevant competencies and later apply them at the place of work.

Besides, Shunk (2000) reported that the social constructivism theory emphasises various teaching approaches which include reciprocal teaching, peer collaboration, cognitive apprenticeships, problem-based instruction, and other methods that involve learning with others. Instructional models based on the social constructivist perspective highlight the need for collaboration among learners and with practitioners (industry) in the society (Lave & Wenger, 1991; McMahon, 1997). Lave and Wenger (1991) asserted that the relations among practitioners, their practice, and the social organisation and political economy of communities of practice are all important and effective in a society's practical knowledge. For this reason, learning should involve such knowledge and practice as well

as appropriate pedagogy which should be used in a classroom setup particularly learner centered approaches (Lave & Wenger, 1991). Lecturers or instructors in TVET institutions serve primarily as guides and facilitators of learning whose output should be the acquisition of competency by students

Therefore, the social constructivism theory in this study, serves as the learning theory foundation for student's competency acquisition in TVET institutions as it emphasised on characteristics that were based on reality, social interaction, learning and knowledge. The effective way of understanding and improve on these characteristics, was to create the physical environment which in this case a classroom equipped with available teaching and learning resources and that could improve students' competency acquisition in TVET institutions.

1.11. Conceptual Framework

A conceptual framework is a set of coherent ideas or concepts organised in a manner that makes them easy to communicate to others. It is the schematic diagram which shows the variables included in the study. It illustrates the relationships between the independent and dependent variables as well as provide a comprehensive understanding of the problem under study. The concepts that constitute a conceptual framework support one another, articulate their respective phenomena, and establish a framework of specific a philosophy (Dadi, 2014). Figure 1.1 illustrate the conceptual framework for this study.

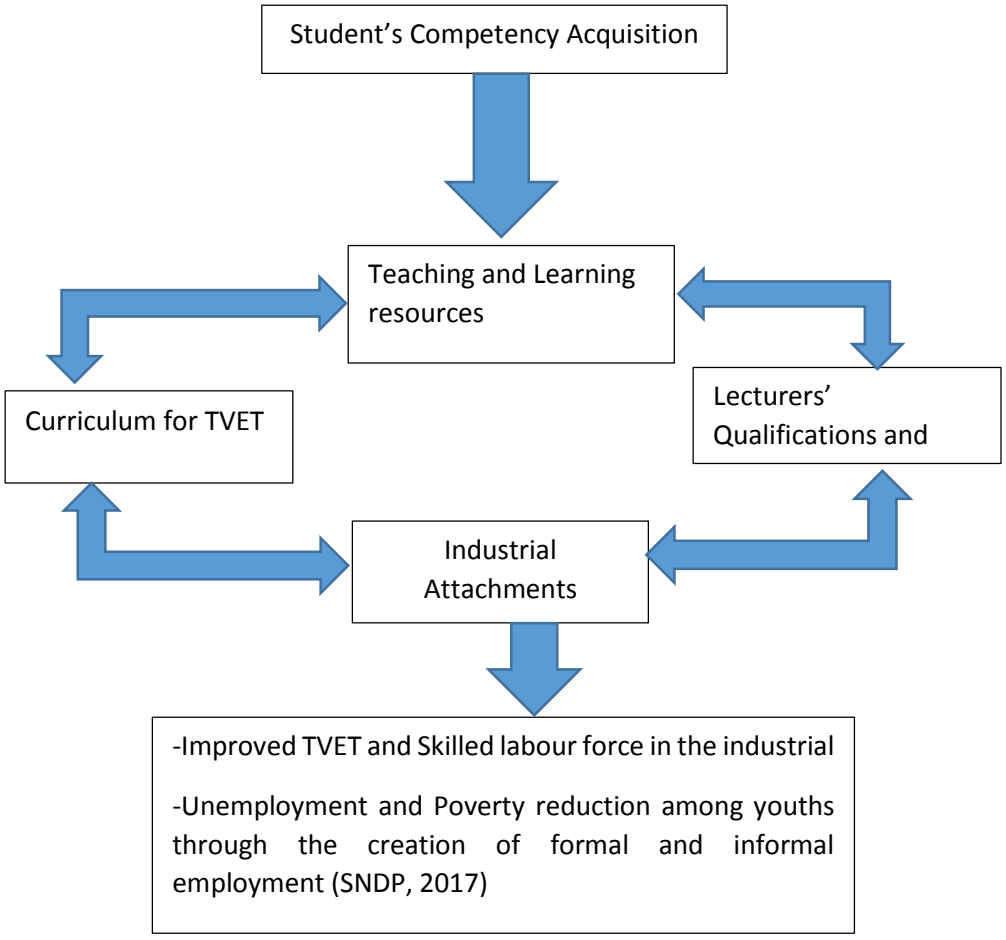


Figure 1. 1: ***Illustration of the conceptual framework***

In any education system, skilled graduates are the overall products (NICHE, 2010). Therefore, the conceptual framework here was designed to depict an examination of students' competency acquisition in TVET institutions. In it, four interrelated determinants were explored which include teaching and learning resources, curriculum for TVET institutions, Lecturers' qualifications and experiences as well as the extent to which industrial attachment was supported in TVET institutions. Thus, these are considered to enhance quality provision of TVET in the country and sustained social economic national growth. Consequently, this is likely to transcend into poverty reduction among the youths through the creation of formal and informal employment (Republic of Zambia, 2017).

The assumptions behind conceptualisation for this study was that, for the TVET institutions to be responsive to the needs of the industry, they should provide relevant competencies to students, through improving TVET competency-based curriculum, teaching and learning resources, and improving a link with the industry as well as having lecturers with appropriate qualification and experience

Besides, this conceptual framework is in line with the social constructivism theory. This is because the availability of teaching and learning resources would influence academic interactions that would also lead to the students' acquisition of appropriate knowledge and skills. For this reason, students are likely to construct knowledge and attain deeper understanding of the subject matter through demonstrating practical skills effectively and efficiently (Fenwick et al., 2013).

1.12. Operational Definition of Terms

Competence: is a broad concept comprising the possession and application of a set of skills, knowledge and attitudes which are necessary to successfully compete for jobs in the labour market.

Competency: refers to any form of knowledge, skill, attitude, ability or educational objectives that are acquired in a context of learning and students are required to perform specific tasks in a context of employment.

Technical Education: refers to theoretical vocational preparation of students for jobs involving applied science and modern technology

TVET institutions: institutions that offer vocational and technical education

Technical and Vocational Education and Training (TVET): refers to the study of technologies and related sciences, and the acquisition of practical skills, attitudes, values and knowledge relating to occupations in various sectors of economic and social life.

Vocational Education: refers to education offered to students to equip them for jobs in designated (manual or practical) trades or occupations.

Youth unemployment: refers to the young skilled people aged 15-24 who are not working in either formal or informal labour force in a specific region or a country.

Youth: refers to young people either girls or boys between the ages of 15-24 years (ILO, 2010).

1.13. Organisation of the Dissertation

The dissertation has been divided into six chapters. The first chapter explains the introduction and in it the main problem that this study sought to address was described, the significance of the study, the theoretical framework for the study, including key words used in the study.

In chapter two, the literature review was discussed and was aimed to scrutinise the trends in TVET particularly in understanding students' competency acquisition so as to establish a gap that this study was trying to fill. Hence, the literature was purposely searched and reviewed on the basis of its relevance to the main themes and the references consulted were not exhaustive since TVET curriculum implementation was a growing discipline.

In chapter three, the methodology that was used to solicit data was explained and it comprised of the following sub-sections; research paradigm, research design, study site, population of the study, sample size, demographic characteristics of respondents, sampling techniques, data collection instruments, procedure for data collection, validity, reliability, trustworthiness, pilot study, data collection procedure, data analysis and ethical considerations.

In chapter four, the findings of the research questions based on a number of themes that emerged from the data were presented. Qualitative data was analysed using thematic analysis while quantitative data was presented in percentages, frequencies, cross-tabulations, mode, means and standard deviations. The findings were discussed in chapter five.

Chapter six was comprised of the conclusion and recommendations of the study and all of which were based from the findings of the study. The proposed areas for future research in the same field of this study were presented.

1.14. Summary

In this chapter a number of issues have been discussed. In the background, the relevance of TVET in the country in trying to understand the policy of the Ministry of General Education in improving the competency-based education was discussed. Further, the prevailing situation of high unemployment levels and poverty among the trained youths in Zambia was discussed and this was attributed to the mismatch of skills offered in the TVET institutions. In addition, the other subsections in this chapter have been presented under the following headings; statement of the problem, aim, objectives, research questions, significance of the study, delimitations, the theoretical framework, conceptual framework, operational definitions. In the next chapter a detailed theoretical perspective and review of literature is discussed so as to further understand the issue under study.

CHAPTER TWO: LITERATURE REVIEW

2.1. Overview

Kombo and Tromp (2006) defined literature review as the written materials that a researcher has consulted so as understand and investigate a research problem. Literature review includes books, journals, dissertations, magazines and other sources that have a bearing on the study. Therefore, in this study, literature related to student's competency acquisition in TVET institutions was reviewed. In order to achieve that, the literature was reviewed with a focus on teaching and learning resources, curriculum for TVET, lecturers' qualification and experiences and industrial attachment. Since this study was centered on TVET, it was important to begin with its concept and historical development in the Zambian context so as to understand the trends and position of students in terms of competency acquisition and the relationship with the labour market.

2.2. The Concept of TVET

The terms technical and vocational education (TVE), technical and vocational education and training (TVET), vocational education and training (VET), are often used to describe the same thing and define it as an education which is mainly designed to lead participants to acquire the practical skills, know-how and understanding necessary for employment in a particular occupation, trade or group of occupations or trades (World Bank, 2001). In this concept, the word 'technical' is tending to give way to the term 'technological' and this type of education prepares students for higher education and the term 'vocational education' continues to refer to the acquisition of skills for specific occupations.

Besides, Daksa (2013) explained that vocational and technical education in any society should be directed toward jobs creation currently and in the near future. There must be a new partnership between education and the world of work to address the need to develop unity between the sectors of education, training and labor market. Thus, UNESCO (1999) summarised the role of technical vocational education in the society as TVET is a bridge to the future, but there must be an employment road to which it leads, otherwise we create other problems. We need new models of TVET linking education, training and social welfare.

2.3.1. Historical Development of TVET in Zambia

Historically, before the coming in of Europeans in Africa, the society then used the digging sticks, stones, bones, and fire to cleat the vegetation and hunting and gathering their food. Work was the true site of vocational training (Daksa, 2013). During this period, the process of learning was traditional and simple. Children used to learn by imitation of skills, and there was verbal transmission of knowledge from one generation to the next. Such awareness was based on what they had acquired from their parents and what they had learned by trial and error during the productive activities (Kelly, 1996). Such a condition reflects the historical beginning of vocational education and training in Zambia and in most African countries.

2.3.2. TVET in Zambia before Independence

The first Europeans to come to Africa were the missionaries and Dr. David Livingstone was one of the greatest explorers of the African continent as well as a renowned missionary. His famous publication in London after his death in 1873 influenced a substantial number of missionaries to come to central Africa to preach the gospel and to bring their culture (Mwanakatwe, 1974). Soon afterward, the first missionaries named François Coillad and Fredrick Arnott arrived in Barotse land. The consequence of their arrival was that, a first formal school was established in 1883 in Barotse land. Then in 1890, the British South African company (BSA) gained control of Northern Rhodesian territory and encouraged the advent of European missionaries into Central Africa. Thus, by 1924, there were fifteen missionary societies in the territory, all of which operated successful schools (Carmody, 2004).

During the advent of missionaries, there was high demand for skilled manpower to help build their churches, stations and schools just as much as they needed catechism and religion. The demand was also accelerated by the construction of the line of rail from Livingstone to Luanshya on the Copperbelt Province upon discovering copper deposits (Snelson, 1974). The BSA Company also entirely depended on the few skilled man power informally trained by the missionaries. As a result of these developments, the Commission for Technical Education and Vocation Training (1969) documented that, missionaries-as a matter of expediency, established practical training schools for carpenters and

bricklayers in the early 1920's at Kawimbe, and later on at Mbereshi by the Presbyterians in Luapula Province and Sefula in Western province by the Paris Missionary Society. The result of this was that the local communities benefited from the schools by constructing houses which, to date, can clearly be seen along the Luapula Valley. The training at Mbereshi became formalised in the early 1930's and could be noticed here that missionaries such as Catholics did not enter this field of training, but did so at a much later time.

Noticeably, in 1935 Munali Vocational Training Centre was formalised and established at the old site which came to be known as Hodgson. It used to provide instructions only in carpentry and trowel trades with a three-year course. However, this was not the first vocational training Centre to be established (Mwanakatwe, 1974). Further, Carmody (2004) explained that the first government technical institute was started at Mazabuka in 1930 and it offered a two- year course in agriculture. Those who graduated from these two institutions in question were far from being enough to meet the demand for the public service and mines. In the same context, Mwanakatwe (1974) explained that by the end of the Second World War, Zambians who had joined the army acquired a lot of vocational skills such that even the Northern Rhodesia government came to rely upon. Despite the forgoing development, an assessment was introduced when retired army officers wanted to join the public works department. They were required to produce the trade certificate too. Consequently, the supply of skilled African army evidently cushioned the demand and pressure the vocational industry had experienced up to the late 1940s.

In the same 1940s, significant development occurred in enhancing quality vocational skills in Northern Rhodesia and there was an intention by the government to increase the supply of skilled African workers (Kelly, 1996). In addition, Kelly (1996) citing Hoppers (1985) demonstrated that by 1948 the decision to build more Trades Schools in the country was at its pick. A reasonable number of TVET institutions were to be post standard for instructions with a three-year training programme in bricklaying and carpentry, mainly for the construction industry. The training was to be very practical with most of the week's spent on building sites and one day reserved for technology and academic subjects. The programme started in 1950 at Mwekera, Luanshya, Mufulira and Kitwe. It fully reached its completion in 1957 when twenty-one TVET institutions were in operations. Ten

schools belonged to government and eleven to the missionaries. By that time the schools were in the process of upgrading entry qualifications from standard 4 to standard 6. This was preceded after the government had observed that, in 1950's the instructors in carpentry and brickwork had started graduating from Munali trade school. Further, Commission for Technical Education and Vocation Training (1969), illustrated that, of that period, the government accepted limited responsibility for vocation training and provided some grants to missionary TVET institutions, and formally established four of its own similar schools along the line of rail as mentioned.

Subsequently, there was another significant development which occurred in 1956. The initiative was particularly made by Ndola Rotary club to establish Northern Technical College which was organised on this basis of apprenticeship and a block release system aimed at giving trade qualifications according to the standard set by the City and Guilds of London Institute. The performance of the college was outstanding and the graduates were skilled to be indentured and become apprenticed. In 1960 as a result of Keir Report (which was sponsored by the government), the college had its position confirmed for apprenticeship training and received the backing of industry and government. The report also established the status of Evelyn Hone College of further education. It also recommended continuation and expansion of Hodgson training College (Kelly, 1998).

However, Commission for Technical Education and Vocational Training (1969) reported that though TVET institutions had received support from the federal government, they had some challenges in terms of human and financial resource as well as inefficiency in administration. Thus, they could barely meet the needs of the industries.

2.3.3. TVET Institutions and needs of Industry

The TVET institutions despite being important in driving the economic development, remained underfunded and as such experienced a number of setbacks (CTVEVT, 1969). In support of this ideal, Carmody (2004:17) documented that,

> *A major reason for the lack of attraction of such institutions and courses included the fact that opportunities for Africans remained very limited in this area where the higher technical jobs were protected for whites. Thus, for a young Africans, taking a technical course did not hold out much promise of well-paid employment. If that is what one wanted, the best route*

> *was through academic programs, which was the strong throughout the world at this time. It was the academic system that had the highest status and promised upward mobility.*

In a similar context, CTEVT (1969) reported that, only about the dullest students were considered suitable to enter TVET institutions and the buildings at the institutions in which they used to work were inferior and sub-standard to the requirements. Such structures were also inferior even to the primary schools where the trainees had come from.

In addition, Kelly (1998) outlined that during the early years, the number of graduates from all TVET institutions was very limited, numbering barely 650 between 1947 and 1955. Further, the graduates were deemed to be of low quality as compared to those of workmen who had developed their skills under the supervisor on the construction site or on the shop-floor. In that case, TVET institutions were not able to adjust themselves to suit the requirements of industry. By the time the system reached its full strength in the late 1950's, the construction industry divided into slump period and the graduates had great difficulty in finding work.

Furthermore, as Carmody (2004) indicated that, due to the physical and sociological repulsion of TVET institutions, it was often found very difficult to attract entrants especially as opportunities for further academic education expanded. In 1958 there were fifteen TVET institutions, all of which were under-enrolled, having an average annual entry of fifteen students. Suitable lecturers were not attracted either, so much that most of these who were in charge were undesirable workmen from the public works department and who themselves were unhappily treated. Consequently, some TVET institutions were closed as to pave way for the expansion of primary education.

However, the above concerns discussed by Kelly (1998) and Carmody (2004) and their studies did not explain the causes of the challenges and why TVET institutions were unable to meet the demand of society by then. In order to have a focused and in depth study, the understanding of this historical development is important because the issue of poor competencies among graduates has been long overdue and no study has been carried out in this context to analyse student competency acquisition in TVET institutions. This was a reason in particular, issues which include, experience and qualification of Lecturers,

curriculum for TVET and industrial attachments were singled out to assess if they could provide solutions for this study in question.

2.3.4. Closure of some TVET institutions

The unprecedented predicaments that simultaneously hampered the development of Technical Education in Zambia from its inception resulted in closure of various TVET institutions across the country in the early 1960s. Kelly (1998) wrote that the first school was closed in 1959, and due to lack of interest among school leavers, more followed in the 1960. Political disturbances made their own contribution when students boycotted classes out of frustration over their own future and events that were obtaining in their territory. TVET institutions had then lost whatever economic relevance they had previously possessed, and the idea suggested by Keiser, Lawrenz and Appleton (2004) was that low-level education for Africans was detested by the nationalist movement which regarded the schools as a symbol of colonial exploitation and racial discrimination.

Moreover, the CTVET (1969) asserted that, a very unfortunate development arose when, in 1962, the colonial authority decided to build more schools and despised the unused TVET institutions as ready-made accommodation for the expansion of primary education. Therefore, several mission and government Trades Schools were closed and aid withdrawn. In the same period, under the direction of Mr. Hodgson, Munali Training Centre had, in the meantime, made commendable strides in technical education and when there was a new academic site, new courses of City and Guilds standard were introduced and a new attractive Centre was built mostly by the trainees. However, Hoppers (1985) in Kelly (1996) explained that, due to racial discrimination, the Hodgson graduates never found a place in the industry field and the consequence of this scenario was that there was high political agitation and bitterness which did not die out even after independence. Technical Training was discontinued and Hodgson was turned into a Technical Secondary school which currently is known as David Kaunda Technical Secondary School. Subsequently, after independence in 1964, many more TVET institutions were closed leaving only Lukashya, Livingstone and Kitwe. This was done to modernise the TVET institutions with new advanced technology (CTEVT, 1969).

2.3.5. Establishment of the Commission for Technical Education and Vocational Training, 1968-1969

When Zambia got her independence in 1964, there was an initiative to begin formulating new policies on Technical Education and Vocational Training (TVET). This came as a reality when Mr. Saunders was appointed to chair the committee to look into the possibilities of improving technical education which was perceived with low esteem in Zambia. The committee in question came to be known as Saunders Commission. In 1967, the Commission submitted the report to the government with important recommendations on how best TVET could be run in the country so that it could meet existing requirements of the public service and other sectors that supported the economic and social development of the country. The other recommendation was to ensure that there was a steady output of skilled human resources for the future and lastly, make sure that Zambians would be technically oriented so that the youth would be trained in creative and productive hard work. These recommendations were later to become the TVET objectives (CTVET, 1969).

2.3.6. TEVETA Acts

There have been a number of acts in the recent past and at the present time that have governed the management of technical and vocational education in Zambia. It is important in this study to identify such acts in order to see how the country has progressed in the path of technical and vocational education policy. This part therefore looks at the acts that have governed technical education in question from 1970 to date.

In the 1970s, it was inevitable that the then Technical Education and Vocation Education needed to address the needs of the thriving formal sector. In 1969, the Minister of State for Technical Education and Vocation Training appointed Dr. Ross Ford as Director. He was tasked to advise government on issues of development and planning of TEVT, and to identify areas which needed assistance from the Canadian International Development Agency (CIDA) (Kelly, 1996). This development later culminated into the passing of the TEVT Act of 1970. The act led to the apportioning of responsibility to the newly set statutory board named ‘Commission for Technical Education and Vocation Training’. The

eventual development saw the enactment of the Act 1972 which in essence repealed the Act of 1970. The new act brought about changes which foresaw a detailed and holistic national programme in technology (TEVATA, 2010).

Between 1980 and 1990, the government of the Republic of Zambia introduced significant economic reforms which were characterised the privatisation of state-owned enterprises, trade liberalization, and promotion of direct foreign investment and increased support of private sector development (Kelly, 1996). Consequently, in 1994, government began to review policy on TVET and in 1996, a new policy was formulated. It focused on meeting the challenges of the changed and changing labour market and in the economy social economic conditions. The new policy also sought to enhance employment through resource opportunities in the economy. The policy therefore aimed at balancing the supply of skilled labour at all levels with the demands of the economy. It was also meant to act as a vehicle for improved productivity and income generation and as an instrument for the minimisation of inequalities among the people (Nkhanza, 2008).

According to Nkhanza (2008), the new policy was broadened in three respects: First, it incorporated entrepreneurship development and for this reason it was to be known as Technical Education, Vocation and Entrepreneurship Training (TEVET) policy. Second, the new policy incorporated all types of technical education and vocation training like agriculture, business and commercial courses as well as engineering. Third, it covered training that was to be conducted at all levels in both the formal and informal sectors. The policy also focused on the concept of equity, based on the provision of equal, opportunity to all the people of Zambia, irrespective of race, gender, location or financial circumstances.

Nkhanza (2008) documented that, the 1996 TEVET policy led to the enactment of Act No.13 of 1998, known as 'Technical Education, Vocational and Entrepreneurship Training Act, 1998'. The Act was arranged in such a way that it had sections which were divided into parts. Part I shows the title and commencement, application and interpretation. Part II was about the Technical Education, Vocation and Entrepreneurship Training, its establishment of Authority, Functions of Authority, Composition of Authority, Director General, Secretary and other staff. Part III is about the establishment

of government institutions and management board. Part IV is about the registration of institutions and Part V is about inspection and general provision.

The Act, too, has the first Schedule which is about the administration of authority under which is Part I showing the seal of authority, tenure of office of member, and other pieces of information. Part II of First Schedule is about financial provisions of institutions? The Second Schedule is about the administration of institutions and management boards (Nkhanza, 2008).

The Act was "to establish the Technical Education, Vocational and Entrepreneurship Training Authority and to define its functions; to provide for the establishment of government institutions of technical education, vocational and Entrepreneurship training; to constitute management boards for institutions established under the Act and provide for their composition; to regulate all institutions providing technical education, vocational and entrepreneurship training to repeal the Technical Education and Vocational Training Act 1972; and to provide for matters connected with or incidental to the foregoing", (TEVET Act 157: 1998). There was also an Act which was an amendment of the Act 13 of 1998. TEVETA is an institution created under the Technical Education, Vocational and Entrepreneurship Training Act (No.13 of 1998) read together with TEVET (Amendment) Act No. 11 of 2005 and the functions of TEVETA were defined in the Act (TEVETA, 2010).

The subsequent development of TEVET Acts in Zambia, had provided a basis for TVET institutions to train competent graduates that in turn were expected to provide efficient and skilled labour force for the country. In spite of this, some pertinent issues were pointed out in the preceding Acts that could help to reduce some of the challenges TVET institutions in Zambia might have been facing. On the contrary, TVET providers such as; TEVETA Directors, Principals and Lecturers might have seemed to forgo the TEVET Acts recommendations and continued to provide the TVET in question in Zambia which did not focus on competency development. Hence, the researcher could not completely depart away from the preceding TEVET Acts discussed because the recommendations were a source of a policy aimed to assist in delivering quality provision of TVET in Zambia

2.4. The Concept of Competency

Competency is a difficult concept which can be explained and interpreted in different ways. However, in this study competency will be explained in the following ways. Competencies are statements of the characteristics that graduating students should demonstrate which indicate that they are prepared to perform and function independently in professional practice (Frere, 2010). It is the possession and development of sufficient skills, knowledge, appropriate attitude and experience for successful performance in life as stated by Perry and William (1988) in Daksa (2013). It is the capability of a person to reach specific achievement. Personal competencies comprise of integrated performance-oriented capabilities which consist of clusters of knowledge structures, cognitive, interactive affective, and where necessary, psychomotor capabilities, and attitudes and values which are required for carrying out tasks, solving problems and, more generally, effective functioning in a certain profession organisation, position or role (Brown, 1994).

In the same way, Brightwell (2013) defined competency as the individual's ability to use, apply and demonstrate a group of related awareness, knowledge, skills and attitudes in order to perform tasks and duties successfully and which can be measured against well accepted standards or levels required in employment as well as assessed against provided evidence at work location. This definition indicates that all tasks have direct implications to the awareness of knowledge, skills, attitude that the students must acquire in order to perform the tasks correctly. Assessment is made on how the individual is actually performing. According to the definition, an individual is incompetent, no matter how much knowledge has been acquired, or as long as an individual cannot apply knowledge and skills appropriately at a work context.

Based on the definitions of competency, it is possible to deduce that competency-based education implies creating opportunities for students and workers to be closer to their world of experience (preferably professional practice) and meaningful learning environment where the learners can develop integrated performance-oriented capabilities for handling the core problems in practice. From this point of view, competencies are characterised by some common characteristics. Competencies are context-bounded. They are indivisible, in that knowledge, skills and attitudes are integrated. They are subject to

change and they are relevant to given activities and tasks. Also, competencies require the individual's learning and development and they are interrelated (Brown, 1994). Thus, competence and TVET are highly interrelated.

The skill of the individual must be of such a nature that an employer is willing to pay for his/her performance. The development of a marketable skill is central to all fields of vocational and technical education and training as Daksa (2013) suggested. Since the concept of competency has become a matter of concern in both academic disciplines and the labour force, it was important to explore it in this study so that the outcry of skills mismatch in the industry might be addressed as discussed in the background.

2.5. Status of TVET Infrastructure in Africa and in Zambia

A study done by Rufai et al., (2013) which looked at the Provision of Workshop Tools and Equipment: Necessity for Technical Vocational Education Graduates Skills Acquisition in Nigeria observed that the major goal of TVE is to prepare students for successful employment in the labor market and this condition can be met through a curriculum that is relevant and comprehensive and a well-equipped workshop with relevant training facilities. This aspect of the curriculum can only be implemented where workshop facilities, tools, equipment and machines are adequate and relevant. Availability of appropriate workshop facilities enhances student learning by allowing them to be involved in demonstrations, and practice which would help them to continue to build their skills.

However, one of the issues of great controversy among TVE educators today is the issue of the poor state of workshop tools and equipment in TVE institutions in Nigeria (Umunadi, 2011). In support, Umar & Ma'aji (2010) stated that most of the TVE institutions in Nigeria have been forced to perform below standard due to purported non-availability, poor management or utter neglect of the required facilities in the workshops for effective skills acquisition. Therefore, there is the need to provide adequate workshop tools, equipment and machines for effective implementation of TVE programs in Nigeria. The school workshops offer chances for practical training of students in the acquisition of skills in different trade areas. In addition, studies done in Nigeria which include among

others; Rufai et al., (2013) and Dike (2013) affirmed that poor student performance in TVE in Nigeria was as a result of inadequate and non-functional training facilities. They also reviewed that some workshop tools and equipment were sub-standard and therefore could be easily maintained to bring it to life again. Consequently, as a country it appears that there is a problem of skilled human resource and poor infrastructure development due to Nigerian Government's limited level of support for TVET schools and in that regard, the studies did not focus on how non-availability of equipment and facilities in TVET institutions could affect the acquisition of relevant competencies among the students. Therefore, it was eminent in this study to explore the relationship between teaching and learning resources and the acquisition of competencies among the students

In the same context, Barky (2005) and Dasmani (2011) reported that lack of equipment and obsolete facilities make it impossible for the students to receive training that meets the standards for employment in industries or related organisations. He also stated that the availability of instructional resources has a major influence on the selection of teaching methods and materials. Without functional workshop tools and equipment, the technical teacher is handicapped and cannot go far in the use of demonstration method in his teaching, TVE has theory limit, if the teaching and learning exceed that limit, acquisition of skill is hampered and TVE will become "theoretical education". It is not surprising therefore, that Rufai et al., (2013) lamented that graduates of TVE programs were being rejected by industries because they had the wrong kind of training in schools. The wrong kind of training implies that TVE graduates were sufficiently deficient in practicum hence were unable to satisfy the industrial demands. The major problem therefore in developing TVE in Nigeria is the problem of inadequate and non-functional training facilities which includes workshop tools and equipment.

Regarding Zambia, some studies have indicated that there is serious mismatch between training equipment used during training and what is obtaining in the industry. Nkhanza (2007) and Tembo (2005) reported that the physical infrastructures of most TEVET institutions were dilapidated, insufficient, and fully utilised. 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 explained 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. Logically, the appropriateness of teaching materials and training equipment are significant to the acquisition of relevant competencies among the TVET graduates in Zambia and therefore, the teaching materials in question in this study were investigated if they were adequate, available and up to date with the latest technology.

A study carried out by Mwila (2016) which was an examination of the effectiveness of Technical Education, Vocational and Entrepreneurship Training (TEVET) in provision of education and skills development in Solwezi District revealed 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. 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.

In addition, 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 approach and 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.

The study by Mwila (2016) revealed 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 results of the study seemed satisfying and the researcher concentrated only on two institutions within the district of Solwezi and those two institutions mighty have had similar context and characteristics. Therefore, his findings cannot be generalised. The method used was good except that the sample size did not include the officials from the TEVETA department who are central in policy formulation for TVET institutions. Hence, a different approach was taken in this study as it did not focus on the effectiveness of TEVET institutions in addressing skills mismatch in Solwezi district but rather on students' competency acquisition in TVET institutions in Eastern province.

Another study was done by Salimu (2007) on the evaluation of the performance of the Management Boards in improving the provision of training in TVET institutions. The study was confined to the Lusaka and Copperbelt based TVET institutions. The objectives of the study included establishing the quality and effectiveness of training after the introduction of the boards, to determine the extent to which they were able to attract and retain capable manpower, and to determine the extent to which they were financially self-sustaining. The survey method was used and the results of the study were also similar to that were reported later by Hamweete (2008) and Mwila (2016). The results indicated that the Management Boards were riddled with poor staff rentation, were unable to provide the required training facilities and their training continued to be supply-driven, hence the offering of poor-quality training to students.

While this study concentrated on evaluating the performance of the Management Boards in improving the provision of training in TVET institutions, the researcher was very much aware of other factors that could affect the Management Boards in TVET institution which included the crisis of funding and copying up with technological advancement so as to modernise TVET institutions. Therefore, this study took a different scope as it concentrated on factors that affect students from acquiring relevant competencies in TVET institutions.

Once again, these studies did not review the quality of the graduates in terms of their competencies in relation to the TVET curriculum, a gap that the study sought to fill though then from Eastern province. Further, the researcher had realised that most of the studies done in Zambia and elsewhere as regards to TVET institutions have mainly focused on the performance of management boards. But this study had to take a different scope to analyse the student's competency acquisition in TVET institutions as a way in addressing skills mismatch for the labour market in Zambian.

2.6. Curriculum for TEVET

Curriculum is increasingly seen by stakeholders as a dynamic framework guiding teaching and learning processes and as a steering mechanism for quality competency acquisition. It features in key European policy documents as a new consensus for contributing to Europe 2020, the European strategy for smart, sustainable and inclusive growth. Findings of empirical research widely recognise that curriculum relevance is a condition sine qua non, not only for improving the human capital potential of education and training graduates but also for retaining students with right competencies in education and training systems (CEDEFOP, 2008).

The endemic irrelevance of TVET curriculum may be one of the greatest obstacles to matching education and training provision successfully to students and labour market needs. Adopting a learning outcomes approach when developing curricula, valuing what a student knows, understands and is able to do on completion of a learning process – irrespective of how, when and where this learning takes place, is seen by many African and European countries as an effective way to avoid such potential mismatches and promote active learning and inclusive teaching (Biemans et al., 2004). For VET providers and employers, outcome-oriented curricula can offer a valuable platform for bridging the worlds of education, training and work, providing a common language between competences acquired in learning and the needs of occupations and the labour market. For lecturers, a curriculum built on knowledge, skills and competences that learners can acquire through an interdisciplinary approach, is more challenging than traditional approaches but also more flexible in designing learning programmes tailored to the needs of learners and applying innovative pedagogies and assessment procedures (CEDEFOP,

20008). Furthermore, CEDEFOP (2008) suggested that the program 'syllabus' should not be a stock of knowledge incompatible, because of its volume, with the faculties of the learner. It must, for each level, identify a list of competences implying the acquisition of corresponding knowledge and know-how, taking into account the assimilation capacities of learners and feasibility criteria. The program defines explicitly the final competences expected at the end of the year, of the study cycle or of the training, as well as associated evaluation modalities

Moreover, a doctoral study which was done by Dadi (2014) and looked at Effectiveness of Competency-based TVET Curriculum in Ethiopia explained a number of relevant and critical issues regarding the competency acquisition by trainees. In this study a concurrent embedded mixed research type was employed. Percentages, mean values, standard deviation, Mann-Whitney U test and binary logistic regression were employed to analyze the data. The study reviewed the ineffectiveness of TVET program with 74.6 percent incompetence and 25.4 percent competence of trainees in COC assessment. After investigating the factors that are responsible for incompetence of trainees in COC assessment the study found out that weak preparation of teaching learning materials, poor implementation of principles of competency-based training, poor TVET lecturers training and poor TVET institutions and industry linkage. The study also investigated the factors that have strong predicting power of competence of trainees in COC assessment. Integrating knowledge, skill and attitude during training, making competencies to be achieved public in advance, actual demonstration of competencies during training, engaging trainees in applying skills similar to the real world of work, using progress record chart during training and providing practical skills to trainees by industries during cooperative training were found to be the major predictors of competence of trainees in COC assessment. Based on the findings, it was recommended that the involvement of industry experts and curriculum experts in preparation of curriculum materials, close supervision and support during implementation of competency-based curriculum, promoting TVET programme to higher institutions to improve the image of TVET, using different options to motivate industry owners to fully cooperate during cooperative training and competency-based pre-service and tailored in-service trainings for TVET lecturers should be realised for effective competence-based curriculum.

Nevertheless, the study's findings and recommendations were impressive. Though the study had looked on the competency-based curriculum, it did not go further to analyse how this competency-based curriculum was being implemented in TVET institutions. This is a more reason this study took a different approach to ascertain the extent to which the students acquire competencies as they interact with the competence-based curriculum in TVET institutions.

In addition, a research which was done by CEDOFOP (2010) reported that developing training materials have become a challenge for all TVET institutions particularly in developing countries. To overcome the problem, their governments have developed a model training material which have been disseminated in their TVET institutions. However, training institutions are seen using old materials and the model materials without much change. The government expects all training institutions to develop materials that reflect local needs and environments. The other major problem observed in curriculum development was the continuous change made in it. At the beginning, all training materials were prepared centrally and used by all institutions with similar inputs and processes and this was attributed to inadequacy of funds. Though the study showed some affirmation to the challenges observed in developing TVET curriculum and training materials in question, it did not clearly review the relevance of TVET curriculum to the labour market and the appropriateness of training materials in developing quality competencies among students, a gap that this study intended to fill though from the Zambian context.

However, another scholar by the name of Keiser et al., (2004) suggested that in order to respond to the curriculum challenges in TVET institutions, there is a need to analyse a Competency-based TVET curriculum. This means that the scope and sequence of curriculum concepts should be logical and efficient. It has to be student-oriented. That is, instructional approach should assist students to prepare for the world of work. It has to be realistic in such a way that students' experience should be practical and fully contextualised. In general, competency-based curriculum has to be future-oriented, evaluation conscious and world class. The extent to which curriculum will be effective in the future should be determined. Continuous and formal efforts must be made to evaluate

the effectiveness of the curriculum to benchmark world-class standards and focus on total quality.

Furthermore, Biemans et al., (2004) argued that competencies should emphasise professional judgment, not just psychomotor skill, for skill competence is not simply performing a skill. It includes making some judgment about the accuracy and appropriateness of the skill, and it implies a standard of excellence. Competency should be oriented to directing and ensuring learning in the higher levels of cognitive, affective and psychomotor domains. It should state the conditions under which a learner performs actions or behaviors and the standard of such performance. Competency-based curriculum is designed based on these characteristics and clearly calls for new skills on the part of teaching staff, practitioners who enact the roles of mentor and assessor and evaluators of learners' learning as adduced by Neary (2003). Therefore, it was worthwhile in this study to investigate if the competency-based curriculum responds to the current needs of the society and whether it was effectively implemented in TVET institutions so that graduates could acquire relevant competencies as required by the labour market.

2.7. Market Labour Analysis

The market labour analysis is very vital particularly in the development of TVET curriculum. A Competency-based TVET curriculum should begin with the identification of training needs within various sectors and sub-sectors of the economy of a nation (CANTA, 2005). Strengthening this notion, TEVETA (2010) emphasised that the identification of every possible source of employment within economy of a nation is critical to the development of relevant TVET education curricula. As a result, it becomes very essential that TVET curriculum planners must be sure that all areas of employment are identified.

Mulder et al., (2011) argued that proper competency-based TVET curriculum development should be preceded by a profound labour market needs analysis. Further, TEVETA (2010) indicated that TVET curriculum needs to focus upon education that is realistic in terms of opportunities for gainful employment. In TVET programme, curriculum planners must design TVET curriculum-based on employment opportunities.

Employment, in this regard, is the occupation for which someone is paid. Basically, to design competency-based TVET curriculum, planners must assess current and future labor market demands in their communities if they expect to develop relevant TVET program.

However, the first problem faced by TVET curriculum planners is that accurate and guaranteed labour demands do not exist. By this time, it becomes very important to keep in mind the opportunities for self-employment. Self-employment is a situation in which an individual works for himself or herself instead of working for an employer that pays a salary or wage. Self-employed individuals earn their income through conducting profitable operations from a trade or business that they operate directly. Furthermore, it is important to note that being self-employed is a different situation from simply being a business owner. A business owner is someone who owns a company but does not work with the day to day operation of economy. Contrary to this, a person who is self-employed owns his/her own business of which he/she is the primary or sole operator (Daksa, 2013). In that case, graduates from TVET institutions for them to have marketable skills for the labour market they need to be well trained.

Similarly, Dadi (2014) adduced that competency-based TVET curriculum focus both on employment and self-employment opportunities. Further, labour demands projected beyond five years are most of the time inaccurate and could lead decision makers to the development of inappropriate TVET curricula. Yet, this situation should not stop curriculum planners from assessing future labor demands as best as they can with information that is available. Therefore, development of the curriculum should be collaborative with various stakeholders from industries so that the job opportunities should be in line with the curriculum. It was of great importance in this study to assess if the curriculum development process was collaborative and was in line with the available job opportunities in the country.

2.8. Assessment and Evaluation Methods for TVET institutions

Effective testing and evaluation of competencies is so critical to the success of competency-based instruction (CEDEFOP, 2008). Competency testing and evaluation must also be carefully planned and directed. Central to competency-based instruction systems is the feature that both the teacher and the student precisely know at all times

what is expected of the student in each learning situation OECD (2009). In that case, a detailed list of competencies with statement regarding the desired level of skill proficiency should be introduced at the very beginning of the students' program as indicated by Winterton et al., (2006). There are differences in meaning between testing and evaluation. These differences should be understood and acknowledged by the teacher who is converting them to a competency-based curriculum. According to Daksa (2013) a test is an instrument, a device or hands on task that can be used to measure the degree of student success in relation to pre-stated goals. Evaluation is a method through which the instructor can make a judgement on how effective the competency-based training system has been in helping the individual student gain knowledge, skills, and attitude. Thus, testing and evaluating in general, the assessment of competency-based training should incorporate knowledge, skill and attitude of the trainees who are in this case the students.

To conduct competency-based assessment, it is important to understand and apply the technical procedure of assessment and be aware of certain principles of assessment. According to Deibinger (2005), there are four principles of assessment. These principles are validity, reliability, flexibility and fairness. Deinbinger (2005) further defined each of these principles and described their processes in the following ways. Validity requires that assessment actually assess what they claim to assess. Validity assessment should cover the range of skills and knowledge sufficient to demonstrate competence. Assessment of competence should be a process which integrates knowledge and skills with their practical application. During assessment, judgment to determine a learner's competence should, wherever practicable, be made on evidence gathered on a number of occasions and in a variety of contexts or situations. Reliability as an assessment principle demands for methods and procedures that consistently measure the achievements from different learners over time. In this principle, assessment practices should be monitored and reviewed to ensure that there is consistency in the collection and interpretation of evidence Dadi (2014).

Moreover, Deibinger (2005) asserted that flexibility requires that a range of assessment methods referring to a range of delivery modes, learning sites and needs, are provided. According to this principle, assessment should cover both the on and off the job components of training. In this principle, assessment procedures should provide for the

recognition of competencies no matter how, where or when they have been acquired. Also, assessment procedures should be made accessible to learners so that learners can proceed readily from one competence standard to another. If this is done in TVET institutions, then the students competencies acquired will be of relevance to the society.

Fairness refers to equitable, accessible, transparent and participatory assessment for all. It means that individual learners must not be disadvantaged. In other words, assessment practices and methods must be equitable to all groups of learners and assessment procedures and the criteria for judging performance must be made clear to learners seeking assessment. Furthermore, there should be a participatory approach to assessment. The process of assessment should be jointly developed or agreed between the assessor and the assessed. Finally, opportunities must be provided to allow learners to challenge assessments and provision must be made for re-assessment Deibinger (2005)

In addition to assessment principles of competency-based training described above, Daksa, (2013) indicated that effective assessment system in competency-based training should measure only what has been presented to the student, use sound principles of test construction, and be objective, comprehensive, systematic and continuous. From these points of view, it can be concluded that, competency-based instruction assessment it is the only tool that should improve the performance and skills students acquire in TVET institutions.

In the same view, Winterton et al., (2006) in their study argued that curriculum reform demands the alignment of learner assessment systems and mechanisms. Assessment practices can exert powerful influence on teaching, on the taught curriculum and on education and training institutions ethos and organisation as also documented in OECD (2009). However, there is an inevitable tendency to devalue any learning aims (or learning outcomes) which are difficult to assess by the means that are currently available. As the way curriculum is being implemented, it does interact with assessment practices. Therefore, curriculum reforms should not be seen in isolation from assessment policies (CEDEFOP, 2008). The shift to learning outcomes in VET has several implications for learner assessment methods as explained by Winterton et al., (2006). For this reason, validation of non-formal and informal learning has raised the question of the validity of

assessment methods, which is also high on the agenda in formal education, given the new focus on integrating skills and knowledge and the transferability of competence from the educational to a professional context.

Although there is sometimes a long way from theory to practice, a range of developments can be seen in the VET segments of the case studies (OECD, 2009). With the same view, CEDEFOP (2008) documented that an important goal of the introduction of learning outcomes in curricula and of new methods of teaching and learning is to develop the ability of the learner to transfer knowledge and skills acquired in an educational context to an occupational context. However, in the TVET, all methods are not new and the use of all methods in combination can retain the lost image characterised the TVET institutions in the country. In order to enhance competency acquisition for students, it requires changes in assessment forms, for instance by increasing the weight of practical examinations and assessment at the workplace. Better still, written examinations are used to assess theoretical knowledge. They are developed by the centers of expertise on TVET and in rare instances the labour market. As well as reliability and objectivity, assessment methods have to be valid in the sense that they indeed describe and evaluate the professional skills and competence which are intended to be tested (Reetz and Hewlett, 2008).

This is also in agreement with the study done by Almed and Mukhtar (2014) in Malaysia which looked at Assessment for Learning: Practice in TVET. The samples of the study were based on the random selection of lecturers who were directly involved in Competence Based Assessment. A total of 554 Vocational lecturers from 20 Vocational schools in Peninsular Malaysia were chosen as the samples for this study. In their discussion, it was reported that assessment usually has more than one purpose and many interested parties. Competence based assessment provides information that can help improve students' learning and help lecturers in teaching. It should also improve students' learning and lecturers' teaching in order to ensure that students reach their individual potential. Lecturers, therefore, generally understand that assessment is integral to teaching. It has been believed that assessment is linked to the teacher-student relationship and occurs within this relationship. Hence, the results from this study indicated that in general, the lecturers' attitudes influenced the practice of competence-based assessment and it was suggested that lecturers' attitude and willingness to implement School Based

Assessment (SBA) are unpredictable despite having the necessary beliefs. A lot of time and effort would be required in order to see positive changes in lecturers' attitude and willingness to implement holistic assessment.

What the above concern and the study did not show however, was the assessment of student competency during course induction in TVET institutions, instead the study singled out the experience of lecturers in assessing the students. And yet, the assessment of student's competency in TVET institutions has recently become a contravention issue in the academic discipline. For this reason, organisations which include UNESCO (2015) and CEDEFOP (2008) have questioned the best way to assess the students in TVET institutions, is it in a classroom, workshop or in industry. This has remained a challenge in the academic discipline to analyse the best way to assess students for competency acquisition. Nevertheless, the researcher in this study tried to seek some answers to a situation such as the one identified in that particular studies in UNESCO (2015) and CEDEFOP (2008) so that the best means of assessing student's competence may be addressed.

In line with this view, Daksa (2013) in his study reported that TVET institutions were in a very weak condition in conducting needs assessment at institutional level which is the base for the provision of demand driven training, awareness creation and assigning trainees to their choice, trainers' competence and training facilities and provision of practical training. As a general principle, assessment tasks based on the concept of vocational competence should address all three aspects of the work process: planning, execution and evaluation. But this principle is not yet fully acknowledged in practice, partly because the examination system is very much decentralised. Final examinations based on the standards laid down in the training ordinance are developed and implemented by the local chambers of TVET institutions and sometimes the industry (CEDEFOP, 2008).

2.9. Students' Knowledge in TVET Institutions

Knowledge is the most critical component in the education sector and brings out a lot of questions to whether students do attain deep understanding in terms of knowledge acquisition particularly in TVET institutions (Fenwick et al., 2013). The fact is that,

building deep understanding entails determining students' prior knowledge, linking new learning to previous learning, creating visual representations, and helping students move beyond acquiring knowledge to applying what they have learned as articulated by Garraway (2011). In the journal published by Fenwick et al., (2013) which was on developing deep understanding about language in undergraduate Pre-service Teacher Programs through the application of knowledge reviewed David Perkins's theory of deep understanding which focuses on not only possessing knowledge, but also being able to think about, explain, and apply it beyond the classroom. This is in agreement with what Hughes et al., (2011) postulated and that is; Students should demonstrate varying degrees of deep understanding by both the quality and quantity of understanding performances. Understanding performances are the things students should show what they have learned. They include, but are not limited to, students' ability to: explain the learned concept in their own words, give new examples that demonstrate knowledge, apply the knowledge to a concept that has not yet been studied, justify or support their positions, compare and contrast the material learned to previously studied material, use new knowledge in the context of the general subject area, and make generalisations related to the subject.

In the same context, Derewianka (2012) was very much concerned to find out how student could reach deep understanding in a classroom and had to pose a question in his study that, how do we tell when a student has moved beyond fragile knowledge to deeper levels of understanding? In response to his question, he deduced that it is important the trainers do analyse student's performances of understanding by listening to what they say, and by examining the assignments they complete. In that case, it should be expected that students in TVET institutions will be able to explain, give examples, and successfully apply what they have learned in new contexts in the process of this research. As regards, if the students are able to demonstrate a command of the material that goes beyond superficial understanding then they should acquire competencies that will credit a merit to the society they will be saving. However, Darling-Hammond (2006) suggested that it is difficult for the learners to reach deep understanding of the knowledge they are exposed to unless they are able to construct their own concepts and make a relationship with other subjects. For this reason, it was strived in this study to ascertain the extent to which trainers in TVET institution ensure that learners have reached deep understanding.

With the same view, Hughes et al., (2010) reported that deep understanding should always result into deeper learning. Besides, deeper learning should embed activities that require learners to draw information from knowledge they have acquired and then do something meaningful with it. This is because the brain must develop the internal wiring necessary to process information efficiently in non-routine ways, deeper learning activities should be structured to give students multiple opportunities, over time, to apply knowledge in a range of challenging tasks as suggested by Garraway (2011). In essence, the learner should move from the novice to the expert level within the sphere of knowledge and expertise in question. This requires a range of strategies for processing information in sophisticated ways. Those strategies vary somewhat based on the subject area and nature of the activity, but all involve a commitment to systematic thought and analysis (Derewianka, 2012)

On top of that, Darling-Hammond (2006) argued that deeper learning requires a broader range of conscious learning behaviors from students than traditional schoolwork. In support of this assertion, Garraway et al., (2011) in his research suggested that students must accept responsibility for expending the time and energy necessary to think about a task, select the proper learning strategies, and judge how well those strategies are working. It is evident in this case that, when students encounter difficulty or setbacks, deeper learning requires that they should diagnose the type of difficulty they are facing, select appropriate strategies to resolve the difficulty, and continue forward toward their learning goals. Consequently, deeper learning expects students to be able to meet shared goals with others as well as to engage in the self-reflection necessary to continue learning throughout their lives and develop the right competencies required for them to preform quality tasks as they complete their programme from TVET institutions.

Mostly, a significant characteristic that should be illustrated in this study was that of affective domain which was in most cases neglected and not measured in terms of student's performance. Thus, deeper learning requires students to develop positive attitudes and beliefs about themselves in relation to academic work as suggested by Garraway et al., (2011). According to him, academic mindsets are the motivational components that influence students' engagement in learning. In turn, engagement in deeper learning reinforces positive academic mindsets, attitudes and beliefs and those are also important in influencing necessary skills and knowledge in students. In that case,

Feniwick et al., (2013) argued that students with strong academic mindsets readily put in effort to learn and persist in the face of difficulty. They make use of cognitive, metacognitive, and self-regulatory strategies because they care about learning and are purposeful in doing what is required to succeed. For the matter of this research, it was not clear whether students in TVET institutions their mindset, attitudes and beliefs were positive towards the acquisition of relevant competencies and what value they attached to the programme. That was a more reason in this research, it was extremely important to ascertain if students in TVET institutions do acquire necessary knowledge that could lead to deeper understanding and deeper learning.

In the same context, Hughes et al., (2010) analysed that students engaged in any form of education should develop positive academic mindsets, positive attitudes and beliefs about themselves as that could increase their academic perseverance and prompt them to engage in productive academic behaviors. Therefore, student's commitment was very important to seeing work through to completion, meeting their goals, and doing quality work, and finally search for solutions to overcome obstacles in the development of relevant competencies.

2.10. Lecturers in TVET institutions

TVET lecturers must be enabled to link closely with the world of work and local/regional communities/society to identify the real training needs and to develop appropriate training programs as well as for youth, adolescents and adults as suggested by Stolte (2009). In the same context Almed (2010) in his study on building capacity of lecturers and trainers in TVET stated that, teacher education has increasingly been recognised as the most crucial factor of quality in education. Almed (2010) further suggested that the goal of teaching is to support student learning. In achieving the inclusive education for all (EFA) goal of 'over-all improvement of quality in education at all levels', diversified innovations in teacher education have been promoted in UNESCO member states, for better initial-service preparation and in-service professional development and building capacity.

According to AU (2007), the professional and pedagogical competence of the technical teacher is crucial to the successful implementation of any TVET strategy. Governments should therefore make conscious efforts, not only to train but also to retain technical

lecturers in the system. Technical lecturers are always motivated through equitable remuneration packages and incentive schemes that should include government subventions and loans to teacher associations and special credit facilities for lecturers to acquire cars and houses.

With the same view, TEVETA (2010) annual report and in it, was documented that, TVET system managers, professionals and policy makers will also have to be trained and their skills upgraded to enable them confidently drive the new strategy with its various implementation structures such as qualifications framework, accreditation standards, assessment guidelines, quality assurance and accountability frameworks.

However, the shortage of TVET lecturers or instructors represents one of the obstacles to TVET development and quality acquisition among students in Zambia (TEVETA, 2015). In a similar context, a study done by Dadi (2014) entitled effectiveness of competence-based TVET curriculum in Ethiopia had reviewed a number of issues regarding lecturers in TVET institutions. In his study a concurrent embedded mixed research method was employed and it was reviewed that there was weak preparation of teaching learning materials, poor implementation of principles of competency-based training, poor TVET lecturers training and poor TVET institutions and industry linkage. The study further reviewed that the quality of TVET lecturers or instructors has suffered as a result of the low reputation of their profession and most of them have relatively low formal qualifications, severely affecting TVET delivery at higher qualification levels. Furthermore, technical lecturers, more often than not, have been unmotivated. They did not choose to become technical lecturers, but were placed in technical teacher colleges because there were no other options available to them.

Mostly, the study reviewed that existing TVET Lecturers or instructors are more often not practically skilled and not competent to teach or lecture in TVET institutions in accordance with the occupational standards. This is a result of a training system that long emphasised theoretical knowledge (though often not aligned with modern technology requirements), disregarding the importance of practical skills and appreciation of the world of work. This is a more reason it was documented in NICHE (2010) that, the quality of student's competency is dependent upon the quality of its lecturers. However, the study

carried out by Dadi (2014) did not explore the conditions of services of lecturers and their experiences as regards to teaching as well as a relationship with students. Thus, this study sought to find out the qualification of lecturers in TVET institutions because the quality of student's competency acquisition is also dependent on the qualification and experience of lecturers.

Moreover, Rajesh and Majumdar (2010) in their Journal of engineering, science and management education titled preparing lecturers of today for the learners of tomorrow, it was reviewed that there are several factors that affect the quality of TVET institutions, particularly in generating workers with qualified knowledge and skills. The quality of any education system ultimately depends on the quality of interactions and relationships that occur between learners and Lecturers. Therefore, the quality of lecturers' education is crucial to determine the knowledge and skills of future workers. Without adequate number of professionally qualified lecturers, TVET cannot offer the qualified skilled workers. It was supreme in this study to assess if the lecturers were upgraded in their field of specialisation and whether they had some interactions with the industries so that they could acquire knowledge and skills required to train students.

In addition, a study carried out by Almed (2010) which was looking at Building Capacity of Lecturers and Trainers in Technical and Vocational Education and Training in Sudan reviewed that for the purpose of effective TVET training, lecturers need to be well trained in both pre-service and in-service training programs. The purpose of a pre-service training for TVET lecturers and trainees is to lay the foundation for building of professional capabilities in TVET teaching and practicing multidisciplinary teamwork. However, without updating of knowledge, skills and competencies acquired during pre-service training, TVET lecturers run the risk of rapidly becoming ineffective in their teaching capacity. However, that study did not venture into the aspect of how the lecturers should acquire competencies and the experience with the industry. Once again that study did not explore the other factors which include conditions of services, TVET facilities and the relevance of TVET curriculum as the ones among the challenges that could contribute to the lecturer's ineffectiveness in their teaching capacity. Though in a different context

(Zambia), the study sought some answers to lecturers' qualification and their experience with the industry.

In a similar situation, Studies on teaching and learning strategies have shown high lecturer preference to teaching theoretical over practical aspects of the TVET subjects. An example is the study by Ferej, Kitainge and Oako (2012) as cited by Kigwiru (2014) in his doctoral study which looked on Determinants of Effective Implementation of Artisan and Craft Curriculum in Catholic Sponsored Community Colleges in Nairobi Region, Kenya in which he established that majority of lecturers had inadequate work experience. Out of the TVET lecturers interviewed, 38 percent had acquired industrial work experience of only six months or less, 26 percent had work experience of between 12-36 months and 16 percent had work experience of over 36 months. The importance of industrial experience for Artisan and Craft lecturers cannot be gainsaid. Adequate initial work experience and regular updating enables the teacher reflect on and demonstrate the appropriate work context to his or her students. The lecturers' working experience in Kigwiru' (2014) study was not explained how it could contribute to lecturers' knowledge that would enable them effectively equip students with relevant competencies that this study sought to feel the gap.

Moreover, Simiyu (2009) argued that teaching experience enables trainees to gain hands-on experience. The findings of the study showed that two thirds (67 percent) of the TVET lecturers were more comfortable teaching theory than practical. Undoubtedly, the preference to teaching theoretical content to practical aspects of the curriculum will affect the effective implementation of curriculum in TVET institutions. Conceptually, ILO (2015) observed that there seems to be a lack of a clear career pathway or clear stages of professional development. Pre and in-service programmes for lecturers and instructors are often not in place, creating difficulties for personnel working in a sector such as TVET, which is highly dependent on innovations and technology-driven, to function effectively without their own training support framework. Innovations also require very close contacts with enterprises and other stakeholders, including employment services, labour market institutions and other social partners, with other vocational lecturers and of course

with TVET students, for purposes of effective teaching/training, career guidance and more.

Consequently, in many countries of the world in-service training for TVET lecturers is very practical solution for increasing their professional levels as also indicated by ILO (2010). Therefore, this study endeavored to establish how effective pre-service and in-service programs aimed to equip lecturers with necessary skills and how often were conducted in TVET institutions.

In general, highly competent, qualified, motivated, flexible and creative TVET lecturers and instructors are the backbone of any TVET system, capable of adjusting to changing technological environments and creating conducive learning environments for different target groups ILO (2010). To this end, the Government of Zambia is in the process of fundamentally overhauling the system and provision of TVET teacher or instructor trainings (Nkhanza, 2008). In that case, this was done by introducing new Bachelor programs in Technology at Technical Vocational and Training College (TVTC) in Luanshya district. This strategy will emphasise strengthening practical competencies and the appreciation of practical work among TVET lecturers or instructors. Further, frequent internships in the industry during the training will be introduced. The modularisation of curricula will allow for flexible entry and exit into TVET teacher/instructor trainings. The intention is to make the TVET lecturers capable of developing curricula, assessment tools and Teaching, Training Learning Material (TTLM) and to make them able to manage the training activities in the workshop in accordance with the requirements of the standards. In this way, TVET lecturers who are willing to teach in the sector should be able to comply with requirements of the occupational and methodological standards.

Moreover, teacher professionalism has predominantly a dual component: knowledge and expertise in the subject or discipline being taught and pedagogical knowledge and expertise on how to teach their subject within socio-economic contexts (Murray 2005). According to Almed (2010) the TVET teacher should be grounded both in his substantive, pedagogical organisational and research domains. Besides possessing this subject science knowledge, he must be grounded in pedagogic methods, manifesting mastery of the learning and teaching process as a facilitator, a motivator, besides displaying the ability

to design, implement and evaluate education processes (pedagogic domain). In support of these assertions, a doctoral study conducted by Mulenga (2015) which was based on designing of the English language teacher education curriculum at UNZA indicated that even with the availability of all the necessary instructional materials, student performance would be below average if the teacher was not well grounded in the content and methodology of teaching. Therefore, lecturers should have knowledge of the content and methods for them to teach students with less challenges.

In addition, Darling-Hammond (2006) also had explained that if lecturers are viewed primarily as channels of information for pupils, one could argue that all they needed was general content knowledge and the ability to give lectures in order to do an adequate job in schools. For this kind of teaching then, it is easy to believe that a liberal arts education (general teacher education curriculum) could be sufficient preparation. But if lecturers need to be able to ensure successful learning for pupils in schools, then they need to be diagnosticians and planners who understand a great deal of the curriculum they are to teach and should have a repertoire of tools or skills at their disposal to do so. A professional curriculum which is tailored to the job description of the teacher is likely to equip the teacher with the required knowledge and skills (Wither, 2000). However, poor preparation of lecturers is detrimental to student's competency acquisition and this is a more reason this study was aimed to investigate the teacher's qualifications and their experiences in TVET institutions. Teacher professionalism and expertise enhances and influence in a positive way the teaching and learning practices.

2.11. Practical Skills

According to the 2015 labour Market survey conducted by TEVETA and Korean Research Institute for Education and Training (KRIVET) in their report it was indicated that there were 48.9 percent skills shortages in terms of artisans, technicians and technologists in the construction sector and 27.3 percent of different skills requirements in the hospitality industry (TEVETA, 2015: 4). The report further indicated that many jobs were unfilled due to skilled workforce shortage and slow generation of jobs. In order to segment these findings, in the same report Dr kyetaik Oh the KRIVET associate fellow in his presentation of the findings, reported that, "There is war for talent… many firms struggle

to find the right people. Education institutions thus loss opportunities for national development. Skills shortages poses a significant limitation on long term economic growth and economic opportunities".

In support of the assertions, UNESCO (2015) reported that there is a huge gap between demand and supply of skilled labour. In the same vain, Wallernborn (2010) suggested that the skill gap exhibited in students particularly from TVET institution is due to curriculum and inappropriateness of training programmes in the construction sector and in order to overcome this, there is a need to recruit more highly skilled workers to improve performance such as planning, managing and designing construction projects. The skills gap between the industry and TVET students has an adverse effect on the growth of the Zambian economy. Thus, TEVETA (2015) report indicated that foreigners have been taking over jobs in many sectors of the economy and most companies indicated that they did not have adequate skilled workers to make them competitive. As a result, companies in the construction industry hired skilled workers from other countries. This denied the local people much needed employment and sustainable income. As regards, much as skills gap has been pointed out by many concerned stakeholders, they do not outline what actually contributed to that. This was a more reason the researcher was determined to find out if students were given time to perform the various tasks they learn and acquire in the industry as they progress in the TVET programmes.

In spite of the documented literature in the preceding sections that discuss skills gap, the question of gender was not clearly stated. Of interest to this study, other studies that have been carried out in the context TVET regarding the women participation in skill development in Zambia, had similar findings. In their study, it was reviewed that female enrolment was particularly low in technical and scientific courses, making them traditionally male dominated fields. Also, the proportion of male students who dropped-out of technical and scientific courses was generally slightly lower than for females. It was further argued that social and cultural biases such as sex-stereotyped beliefs and practices constrained female participation and progression in technical training and occupations. This was attributed to the poor background in sciences and mathematics, which instilled a sense of inferiority or lack of confidence among females. Besides,

barriers of forming a viable working life was related to lack of information, deficient skillset, shortage of rescores and poor communication were also among the findings that hinder women's' participation in technical courses (Zulu, 2008. Nikolaisen, 2011). Therefore, this study had to take a blind approach on gender disparity and focus on both sexes because all were considered to be drivers of economic development and the focus was on some selected technical courses that were offered by TVET institutions in question so as to understand how students acquire practical skills.

2.12. Industrial Attachments in TVET Instructions

The skills gap indicated in TEVETA (2015) are a matter of concern and can only be overcome by students having industrial attachments in reputable and advanced industries equipped with new technology. Therefore, Industrial attachment refers to the formal placement of trainees in the work place to facilitate the achievement of specific learning outcomes that would potentially lead to their employability on completion of a training program. Industrial attachments typically involve training providers and industries or employers in forming partnership to offer situated learning opportunities in the work place so that learners and TVET practitioners have access to authentic experiences that only the work place can offer (Choy & Hauka, 2009).

The study that was done by Keiser et al., (2004) on technical education curriculum assessment reviewed that industries are the only place for students to learn competencies and execute competencies learned at school or training institutions. In this regard, some industries play their roles in ensuring that adequate competencies are built in students by accepting students for industrial attachment; moreover, other industries willingly accept students who are sent for demonstrations and practical activities. Thus, industries should play important roles to help TVET institutions to train relevant, competent and competitive graduates who will fit easily to the world of work. Some of these roles are: experts from industry should accept more collaboration to provide the desired training for trainees and industries should open their door for TVET staff and trainees to acquire industrial experiences.

With the same view, a doctoral study done by Daksa (2013) which looked on current practices and prospects of Technical and Vocational Education and Training (TVET) in

east wollega zone in Ethiopia argued that industries should work together with TVET as partner in research development and dissemination of appropriate technology, and they should assist TVET institutions to assess, review curricula and share information regularly. Furthermore, industries should provide equipment to TVET institutions for training students theoretically and helping them practically in order to link theory with practice. UNESCO (2016) and Wallernborn (2010) in support, documented that, Scholars, learners and employers across the globe agree that the workplace is the most authentic learning environment to train a competent workforce. The workplace provides a context for learners to transform into skilled workers and construct socially meaningful knowledge and skills. Training providers and industries, through employers, form partnerships to offer situated learning opportunities in the workplace so that learners have access to authentic experiences that only the workplace can offer.

On the contrary, Akoojee (2007) in his study reviewed that public providers and were not necessarily able to secure more effectively employment opportunities for their pre- and unemployed learners. This meant that there was a problem in making linkages between TVET institutions and the industries. Though in a different context (Zambia), this study tried to seek some answers in TVET public institutions and how effective was the linkage with the local industries.

Besides, industry attachments have long been accepted as a core component of training for trainees and are well structured and coordinated. Although industry attachment for lecturers and trainers is equally important, it has not received parallel attention, coherence or coordination at the policy or organisational levels (Choy & Hauka, 2009). Hence, it was not as clear as it should be that, TVET institutions particularly that were situated very far from industries, could have had challenges to engage their students for industrial attachments. This was a more reason that the researcher thought to take a different scope in assessing whether there was a cooperative training between TVET institutions and the industry to equip students with relevant skills.

2.13. The Identified Gap in Literature review

The purpose of this literature review was to scrutinise the trends in TVET particularly in understanding students' competency acquisition so as to establish a gap that this study

was trying to fill. Hence, the literature was purposely searched and reviewed on the basis of its relevance to the main themes and the references consulted were not exhaustive since TVET curriculum implementation was a growing discipline. The reviewed studies, all saved the purpose of establishing the gap on students' competency acquisition that had continued to pose a challenge in TVET institutions in Zambia and around the globe in developing relevant competencies among students.

Reading through the existing literature, it was discovered that there seems to be no research that has been done on students' competency acquisition as regards to analysing TVET curriculum implementation in Zambia. The importance of this research, therefore, was that it seemed to be the first of its kind in this discipline in Zambia and the research, partly, departed away from most of the reviewed studies on TVET institutions in this chapter. Instead, the study had gone further to look at the factors that hinders students from acquiring relevant competencies rather than concentrating on numerous challenges that TVET institutions face. This research, therefore, in literature review, pertinent issues based on lecturers' qualification and their experience, status of infrastructure curriculum in TVET institutions, assessments of students, how students acquire deeper understanding of knowledge, industrial attachment, labour market analysis and skills have been reviewed and these are some of the areas that this research was trying to fill the gap. Thus, a research needed to be conducted because it was not sure how the students in reality do acquire competencies in TVET institutions.

While other researchers have used either a qualitative or quantitative approach in their studies, in this study, the researcher endeavored to take a holistic approach by using both in the mixed method approach so as to have a better understanding of the research problem under investigation. Mostly, this study may seem to have come at any better time than now when some Zambians are living beneath the national poverty line due to high levels of unemployment, and when the rural population is about 70 percent experiencing sever inequality as documented by UNESCO (2013). Additionally, when there is a demand for the new-based knowledge economy and a demand for the new competencies for students as they survive in the 21st century.

2.14. Summary

In this chapter, some literature on student's competency acquisition has been reviewed in relation to the following subsections: teaching and learning resources in TVET institutions, lecturers' qualification and experience, TVET curriculum and industrial attachment. The study revealed that teaching and learning resources were not appropriate and adequate to develop necessary competencies that were needed by the industry and TVET institutions had challenges in retaining highly qualified lecturers thereby allowing lecturers with low qualifications to teach the students. It was also indicated in the studies that the TVET curriculum was not relevant to the industrial practices and there was a lot of gaps on issues surrounding industrial attachments. As a result, this had put TVET institutions at a spot check of not delivering improved training that could enhance students' competencies acquisition. In the following chapter, a detailed research design and methodology that was used to conduct this study are discussed.

CHAPTER THREE: METHODOLOGY

3.1. Overview

In this chapter the methodology used in the study is discussed. The chapter is presented under the following sections: research paradigm, research design, study site, population of the study, sample size, demographic characteristics of respondents, sampling techniques, data collection instruments, procedure for data collection, validity, reliability, trustworthiness, pilot study, data collection procedure, data analysis and ethical considerations.

3.2. Research Paradigm

Firstly, it is important to discuss the underlying philosophical research framework that formed the foundation of this study before discussing the research design and methodology. Pring (2000) argued that research paradigms inherently reflect beliefs about the world we live in and want to live in. In this research, a constructivism paradigm was implored and its view is that there is no single reality or truth, and therefore reality needs to be interpreted (Cohen, Manion, & Morrison, 2003). This paradigm enabled the researcher to investigate students' competencies, their learning, experience, cultural context in real-life setting.

In addition, Pring (2000) argued that a research paradigm is an all-encompassing system of interrelated practice and thinking that define the nature of enquiry along three dimensions namely; ontology, epistemology and methodology. Ontology is the study of reality whereas epistemology is the study of knowledge and methodology is the strategy used to discover the reality and knowledge.

Therefore, this research was guided by the mixed methods approach. A mixed method is a procedure for collecting, analysing, and "mixing" both quantitative and qualitative methods in a single study or a series of studies to understand a research problem (Creswell & Plano, 2011). Further, Creswell (2012) suggested that the basic assumption is that the use of both quantitative and qualitative methods, provide a better understanding of the research problem under investigation than either method by itself. He further explained that mixed methods research is a good paradigm to use because it builds on the strengths

of both quantitative and qualitative data. Neither quantitative nor qualitative methods were sufficient by themselves to capture the trends and details of the situation of student's competency acquisition that integrates teaching and learning resources, knowledge and practical skills.

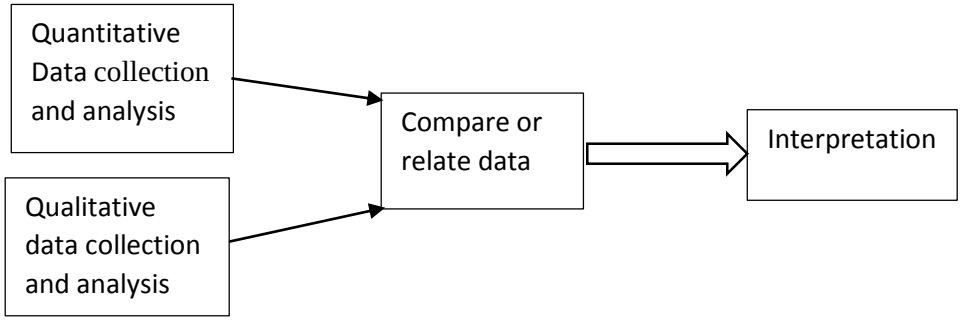
3.3. Research Design

A research design is important as it facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible and yielding maximal information with minimal expenditure of effort, time and money (Kothari, 2004). Kombo and Tromp (2006) defined a research design as the structure of research. It is the glue that holds all elements in a research project together. In simple terms, a research design can be defined as a systematic and scientific plan for the research. Therefore, the function of a research design is to ensure that the evidence obtained enables the researcher to answer the initial question as unambiguously as possible and to evaluate a programme or to accurately describe some phenomenon (De Vaus, 2001).

This study used a convergent parallel design which is sometimes referred to as convergent concurrent design. Onwuegbuzie and Frels (2013) argued that the key components of a convergent parallel approach, as with any other mixed methods approach, has to do with priority and sequence. In terms of priority, both qualitative and quantitative approaches should be given equal weight. In terms of sequence the researcher should simultaneously collect both quantitative and qualitative data, analyse both datasets separately, and then compare the results from the analysis of both datasets, and makes an interpretation as to whether the results support or contradict each other. In this study the use of convergent concurrent design was eminent because the nature of the data that was collected required the use of both qualitative and quantitative approaches.

Within this design, the researcher had the opportunity through the use of qualitative approach to gather in-depth data from TEVETA officials and from College Principals whereas quantitative approach facilitated the collection of data from the lecturers in TVET institutions and the students. These approaches complemented each other and provided

for the triangulation of findings and greater validity of the emerging inferences. Figure 3.1 illustrates how the convergent parallel design was applied in this study.



Source: Adopted from Creswell, 2012

Figure 3. 1: ***Illustration of the Convergent Parallel Design***

3.4. Study Site

The study site as defined by Kothari (2004) is a demography area or a zone of proximity in which the research is to be carried out. In support, Kombo and Tromp (2006) stressed that the selection of the study site is essential as it influences the usefulness of the information to be produced. The study was conducted at two TVET institutions in Eastern province (see Appendix L).

3.5. Target Population

Msabila and Nalaila (2013) stated that a population refers to a complete set of elements (persons or objects) that possess some common characteristics defined by the sampling criteria established by the researcher. In this study, the target population consisted of all the officials from TEVETA, all college principals, all lecturers and all students from TVET institutions in Eastern Province. Considering the target population, all the members had a chance to be selected as participants in the study.

3.6. Sample Size

Kothari (2004) stated that, a sample size refers to the number of items to be selected from the population and 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. Similarly, Bryman (2008) defined a sample as the segment of the population that is selected for investigation. Hence, the most important thing in sampling is to identify an appropriate sample from which to acquire data.

In order to justify the sample size, Dellinger (2005) stated that the sample population should be within reach and accessible. In this study, the sample population from two TVET institutions and including officials from TEVETA was hundred and fifty-six (156) which was within reach and accessible. For quantitative data collection the researcher targeted a sample size of participants that could give a 95 percent level of confidence and 5 percent (0.05) sampling error using the Yamane (1967) formula as shown below.

The formula: $n = \frac{N}{1+N(e^2)}$

Where: n= sample size N= total population e = desired margin error

Based on the Yamane formula, the calculations were as follows:

i. Using this formula, the study sample for second year students in technical courses at Trades School 1 was calculated as follows.

- Total student population (N) was = 64

Whereas: n= sample size, N= Target population=64, e = Desired margin error (0.05),

e^2 = 0.0025

i.e. $n = \frac{64}{1+64(0.0025)}$

$n=\frac{64}{1+0.16}$

$n=\frac{64}{1.16}$

n= 55 respondents

Therefore, the sample size for all second-year students was **55** (Trades School 1)

ii. The study sample size for lecturers at Trades School 2 was 18

- Total student population (N) was = 18

i.e. $n = \frac{18}{1+18(0.0025)}$

$n = \frac{18}{1.045}$

n =17 lecturers (Trades School 2)

iii. The study sample for second year students in technical courses at Trades School 2

- Total student population was = 50

i.e. $n = \frac{50}{1+50(0.0025)}$

$n = \frac{50}{1.125}$

n =44 students

iv. The study sample size for lecturers at Trades School 2 was 22

- Total student population (N) was = 22

i.e. $n = \frac{22}{1+22(0.0025)}$

$n = \frac{22}{1.055}$

n =20 lecturers

Thus, from the calculations based on the Yamane (1967) formula, the intended sample was as follows: 37 lecturers and 99 students from the two TVET institutions. In addition, one TEVETA Director (curriculum planning), one TEVETA Manager (Curriculum), two college principals from two TVET institutions. Table 3.1 gives the summary of the sample

that was intended and the actual sample that participated in the study as well as the response rate.

Table 3. 1: ***Summary of the intended and actual samples***

Respondents	Intended Sample	Actual sample	Response Rate (%)
TEVETA Director Curriculum Development	1	1	100
TEVETA Curriculum Manager	1	1	100
Principals	2	2	100
Lecturers	37	31	84
Students	99	85	86
Total	**140**	**120**	**86**

Hence, based on the calculations, the response rate of 86 percent of respondents participated in the research. The response rate could have been higher if all the questionnaires were returned and if some students could have been present for observation during practicals in the workshops. The description of how the respondents were selected is what is described in the following section.

3.7.1. Demographic Characteristics of the Respondents

In this section, the demographics characteristics of respondents have been presented which include; TEVETA Director Curriculum, TEVETA curriculum manager, college principals, lecturers and students.

3.7.2. TEVETA Director Curriculum and TEVETA Curriculum Manager

The two officials from TEVETA, Director Curriculum planning and Curriculum Manager were interviewed. TEVETA is an institution which is responsible for regulating, coordinating and monitoring Technical Education, Vocational and Entrepreneurship Training in consultation with the industry, employers, employees and other stakeholders.

Thus, Director Curriculum planning and Curriculum Manager have a responsibility of ensuring that a well developed and implemented TEVET research, innovation and knowledge management system is in place. They are also charged with the responsibility to develop and continuously review TEVT curricular so as to ensure relevance and responsiveness to national development. These officials namely; Director Curriculum planning and Curriculum Manager were interviewed on different scheduled meetings. All the interviews were recorded and conducted in English so that the researcher could understand and interpret the interviewee's verbatim as well as having an opportunity to ask follow up questions.

3.7.3. College Principals

In this study, question one from the interview guide for principals sought information about the experience of college administrators and their industrial experience (see Appendix F). The college principals who were interviewed were both males and this indicated that there was unevenly representation of women administrators in the study. The two principals were above 50 years of age which showed that they had worked for more than ten years in lecturing as well as in administration. They also had some experience in the industry and were likely to be well vest with the issues pertaining to TVET in their colleges.

3.7.4. College Lecturers

This section presents the demographic information of lecturers who participated in this study. 37 lecturers were sampled but only 31 participated in the study by filling in a questionnaire and the rate of questionnaire completion was at 86 percent. Question one and two from the interview schedule for principals sought information on gender and age of lecturers. Table 3.2 shows the summary of information on lecturers' gender and age.

Table 3. 2: ***Frequency and percentage distributions of lecturers according to gender and age***

Variable	f	%	Total	
			Number	Cumulative%
Gender (n=31)				
Male	24	77	31	77
Female	7	23		100
Age Range (n=31)				
20-30	4	13	31	13
31-40	9	29		42
41-50	10	32		74
51 and Above	8	26		100

Table 3.2 indicates that 77 percent of lecturers who were respondents in this study were male while the remaining 23 percent were female. This shows that the number of female participations was extremely low. The Table 3.2 also shows that 13 percent, 29 percent, 32 percent and 26 percent represented the age group of lecturers in the range of: 20-30 years, 31-40 years, 41-50, and 51 years and above respectively. The age groups distribution shows that the majority of lecturers of 87 percent were above 30 years which might simply mean that those two institutions sampled had mature lecturers with a good understanding of TVET programmes.

3.7.5. Students

The second-year students in technical programmes participated in this study and were observed during practicals in the workshop. The students' competency checklist was used to collect information from students about gender and a total of 85 participated in this study. Table 3.3 provides a summary of information on students' gender.

Table 3. 3: ***Frequency and percentage distributions of students by gender***

Variable (n=85)	**f**	**%**	**Total**	
			Number	Cumulative %
Gender			85	
Male	66	78		78
Female	19	22		100

Table 3.3 indicated that 78 percent of students were male while the remaining 22 percent were females. This reveals that the number of women participating in technical courses was still low.

3.8. Description of the Sample and Sampling Procedure

3.8.1. TEVETA Director Curriculum Planning and TEVETA Manager Curriculum

It is the responsibility of the director of TEVETA curriculum planning and TEVETA Manager Curriculum to ensure that TVET policy which governs the TVET institutions in Zambia is implemented. These two have a mandate to ensure that the management of TVET institutions in the country is well coordinated and the graduates from TVET institutions acquire relevant competencies for various job prospects for the labour market. For this reason, they were purposively selected as they were assumed to have in-depth understanding and experience regarding TVET programmes in Zambia.

3.8.2. Colleges for TVET

Eastern province had a total number of twelve TVET institutions. However, eight of them were grade three while the other four were grade two. Regarding the grade three TVET institutions, TAVETA (2016) reported that these institutions have a number of challenges in areas of administration and management systems in place, qualification of staff, low students' enrollment and other relevant facilities as compared to grade two TVET institutions. Further, Grade two TVET institutions are big in terms of the students' enrolment while grade three schools have a lower population as compared to grade two TVET institutions. The grade two TVET institutions have a well-established

administrative structure system and offer craft certificates for a duration of two years. Therefore, Eastern Province had four grade two TVET institution of which all of them had an equal opportunity to be selected in the study. All the four TVET institutions were coded with numbers from one to four on four pieces of paper and four pieces were put in a small cup. Using simple random sampling, two pieces of paper representing two grade two TVET institutions (Ukwimi and Chipata) out of a total of four were selected and these two institutions in question were a representation of grade two institutions in Eastern Province.

3.8.3. Principals for TVET institutions

The principals of the two TVET institutions were selected in the sample because they were directly responsible for the leadership and administration of the TVET programme implementation according to the TEVETA (2015) guidelines. Thus, purposive sampling was used to select each college principal from the sampled TVET institution. Considering that, principals might have in-depth understanding and experience about matters relating to TVET programmes.

3.8.4. Lecturers for TVET Institutions

Lecturers are directly involved in the implementation of the TVET curriculum and the way they implement the curriculum influences the courses' direction and outcomes. They are also co-administrators in the institution as the provide guidance to the administrators and to the students. The names of lecturers were stratified into two stratums of male and female so as to have a well representation of both sexes. However, the situation was that, the number of female lectures was very small, thus all of them were included in the sample. Using simple random sampling 13 lecturers were drawn from male stratum were as four females were all included in the sample at Ukwimi Trades. Similarly, using simple random sampling 16 lecturers were drawn from male stratum were as four females were all included in the sample at Chipata Trades Training Institute Management Board. Thus, 37 lectures in total were sampled for the study. One of the advantages of using simple random sampling is that each member of the population under study had an equal chance of being selected and the probability of a member of the population being selected is

unaffected by the selection of other members of the population as suggested by Cohen, Manion and Morrison (2007).

3.8.5. Students

Students are the direct beneficiaries of the TVET programme. It is for this reason that a bigger number from them was sampled. For this study, the second-year students who were about to complete their programmes were targeted on the basis that these could identify what they had learnt since they were in their final year of study. Using the students' register in each TVET institution, stratified sampling was employed to group students into strata of male and female. Stratified sampling was preferred here to ensure that both male and female were represented in the sample. However, the student enrolment was very low as well as the number of female students in all TVET institutions sampled. Therefore, all female students were included in the sample whereas males were sampled from each strata using simple random sampling. A total of 43 males and12 female were selected from Ukwimi Trades giving a total of 55 second year students whereas 37 males and 7 females giving a total of 44 second year students were selected from Chipata Trades Training Institute Management Board. Hence, in this study a total of 99 students were selected.

3.9.1. Description of Research Instruments

In order to collect reliable qualitative and quantitative information for this study, the following instruments were used; interview schedules, questionnaires and observation checklist. Questionnaires were used to collect information from lecturers whereas interview schedules were used to collect information from the TEVETA Director Curriculum Development, TEVETA Curriculum Manager and College Principals. Besides, students' observation checklist was used to collect data from students on basic competencies that were exhibited during practicals in their respective programmes and these competencies included among others; self-responsibility, management of tasks, management of others and the management of the environment (Cohen, Manion and Morrison, 2011). Observation checklist was also used for triangulation so as to supplement information that were collected from interviews and questionnaires on the availability and use of instructional materials, students' competency acquisition, student assessment, physical facilities and the teaching and learning process. A brief description of each

research instrument and the type of data that was collected is presented in the sections that follow.

3.9.2. Interview Schedules

Two interview schedules were designed and were used to collect information from the TEVETA officials (Curriculum Development Director and Curriculum Manager) and the two College Principals. Although this method of collecting data is time consuming, it was very effective in such a way that topics and issues that were covered were specified in advance and the outline increased the comprehensiveness of the data. Also, interviews remained fairy conversational and situational in a more clearly and comfortable language. This is what is advocated by Cohen, Manion and Morrison, (2011).

3.9.2.1. Interview Schedule for TEVETA Officials (Curriculum Development Director and Curriculum Manager)

The interview schedule was used to collect data about the qualification and the experience of lecturers, relevance of curriculum to the labour market, appropriateness of teaching and learning materials, students' assessments and industrial attachments. Further, the challenges that TVET institutions faced and possible solutions were collected using the same interview schedule and it was for both Curriculum Development Director and Curriculum Manager from TEVETA (see Appendix E).

3.9.2.2. Interview Schedule for College Principals

This instrument (see Appendix F) was used to collect information about the curriculum implementation in TVET institutions, lecturers' qualifications and experience, status of infrastructure and learning materials, assessment methods and about the effectiveness of industrial attachments. The instrument was also used to seek information about the strengths and problems of TVET institutions faced to equip students with relevant competencies.

3.9.3.1. Questionnaire

According to Kombo and Tromp (2006), a questionnaire is a research instrument that is used to collect data from a large sample. A questionnaire in this study was preferred to

collect information from lecturers because they also form a large group of the sampled population. A questionnaire had both open-ended and close-ended questions. Above all, Sarantakos (1996) as cited by Mulenga (2006) explained that questionnaires are helpful in collecting quantitative information because they can collect objective, consistent data and can give respondents time to consult files and are a uniform measure.

3.9.3.2. Questionnaire for Lecturers

The questionnaire for lecturers consisted of sections A to C (see Appendix D). Section A was used to collect information about the demographic characteristics of lecturers. Section B was used to collect information about the nature of infrastructure, curriculum for TVET institutions, appropriateness of teaching and learning materials and about TVET institutions and industry linkage whereas section C was designed to collect data about assessment methods, understanding of knowledge, skills gap, challenges and possible solutions to address the students' competency acquisition.

3.9.4.1. Observation

Cohen, Manion and Morrison, (2011) suggested that the distinctive feature of observation as a research process is that it offers an investigator the opportunity to gather 'live' data from naturally occurring special social situation. In the same way, the researcher can look directly at what is taking place in a situation rather than relying on second-hand accounts. Of particular interest to this study, two observation checklists for teaching and learning material and for assessment of students' competency were designed as indicated in the following sections.

3.9.4.2. Observation Checklist for Teaching and Learning Material

The observation checklist in Appendix G was used in this study to find out the appropriateness and availability of teaching and learning materials for students as well as on the availability of college physical facilities and equipment.

3.9.4.3. Observation Checklist for Students' Competency

The observation checklist in Appendix H was used to collect information on basic competencies that every student was expected to demonstrate during practicals. In it, aspects which included student self-responsibilities, responsibilities to others in the

workshop, management of tasks, management of the environment during practicals and adherence to safety rules within the workshop were addressed. This was necessary because a total of 85 students' out of 99 that were selected in this study were observed during practicals respectively to their programmes. Some students particularly those in General Agriculture programme were observed in the piggery, orchard and in the gardens whereas students in other technical courses were observed in their workshops as they were demonstrating the actual skills acquired in their programme. Thus, it was easier to analyse the competencies that students had acquired over a period of their training in TVET institutions by using an observation checklist for students.

3.10. Validity, Reliability, and Trustworthiness

It was extremely important to ensure that the credibility of research findings for this study was addressed. The aspect of validity, reliability, and trustworthiness were taken care of as explained in the sections that follow.

3.10.1. Validity

Cohen, Manion and Morrison (2011) defined validity as the extent to which an instrument measures what it is supposed to measure and perform what it is supposed to perform. In order to address validity in this study, the pilot study was conducted from another research site that is, at Thornpark Construction Centre in Lusaka, a campus for Lusaka Business and Technical College. The research instruments which included questionnaires and interview schedules were piloted and that ensured the clarification and modification of difficult questions that were designed. Further, the supervisor provided guidance on how quality research instruments (interview schedule and questionnaire) should be developed and these research instruments were given to three academicians, the lecturers from the University of Zambia for their judgement and their comments were incorporated in the development of relevant research instruments for the study in question.

In addition, the competency observation checklists were filled in regularly together with the taking notes at the time of this study. Thus, these different types of data sources, also helped in data triangulation and counter the threats to validity. Triangulation is the use of two or more methods of data collection in the study and the exclusive reliance on one

method, therefore, might create bias or distort the researcher's picture of the particular reality being investigated (Smith, 1975).

3.10.2. Reliability

Reliability is the ability of the research instrument to produce the same results when it is administered under the same conditions as defined by Cohen, Manion and Morrison (2011). Similarly, Creswell (2012) suggested that reliability is concerned with the consistency of the results obtained from a measuring instrument. To ensure that the research instruments remained consistent, some research instruments which included questionnaires and interview guides were piloted so that corrections and modifications could be made. As earlier pointed out, a convergent parallel mixed-methods design was used in this study. In that case, quantitative and qualitative method complemented each other and provided for the triangulation of findings. This provided greater reliability of the emerging inferences. This is also in line with Patton (1990) who suggested that combination of methods ensures that inconsistencies are removed and thus valid and reliable data emerges.

Regarding the reliability of the questionnaire, a pilot test was conducted at Thornpark Construction Centre in Lusaka, a campus for Lusaka Business and Technical College. A total of 20 questionnaires were distributed to lecturers and only a total of 12 questionnaires were collected. The information from 12 collected questionnaires was analysed using statistical package for social sciences version 20 and the Cronbach's Alpha test was used to calculate reliability. Pallant (2007) stated that a value of 0.08 is seen as an acceptable value for Cronbach's Alpha and values lower than 0.08 indicate unreliable scale. Most questions in a questionnaire had indicated a Cronbach's Alpha values of 0.08 and above but for the questions that had values lower than 0.08, were corrected and modified.

3.10.3. Trustworthiness

Although there are arguments to accept the trustworthiness of qualitative findings, yet, criteria for ensuring rigour in this form have been in existence for many years which include credibility, transferability, confirmability and dependability (Shenton, 2003). These criteria are extremely important in a qualitative approach and the following is a description of each criteria and strategies that were employed as to meet them.

3.10.3.1. Credibility

Since credibility deals with the focus of the research, it refers to the idea of internal consistency which is the quality of achieving a level of performance which does not vary greatly in quality over time (Gasson, 2004). In this study, credibility was addressed by prolonged engagement with participants as well as persistent observation in the field during the research. Further, member checking and triangulation was employed.

3.10.3.2. Transferability

This refers to the extent to which the reader of the particular study is able to generalise the findings of that study to her or his own context and addresses the core issue of "how far a researcher may make claims for a general application of their theory (Gasson, 2004). In this case, 'context' can mean similar situations, similar populations and similar phenomena (shenton, 2003). This was ensured in this study through providing sufficient information about the research instruments, the research context, processes and participants. In addition, Morrow (2005) suggested that since specific information is maximised in relation to the context in which the data collection occurs, it was therefore, prudent to use purposive sampling so as to ensure transferability of the research findings.

3.10.3.3. Confirmability

Shenton (2003) defined confirmability as a degree of neutrality in the research findings. In other words, this means that the findings are based on participant's responses and not on any potential bias or personal motivations of the researcher. This also involves making sure that researchers' bias does not skew the interpretations of what the research participants said. In order to address confirmability in this study, member checking was applied by asking the interviewees to clarify some responses which could have seemed too ambiguous to the researcher.

3.11. The Pilot Study

A pilot study is a small-scale preliminary study conducted in order to evaluate the feasibility, time, cost, adverse events, and effect size in an attempt to predict an appropriate sample size and improve upon the study design prior to performance of a full-scale research project as suggested by Bryman (2008). The pilot study was conducted in

Lusaka district at Thornpark Construction Centre, a campus for Lusaka Business and Technical College. Thornpark Construction Centre was different in its setup and characteristics from the two TVET institutions sampled for the actual study. The Head of department at Thornpark Construction Centre was interviewed and a total of 20 questionnaires were distributed to lecturers but only 12 questionnaires were collected for further analysis. Thereafter, the supervisor was met to discuss the findings so that corrections and modifications in a questionnaire could be clarified.

The information from the interviews conducted with the Head of department was compared to the information from the questionnaire and the findings were the same. Further, the information from 12 collected questionnaires was analysed using statistical package for social sciences version 20 and the Cronbach's Alpha test was used to calculate reliability. Most of the questions in a questionnaire had indicated a Cronbach's value of 0.08 which is an acceptable value for reliability and those questions that indicated a value lower than 0.08 were revealed for accuracy. Pallant (2007) stated that a value of 0.08 is seen as an acceptable value for Cronbach's Alpha and values lower than 0.08 indicate unreliable scale.

Most of the research results in the pilot study were not different from those of actual study. The findings of the pilot suggested that students in TVET institutions were competent in basic hands on skills but most of such competencies were not what industries needed. Further, it was revealed that the gap in skills was as a result of advancement in technology and lack of exposure by lecturers to modern equipment that the industry was using. Industries had advanced equipment whereas vocational colleges were still using obsolete equipment which was not also adequate for all students. It was also revealed that TVET institutions had enough qualified lecturers though in some new courses such as creative digital media and refrigeration, colleges were lacking qualified lecturers to teach.

3.12. Research Procedure

Research procedures in this research determined the plan and the direction of the research in advance. Since the collection of information should be largely dependent on research instruments and the voluntary participation of the sampled respondents, it was of significance to seek permission from all relevant authorities which included; the UNZA

Ethical Committee were the clearance letter was obtained **(Reference Number: HSSREC: 2018 AUG-024).** Further, the researcher got permission from the Ministry of Higher Education, and Principals for TVET institutions before carrying out a research in selected TVET institutions (see Appendix A, B, C, and I).

After the permission was granted from relevant authorities, some of the research instruments were administered for pilot testing to independent respondents who were assumed to be knowledgeable with matters regarding competency acquisition in TVET institutions. This made it easier to modify, correct the research instruments and ensure a researcher to have had a preview of the information that was collected. Then the researcher made appointments in advance with the TEVETA officials (Curriculum Planning Director and Curriculum Manager) for face to face interviews and their after, travelled to TVET institutions in Petauke and Chipata. The researcher stayed at each Trade School for a period of two weeks when carrying out a research. The TEVETA officials (Curriculum Planning Director and Curriculum Manager) were the last informants to be interviewed. Immediately the research was done and the information was collected, the research draft and final report was written so as to show how the deliberations were conducted.

3.13.1 Data Analysis

The information that was obtained from the participants using questionnaires, interviews and an observation checklist was structured to suit analysis and interpretation. Data analysis refers to examining what has been collected in a survey or experiment and making deductions and inferences as defined by Kasonde-Ng'andu (2013).

3.13.2. Quantitative Data Analysis

Quantitative data was collected using both the questionnaire and an observation competency checklist. Based on the nature of the data collected from the questionnaires and observation checklist for students. Descriptive statistics were used to analyse quantitative data with the help of Statistical Package for Social Science Soft Ware (SPSS) version 20.0 software. SPSS software facilitated for accuracy and speedy entry of data from questionnaires as well as analysis of the responses. Using SPSS, the data was summarised in frequencies, percentages, cross-tabulations, means and standard

deviations. Then the data was presented using frequency tables, pie charts, and graphical presentations.

It was also important to note that the data set created in SPSS was exported to excel spread sheet for further descriptive statistics analysis. After analysis, quantitative data was interpreted by the researcher to answer the research questions before looking at the qualitative data.

3.13.3. Qualitative Data Analysis

The analysis of data begun immediately the researcher started conducting the interviews and filling in the competency observation list. Punch (2014) stated that qualitative data analysis is a process of continuous search for patterns and explication of their meanings, through progressive focusing, reflexive iteration and grounded interpretation, which aims to generate rich accounts of the phenomena studied and link them to literature. In the same context, Kasonde-Ng'andu (2013) defined qualitative data analysis as the manipulation of the collected data for the purpose of drawing conclusions that reflect on the interest and theories about ideas that initiated the study.

In this study, qualitative data from semi-structured interviews was transcribed from audio recordings into text. Cohen, Manion and Morrison (2011) explained that transcriptions can provide important detail and an accurate verbatim record of the interview. The common verbatim from the participants interviewed were grouped according to each research question and this made it easier to analyse and interpret the emerged themes. Then, thematic analysis was further used where themes were drawn from the grouped verbatim in line with the research questions. Some responses were also isolated that were used as original quotes for verbatim to highlight important findings of the study. This was also done by carefully listening to the recorded conversations in order to interpret, reduce and code key responses into major and sub-themes that emerged for later discussion.

3.14.1. Ethical Considerations

Creswell (2012) explained that the awareness of ethical concerns are very important and should always be reflected at each stage in research. Mulenga (2015) citing Lankshear and Knobel (2004) explained that in educational research and other social research, ethics is

concerned with ensuring that the interests and the well-being of research participants are not harmed as a result of the research being done. Harm can range from people experiencing affronts to their dignity and being hurt by conclusions that are drawn about them all the way through to having their reputations or credibility undermined. In that case, the high value of knowledge gained through research, knowledge should not be pursued at the expense of human dignity. Thus, 'Ethics' refer to rules of conduct, typically to conformity to a code or set of principles (Robson, 2011). There are many sets of principles that should be considered when carrying out a research on human beings and in this research, principles such as; informed consent, voluntary participation, research description, Non-maleficence, benefits, anonymity and confidentiality were addressed. The following sections gives the description of the principles and how they were addressed.

3.14.2. Informed Consent

Diener and Crandall (1978) defined informed consent in Cohen, Manion and Morrison (2011) as the procedures in which individuals choose whether to participate in an investigation after being informed of facts that would be likely to influence their decisions. Similarly, Cohen, Manion and Morrison (2011) argued that informed consent is a cornerstone of ethical behaviour, as it respects the right of individuals to exert control over their lives and to take decisions for themselves. Informed consent was addressed in this study by firstly obtaining an introductory letter from the Assistant Dean Post Graduate in the School of Education and then ethical clearance from UNZA Ethics Committee. Further permission from the Ministry of Higher Education was obtained and letters addressed to two TVET institutions sampled were given to the researcher.

In addition, the Principals of TVET institutions were briefed about the significance of the study before meeting with lecturers/trainers and students. For this reason, the researcher had gotten informed consent from the participants sampled in this research before the questionnaires were administered and those sampled for interviews such as TEVETA officials (Curriculum Planning Director and Curriculum Manager), College Principals were communicated to in advance prior to scheduled interviews. The researcher got consent from the respondents on whether to record the interview as well as requesting the

interviewees to sign a consent form. Specifically, the participants were informed about the significance of the study and their participation was purely voluntary and by no any restrictions the participants were free to withdraw at any time in the course of the study.

3.14.3. Voluntary Participation

Cohen, Manion and Morrison (2011: 78) suggested that 'voluntary participation entails applying the principle of informed consent and thus ensuring that participants freely choose to take part (or not) in the research and guarantees that exposure to risks is undertaken knowingly and voluntarily'. The participants were informed in advance that their participation in the research was on voluntary basis and they could withdraw from the study at any time if they felt uncomfortable.

3.14.4. Research Description

In order to adhere to this principle, the researcher gave a brief description of his identity as a way of an introduction to respondents. The researcher also highlighted the purpose of the study and its significance to enhance students' competency acquisition in TVET institutions.

3.14.5. Non-maleficence

This is a guiding precept in research of doing no harm as stated by Cohen, Manion and Morrison (2011). Therefore, in this research all the participants involved were assured that there were no risks in any kind that could damage them physically, professionary, socially, psychologically, emotionally and spiritually. The researcher also clarified the precise nature and scope of the research so that fear in participants could be minimised.

3.14.6. Benefits

This was a critical issue which needed to be addressed with caution particularly to participants in the study. Patton (2002) argued that the issue of whether or not to compensate research participants in cash or kind as a way of reciprocity is controversial because compensation can affect the level and quality of data. It is also recommended that compensation should also be discouraged on the grounds that it may induce unnecessary 'favourable' responses from participants with a view of pleasing the researcher. In this study, the participants were informed that their participation was not to induce any

compensation in monitory form as this research was purely academic and it would benefit participants in the sense that they might be helping to improve our understanding of students' competency acquisition in TVET institutions in the country.

3.14.7. Confidentiality

In order to ensure confidentiality in this research, it was explained to the respondents that the information to be provided would be purely for academic purposes and by no means would the information be revealed to anyone or any organisation without the consent from the University of Zambia. In particular, all the responses from the interviews were not availed to anyone but only presented in the document. In a similar manner Punch, (2014) suggested that confidentiality arises from respect for the right to privacy and functions as a precautionary principle.

3.14.8. Anonymity

To address anonymity in this research, the questionnaire and observation checklist only contained the serial number and participants were sincerely requested not to write any name, address, or any identified symbol that could review their identity. To support this view, Cohen, Manion and Morrison (2011: 91) suggested that, 'The principle means of ensuring anonymity, then, is not using the names of the participants or any other personal means of identification. In that case, anonymity was highly ensured.

3.15. Summary

In this chapter, mixed methods approach was adopted to describe the methodology that was used in the study. The research design which is convergent parallel was employed as to allow the researcher to collect both quantitative and qualitative data in a sequence manner and consider the priority. The methodology was further presented under the following sub-titles: study site, target population, sample size, sampling techniques, demographic characteristics of respondents, instruments for data collection, data analysis, validity, reliability, trustworthiness, pilot study and research procedures and finally some ethical principles were explained. In the next chapter, the research findings are presented.

CHAPTER FOUR: PRESENTATION OF THE FINDINGS

4.1. Overview

In the previous chapter, the methodology which was employed to collect data was described. These findings are based on the data that was collected through questionnaires, interviews and observation checklists. In this chapter, the findings of the research questions based on a number of themes that emerged from the data are presented. Qualitative data is summarised using verbatim while quantitative data is presented in percentages, frequencies, cross-tabulations, mode, means and standard deviations.

4.2. Adequacy and Appropriateness of Teaching and Learning Resources

As earlier mentioned, at the beginning of this chapter, research question one sought to determine if TVET institutions in Eastern Province had adequate and appropriate teaching and learning resources. This question was very important for this study because the relevance of the teaching and learning materials were vital to the quality of the products in relation to the students' competency acquisition. In order to answer this question, the researcher got information from lecturers, College Principals TAVETA officials (Director Curriculum Planning and the Manager for curriculum development).

4.2.1. Nature of Physical Facilities

In the questionnaire for lecturers, items A and B under question 14 sought information on the adequacy of the required training facilities and equipment in the workshop for skills transfer and adequate lecturer rooms respectively. Question 14 required lecturers to indicate on a four-points Likert scale rated as: 1=Very Adequate, 2 = Adequate, 3 =Fairy Adequate, 4 = Inadequate. In addition, the interview guide for college principals' and TEVETA directors under question 14 and 8 respectively sought information on whether the facilities and the equipment in their TVET institutions were adequate and appropriate for training the students to acquire relevant skills. The findings to these questions are described in the sections that follow.

4.3.1.1. Workshop Equipment

The adequacy of workshop equipment is vital in ensuring that students from TVET institutions acquire relevant practical skills. Using the four-point Likert scale, lecturers had to indicate their opinions about the adequacy of workshop equipment. The Figure 4.1 shows the summary of the findings from the lecturers.

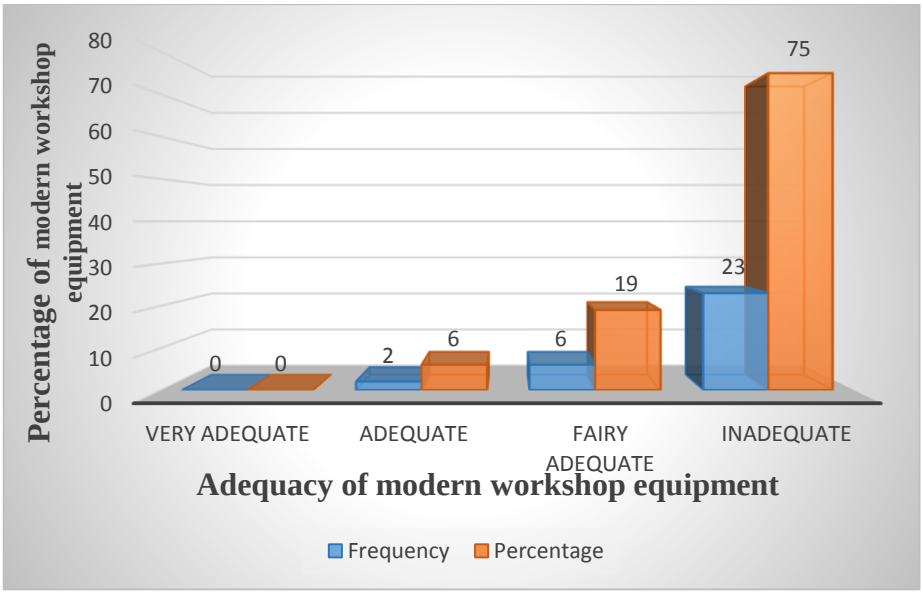


Figure 4. 1: ***Frequency and Percentage distribution of lecturers' response about the adequacy of modern workshop equipment***

As shown on Figure 4.1, none of the lecturers responded that the workshop equipment were very adequate and two lecturers representing six percent said that workshop equipment were adequate, six representing 19 percent said fairy adequate and 23 representing 75 percent expressed inadequate. The results show that the workshop equipment's were not adequate for skills training to all students. Similarly, all the college principals and the officials from TEVETA namely; Director Curriculum planning and Curriculum Manager affirmed that the facilities and equipment that were used in TVET institutions were not adequate and appropriate to equip students with relevant skills. Responding to the questions 14 and 8 in the principals' and directors' interview schedule

respectively. In order to adhere to the ethical principles, the participants who were interviewed were coded. Principal 1 who was interviewed commented that;

> *As an institution, we do not have adequate as well as very relevant equipment to enhance students' competencies. This is because the equipment were somehow obsolete and cannot be equated to technological advancement happening right now in the industry. In terms of programmes, I may say carpentry and joinery, we do not have adequate hands on tools and most of them are old and were bought in 1995 except a few which were donated 10 years ago. Still we are using them and most of them are worn out as you have observed in the workshop. In automotive mechanics that's where we have a big challenge, so far there is only one carburetor engine for all students to do their practicals and this engine is very old and not sure if there could be vehicles with such engines on the road right now because most modern vehicles have injector pumps. Due to various challenges we face as an institution, we can't afford to buy new equipment that could cater for all students during practicals.*

In support and responding to the same question, principal 2 his views were not completely far from the first respondent. He explained that;

> *I acknowledge that equipment and other facilities are a challenge in certain programmes in this institution. Although in programmes such as ICT we have enough computers and two computer laboratory where in other courses like automotive mechanics we have only one obsolete carburetor engine for practicals. If we can receive donation of any kind maybe fault engines, we shall be very happy. Since this institution has been selected as centre of excellence in agriculture, soon we shall receive modern agriculture equipment and the equipment at hand cannot match with modern equipment in the industry.*

Furthermore, the same question (question 8 in Directors' interview schedule) which sought information on the adequacy and appropriateness of equipment to skills training was asked to TEVETA officials namely; Director Curriculum planning and Curriculum Manager who were required to give their views (see Appendix E). Official 1 responded that:

> *This is the area in which we are limping. However, there are plans by the Ministry of Higher Education to equip all the TVET institutions in the country with modern equipment. The ministry has made a big stride in purchasing new equipment and there is a political will in this area especially with the introduction of skills development fund to all private*

> *industries. For instance, Lusaka Business and Technical College and Kabwe Trades have been equipped with modern equipment in power electrical and automotive mechanics. In general, majority of institutions have obsolete equipment. We may review the TVET curriculum to the best practices but there is no adequate equipment to support the curriculum and this has contributed to the skills gap with the industry.*

Besides, in responding to the same question, official B explained that:

> *I can say average. Some have and others don't have. Particularly in science courses which include; health related courses and engineering, equipment are extremely expensive and majority of institutions alternatively end up using obsolete equipment and facilities. However, the scenery has started improving due to the introduction of skill development levy by the government. As TEVETA this year we had received a substantial amount of money which went to review forty (40) curricula in different programmes.*

With the view of participants' responses about workshop equipment, it was deduced that the TVET institutions in question had a challenge in securing latest equipment for student's practical trainings in most technical courses except in ICT. This situation had compromised the quality of competencies that the students could have acquired at the completion of their programmes.

4.3.1.2. Lecture Rooms

The shortage of lecture rooms in many TVET institutions has been reported to create a challenge so as to equip students with relevant skills (Mwila, 2016). For this reason, it was important to assess the adequacy of lecture rooms in the two TVET institutions and question 14 in the lecturers' questionnaire required lecturers to indicate their choice on a four-point Likert scale rated as: 1=Very Adequate, 2 = Adequate, 3 =Fairy Adequate, 4 = Inadequate. The results are displayed in figure 4.2 which were given by the lecturers.

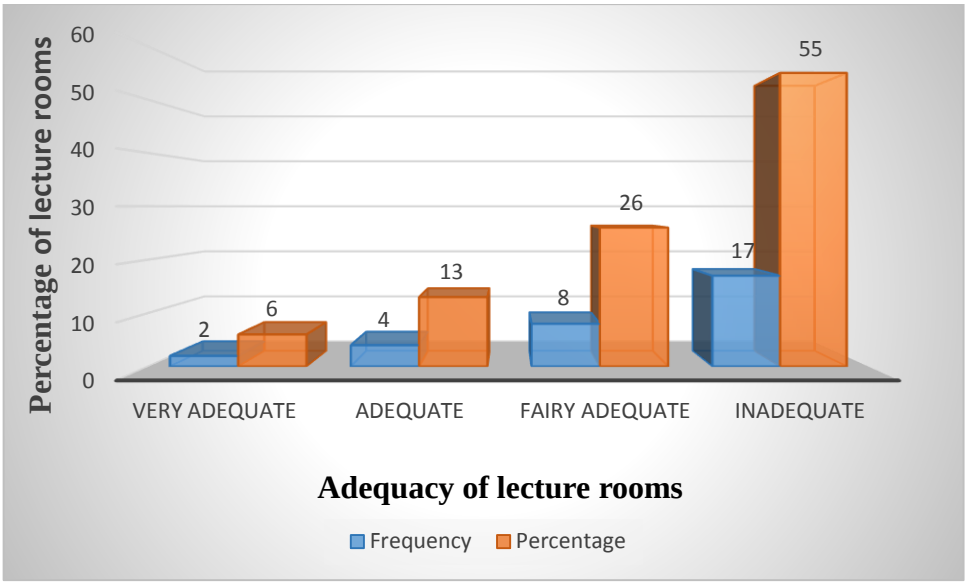


Figure 4. 2: ***Frequency and Percentage distribution of lecturers' response about the adequacy of lecture rooms***

Table 4.2 shows that two respondents representing six percent reported that lecture rooms were very adequate, four of lecturers who made 13 percent said adequate, eight respondents representing 28 percent stated that the lecture rooms were fairy adequate while 17 consisting of 55 percent were of the view that the lecture rooms were inadequate. It can be deduced from the lecturers' responses that the lecture rooms were not adequate for all the programmes that were offered in the two TVET institutions in question.

4.3.1.3. Computer Laboratory and Internet Connectivity

The rapid spread of new technology in the world has influenced all the TVET institutions particularly in Zambia to realign all the programmes offered with Information and Communication Technology (ICT). It is now a mandatory in all the TVET institutions for all students to be computer literate (Dadi, 2014). Therefore, it was important in this study to assess the availability of computer laboratories and internet connectivity.

a) Computer Laboratory

By using the observation checklist for instructional material and facilities (see Appendix G), it was observed that one college had no computer laboratory though they had received computers which were just put in a store room. The other college had a very good computer laboratory equipped with 40 computers and students were found in a computer

laboratory learning Information and Communication Technology (ICT). All the students had access to this facility and ICT was reflecting on a student time table in all programmes which was a sign that all students were learning computer studies.

b) Internet Connectivity

The observation checklist for instructional material and facilities (see Appendix G), was used to establish if the two TVET institutions in question had a good and a reliable internet connectivity. This is because internet connectivity is very vital in TVET institutions as it helps students in research (UNESCO, 2010). However, the two TVET institutions sampled in the study were connected to the Wi-Fi internet though their Wi-Fi were not working at the time of the visit.

Similarly, during the interviews with the college principals, a follow up question was asked (question 14 in the principal's interview guide) why the institutions' Wi-Fi was not working at the time of the visit and principal 1 commented that;

> *The institutions had challenges in maintaining the internet and it was too expensive to keep it running. We have always been calling experts from Lusaka to maintain the internet system and it was too costly for the institution such that other activities were affected. But we are yet to find a lasting solution.*

In support of the same idea, principal 2 asserted that;

> *We received 20 computers and the Wi-Fi was installed but we have not yet received any lecturer for Information Communication and Technology (ICT). However, the computers are packed in one of the departmental store room because we do not have a laboratory as at now. Our students are not learning computers despite the directive from the Ministry of Higher Education to make computer subject compulsory to all students. The Wi-Fi worked only for two weeks and the router developed a fault and since that time, it has never been repaired.*

The adequacy of lecture rooms and computer laboratories play a vital role in accommodating a large number of students in each programme. But the results as expressed by participants indicated that both lecture rooms and computer laboratories were not enough to accommodate all students except one TVET institution which had a

good computer laboratory. Other facilities were examined that could have contributed to a conducive learning environment and are explained in the following sub-section.

4.3.1.4. Other Physical Facilities

There are other important facilities that support the implementation of all TVET programmes and in this study the following were among the facilities that were investigated; electrical power, water supply and sanitation, staff room for lecturers and sporting facilities. An observation checklist for instructional material and facilities (see Appendix G), was used to check on the availability, adequacy and appropriateness of the facilities.

a) Electrical Power

It was observed that the two TVET institutions were all connected to the national hydro electrical power and the supply was consistent. They had no challenges of load shedding at the time of the visit.

b) Water Supply and Sanitation

At the time of the visit, all the two colleges had their own source of water from boreholes. It was also observed that all the colleges had water taps in strategic places where most of the students could access water. Further, it was observed that all the toilets in the colleges visited had enough water taps inside and had running water in all of them that was been used for flashing. The toilets were clean and adequate for all students and rubbish bins as well as pits were available and placed in a strategic place for easy access by students.

c) Staff Room for Lecturers

It was observed that all the two colleges visited had good staffrooms with good furniture. At the time of the visit, lecturers were writing their lessons plans and preparing teaching aids from staff rooms. This was an indication that the staff rooms were utilised by the lecturers.

d) Sporting Facilities

At the time of the visit, all the two colleges had poor sporting facilities. One of the institutions had no football or netball ground and the other one had a football ground which was poorly maintained. This indicated that sports activities were not on top of administration priority.

4.3.4. Relevance of Facilities and Equipment to Required Competencies

It was important in this study to examine the relevance of the facilities and equipment which were used in the TVET institutions to implement the existing curriculum. The facilities and equipment included workshop tools and machines, lecture rooms, electrical power, water supply and sanitation, staff room for lecturers and sporting facilities. Question 15 in the questionnaire for lecturers sought information on how relevant the facilities and equipment were to the TVET curriculum. Three choices were provided as; 1=Very relevant, 2= Relevant, 3=Not relevant. Table 4.3 provides a summary of lecturers' responses

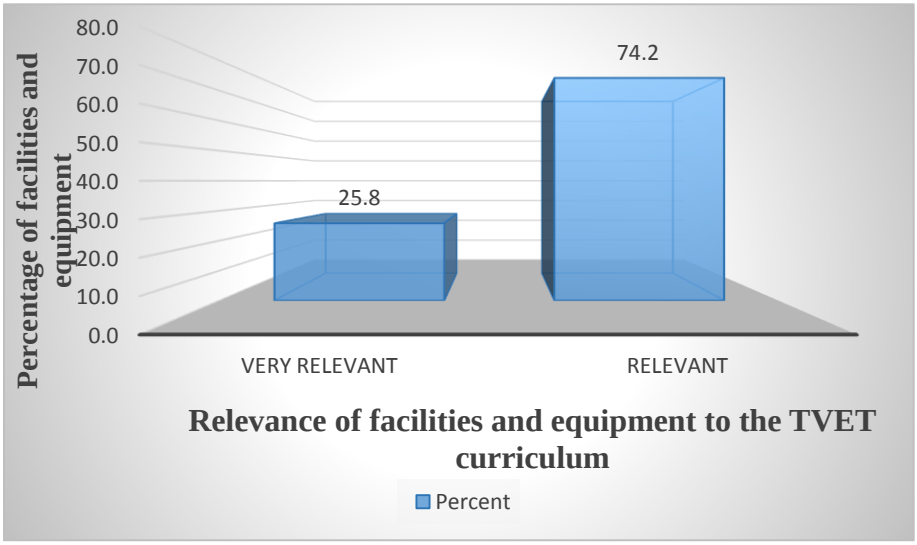


Figure 4. 3: ***Percentage distribution of lecturers' response about the relevance of facilities and equipment to the TVET curriculum***

Figure 4.3 indicates that 25.8 percent of lecturers responded that the facilities and equipment which were used to implement the TVET curriculum were very relevant

whereas other lecturers consisting a percentage of 74.2 responded that the facilities and equipment that they were using to implement the TVET curriculum were relevant. Although majority of lecturers had expressed that the facilities and equipment were relevant, they were not adequate and some were not available particularly the latest machines that could support practical training.

4.3.5. Teaching and Learning Materials

Teaching and learning materials are extremely important in equipping students with various relevant competencies and therefore it was vital in the first research question to assess the adequacy and appropriateness of teaching and learning materials which include students' text books, lecturers' text books, visual aids, chalkboards and chalk. Question 19 in the lecturer's questionnaire required respondents to indicate their views on issues regarding to teaching and learning materials on a five-point Likert scale (1 = strongly agree, 2 = agree, 3 = neutral 4 = disagree and 5 = strongly disagree). Similarly, question 11 and 18 in the interview schedule for college principals and TEVETA directors requested the respondents to explain if TEVET institutions had adequate and appropriate teaching and learning material which were up-to date with technological advancement. An observation checklist for instructional material, administration and facilities was also used to counter check the responses from lecturers, college principals and TEVETA directors (curriculum planning and curriculum manager). Table 4.1 shows the lecturers' responses on teaching and learning materials that were used to implement the TVET curriculum and mode, mean and standard deviation were used to analyse their responses.

Table 4. 1: ***Results of lecturers' rating on teaching and learning materials (mode, mean and standard deviation***

NO:	Statements Regarding Teaching and Learning Materials	Mode	Mean	Standard Deviation
A	Learning materials are adequate to all students for both theory and practical learning	5	4.19	0.833
B	Learning materials for instruction are appropriate for the tasks	4	3.90	0.790
C	Learning materials for instruction are available for the tasks to all students	5	4.29	0.732

D	Learning equipment's and machines are relevant to the occupation in the world of work	4	3.74	1.264
E	Learning materials are effectively utilised during teaching instruction by all students	4	3.71	1.071
F	Learning materials develop competencies (knowledge, skills, abilities) in TVET students	1	1.87	0.846
G	The college library is stocked with current as well as appropriate lecturers' and students' text books	5	4.52	0.626

Table 4.1 shows that all the values of the standard deviation were less than the mean values, and hence, the mean was an appropriate measure of teaching and learning materials. The results indicate that, most of the lecturers' responses were in disagreement with items expressed in Table 4.1 except for item F. According to the lecturers' responses, learning materials were not adequate to all students for both theory and practical learning with mode, mean and standard deviation of 5, 4.19 and 0.833 respectively, learning materials for instruction were not appropriate for the tasks (4, 3.90 and 0.790), learning materials for instruction were not available for the tasks to all students (5, 4.29 and 0.739), learning equipment's and machines were not relevant to the occupation in the world of work (4, 3.74 and 1.269), learning materials were not effectively utilised during teaching instruction by all students (4, 3.71 and 1.071) and the college libraries were not stocked with current as well as appropriate lecturers' and students' text books (5, 4.52 and 0.626). On the contrary, the lecturers strongly agreed that the learning materials develop competencies (knowledge, skills, abilities) in TVET students with rated mode, mean and standard deviation of 1, 1.87 and 0.846 respectively.

In responding to question number 11 and 18 in the interview schedule for college principals and TEVETA directors on teaching and learning materials respectively, all of them confirmed that teaching and learning materials were not adequate and appropriate in TVET institutions that could equip students with relevant skills needed for the labour market. In particular, Principal 1 explained that;

> *In terms of teaching and learning materials we are a bit struggling. In some courses we have while in others we do not have. We have only procured*

> *few recommended books for lecturers in each program through our ministry however, books are not adequate for all students. The same views were affirmed by the other principal.*

In response to the same question, official A from TEVETA reported that:

> *The issue of teaching and learning materials is a relative statement, the ministry procured the latest materials for teaching and learning but the problem is that, are the lecturers able to interpret correctly the current books especially if they were trained twenty (20) years ago? TVET institutions have received materials from the ministry and we are still looking to review what materials could best suit our curriculum. You would discover that some institutions are still using old books because lecturers cannot interpret these modern books. However, we have started a process of developing our own books that reflect our own context.*

Similarly, official B argued that:

> *Teaching and learning materials are not adequate to implement most of the curriculum and most of the materials are not available and are quite expensive beyond the reach of learners and TVET institutions. Most institutions have few facilities and books. You would discover that many students are clouded on one facility or text book. In the past we never used to develop the learning materials in line with the curriculum, it was up to the institutions themselves to buy recommended text books and we realised that it was not working well. However, we have started developing learning and teaching materials that is text books in line with the curriculum. Soon this situation will be addressed and text books and other instructional materials will start reaching into colleges.*

On the other hand, an observation checklist for instructional material, administration and facilities was used by the researcher and it was observed that the appropriate text books for various programmes were not adequate in the library. Surprisingly, one of the two TVET institutions visited had no library facility and no any lecture room that could have been improvised as a library. The books were kept in one of the departmental store rooms and most of them were not appropriate to the TVET curriculum which was implemented. Similarly, the other institution visited, had a very good library but there were no books on shelves. The books were kept in one of the library store rooms for fear of theft and most of them were worn out.

The conclusion drawn from the results obtained from quantitative and qualitative data sets on the adequacy of teaching and learning materials was that, the majority of TVET institutions had inadequate teaching and learning materials. This indicated that the physical facilities and equipment used were obsolete and not adequate for all students. Further, the instructional materials (text books) particularly for students and lecturers were not adequate and appropriate because most of the books were produced by other countries. However, in this area, there were some recommendable strides that were made by the ministry to start developing text books locally in line with the curriculum such that the challenge of instructional materials would be minimised. In the next section, results to answer research question two are presented.

4.4. TVET Curriculum and the Labour Market

In research question two the researcher sought the information about the relevance of the TEVT Curriculum which was implemented to the labour market. Curriculum is a multidimensional concept. To some, it denotes the specific course, while, to others it means the entire educational environment. However, the TVET Curriculum scope is broad, and it is involved with teaching and learning. Since the entire system of education is centered on the curriculum, it was important in this study to address the relevance of the curriculum to the labour market. The information was elicited from the lecturer's questionnaire item 17, college principals schedule item 3, 4, 6, 7 and 8 and directors' interview guide item 5, 6 and 7 respectively. It was therefore important to establish the relevance of the TVET curriculum to the labour market so as to bridge the gap between the TVET institutions and the industries. The researcher in the sub-sections that follow presents different perceptions of respondents which include TEVETA officials (Director Curriculum planning and curriculum manager), college principals' and lecturers.

4.4.1. Relevance of the TVET curriculum to the labour market.

Lecturers were asked in a questionnaire item 17 to indicate their opinion on a five-point Likert scale (1 = strongly agree, 2 = Agree, 3 = neutral, 4 = disagree and 5 = strongly disagree) on the statements regarding the relevance of TVET curriculum. Mode, Mean and standard deviations were used for the analysis of lecturers' responses. In Table 4.2 all

the values of the standard deviation are less than the mean values, and hence, the mean is an appropriate measure of how relevant the TVET curriculum is to the labour market.

Table 4. 2: ***Relevance of the TVET curriculum to the labour market***

Statements Regarding the Relevance of TVET Curriculum	**Mode**	**Mean**	**Standard Deviation**
The TVET curriculum addresses the current labour market demands in Zambia.	2	1.81	.703
Courses offered at the college have the potential to address unemployment and poverty levels in the country.	1	1.74	.495
Graduates from TVET institutions acquire relevant competencies.	1	1.39	.815
The course content of the curriculum is up to date with technological advancement in the world.	2	2.42	1.858
The duration of the TVET programmes are too short to complete course contents.	3	3.45	2.336
There is a need to revise the current TVET curriculum to the current needs of the society in Zambia.	2	2.13	1.204

Table 4.2, presented only one statement that was responded above mean of 2.336 because the majority of lecturers responded neutral on the Likert scale and the statement indicated that the duration of the TVET programmes were too short to complete course contents. Alternatively, lecturers agreed to the remaining item though the mode response, mean and standard deviations were different from each other. For instance; lecturers agreed that the TVET curriculum was able to address the current labour market demands in Zambia and the courses that were offered at the college had the potential to address unemployment and poverty levels in the country. The course content of the curriculum was up to date with technological advancement in the world though lecturers on the other item responded that there was a need to revise the current TVET curriculum to the current needs of the

society in Zambia with mode, mean and standard deviation of 2, 2.13 and 1.204 respectively. From the illustration on the Table 4.2 it indicates that the TVET curriculum was relevant to the industry. However, there is a need to revise the TVET curriculum to the current needs of the society in Zambia.

In addition, the information on the relevance of the TVET curriculum was also collected from the TEVETA officials and the college principals using the interview guides. All the respondents interviewed, confirmed that the TVET curriculum was responsive to the needs of the labour market in Zambia because at every stage, of its development process, industries were involved. Principal 1 remarked that;

> *We have the curriculum which is competency-based but the actual document we do not have. All what we have are the syllabi in different technical courses that are offered. The curriculum is effective and relevant to the industry. For instance, we offer courses which include; Bricklaying and Plastering, Carpentry and Joinery and Engineering and these courses are relevant to the industry and are demand driven.*

Responding to the same question, official A commented that;

> *All the courses under TEVETA include competency modular training system and are actually derived from the industry and are demand driven. However, there is a process we follow when developing the curriculum and that is: we start with the Job Profile Analysis (JPA) followed by Content Analysis (CA) and the Development of a detailed syllabus which is then approved by the committee of the board under TEVETA and at every stage experts from the industries are involved.*

Responding to the same question, official B from TEVETA expressed that;

> *The review of the curriculum in each program is ongoing, for example, programmes at trade test level are reviewed every two to three years whereas at craft and diploma are reviewed every five years. The curriculum maybe responsive to the labour market but sometimes the industry may complain of incompetency exhibited by some graduates and that is not our problem as TEVETA. The challenge may be created at the implementation stage in colleges due to other factors such as obsolete equipment.*

From the interviews conducted, it was affirmed that the TVET curriculum was responsive to the labour market and many stakeholders were involved in its development. However, the process of curriculum implementation was characterised with some challenges as observed by the participants who were interviewed. The follow up question was asked to college principals and the TEVETA directors to explain major challenges that were faced by TVET institutions in implementing the TVET curriculum. The responses from the interviewees were similar and official B from TVETA reported that;

> *Our curriculum maybe up-to-date with technological advancement in the world and we may review it with the best practices but challenges may come in with its implementation. Let me highlight one example, when we went to Brazil for World Skill International Workshop, we discovered that the TVET curriculum was very ahead comparing to the technology in the industry and industries were coming to TVET institutions for new innovations. In our case, the industries are far much better in technological advancement than our curriculum and that is a reason the curriculum is revised on regular basis. However, some curriculum may not have been reviewed to current best practices due to inadequate resources. Much as we cannot run away from the fact that we are a third world country, our TVET institutions face many challenges which may include obsolete equipment, many lecturers are not upskilled with new technology. All these challenges could affect the best curriculum and its relevance may be questionable.*

Similarly, at the time of the visit, it was observed that the student enrollment was low in both institutions and an interest in this matter was developed because the greatest success of a curriculum is dependent on the student's output. At one institution visited only one second year student was enrolled in carpentry and joinery while four students in bricklaying and plastering. The same scenario was found at another institution and there was only one second year student in carpentry and joinery and two in bricklaying and plastering. The low levels of enrolment in these programmes would create an adverse effect in the construction industry particularly in employing skilled workers. However, when the two principals were asked to explain why some programmes had fewer students than others, their responses were similar and principal 1 expressed that:

> *I will talk more of our institution here; this institution is situated in a more rural like setting and with agriculture-based economy and that implies low economic levels and income. Many families cannot afford to pay the fees.*

> *Observably, the women participation in technical courses is poor except in few courses like Agriculture, ICT and Secretariat and this trend could have been influenced by our culture and traditions which discourage female to become engineers, bricklayers and plumbers. The other reason could be the stigmatisation of technical colleges because we enroll students who have acquired as low as grade seven certificates who mostly are considered as drop outs or with low intelligent levels and the society perception is extremely negative towards our programmes.*

In addition, responding to the same follow up question, principal 2 remarked that;

> *The period of training could have also an effect on enrollment because the duration of two years is too long such that students can not earn a living and they would rather get training on the job and perfect their skills. That's why we have introduced short courses which are capturing a lot of students. we appreciate the government to have come up with generous interventions of introducing bursary schemes otherwise without that most of TVET colleges in rural places could have been closed and in particular our institution. Currently, we have 268 students on bursary scheme and 58 on sponsorship and this indicates the limitations in income levels.*

The conclusion drawn from the results obtained from quantitative and qualitative data sets was that the TVET curriculum was relevant to the labour market and a lot of stakeholders which include industries and regulatory boards were involved in its development processes. Despite the TVET curriculum being characterised with some challenges in its implementation, measures were put in place by the Ministry of Higher Education that could have addressed these aforementioned challenges. Such measures included; introduction of skills levy, upskilling of lecturers, introduction of bursary scheme and the development of instructional materials locally in line with the curriculum. The curriculum cannot address the poor competencies exhibited by students in the industries without assessment. Assessment should be one of the measures of how effective the TVET curriculum should be in improving the students' competency acquisition in technical courses. The sub-section that follow presents the assessment and the type of assessment that are mostly implored by lecturers to assess the student's competencies.

4.4.2. Assessment

In the education system, assessment is the central process in bridging the gap between effective teaching and learning. No matter how careful lecturers' design and implement the teaching and learning activities, what students learn cannot be predicted with any certainty. It is only through assessment that lecturers, college administrators, curriculum designers and parents can discover whether the learning activities in which students are engaged, meet the goals of education system and the society at large. Consequently, assessment of the TVET curricular should be a process which integrates knowledge, practical skills, values and positive attitude among the students in TVET institutions. During assessment, judgment to determine a learner's competency should, wherever practicable, be made on evidence gathered on a number of occasions and in a variety of contexts or situations as suggested by Dadi (2013).

In order to get data on assessments both methods (quantitative and qualitative) were used. To this effect, research item number 20 in a lecturer's questionnaire sought information on assessment modes based on TVET and the statements in it were designed with a five-point Likert scale that is: 1, 2, 3, 4, 5, representing strongly agree, agree, neutral, disagree and strongly disagree respectively. Mean and standard deviation were used for the analysis of the assessment activities. As can be seen from Table 4.3 the values of the mean for all variables are greater than the standard deviation. As a result, the mean would be an appropriate measure of central tendency for assessment activities.

Table 4. 2: Assessment activities

Statements Regarding Assessments	**Mean (M)**	**Standard. Deviation (SD)**
Learning activities adequately measure students' knowledge required in a work of place	1.65	.551
Assessments engage students in applying knowledge, skills in the industry	1.68	.541
Assessment is continuous	1.55	.506

Students are aware of how and when assessments will be done	1.77	.669
Project assessment is mandatory to all students for them to graduate	1.84	1.098
Assessment activities in TVET learning and instructional materials are derived from learning outcomes	1.71	.783
Theory and practical assessments are combined for national examinations	1.55	.810

As shown in Table 4.3, from the given statements, six (6) were positively agreed that learning activities adequately measure students' knowledge required in a work of place with a mean and standard deviation of 1.65, 0.551 respectively, assessments engage students in applying knowledge required in a work of place (M= 1.68, SD=0.541). Further, majority of lecturers agreed that assessment was continuous (M=1.55, SD=0.506) and students were aware of how and when assessments would be done (M=1.77, 0.669). However, a grand standard deviation of 1.098 with a mean of 1.84 was recorded on project assessment if it was mandatory for all students for them to graduate. A majority of lecturers were neutral and disagreed to the statement and it indicated that project assessment was not a mandatory for students to graduate. In addition, majority of lecturers agreed that assessment activities in TVET learning and instructional materials were derived from learning outcomes (M=1.71, SD=0.783) whereas theory and practical assessments were combined for national examinations (M=1.55, SD=0.810).

4.4.3. Types of Assessment

In trying to solicit information on the types of assessments that were administered to students in a lecture room, open ended questions were formulated. In particular, research item number 23 from the lecturers' questionnaire was designed and question number 20 and 12 in the principals' interview schedule and directors' interview schedule respectively were asked to seek the same information. With this regard, 31 lecturers were asked to list the type of assessments they administer to students and their views were similar. Figure 4.4 demonstrate the views of lecturers.

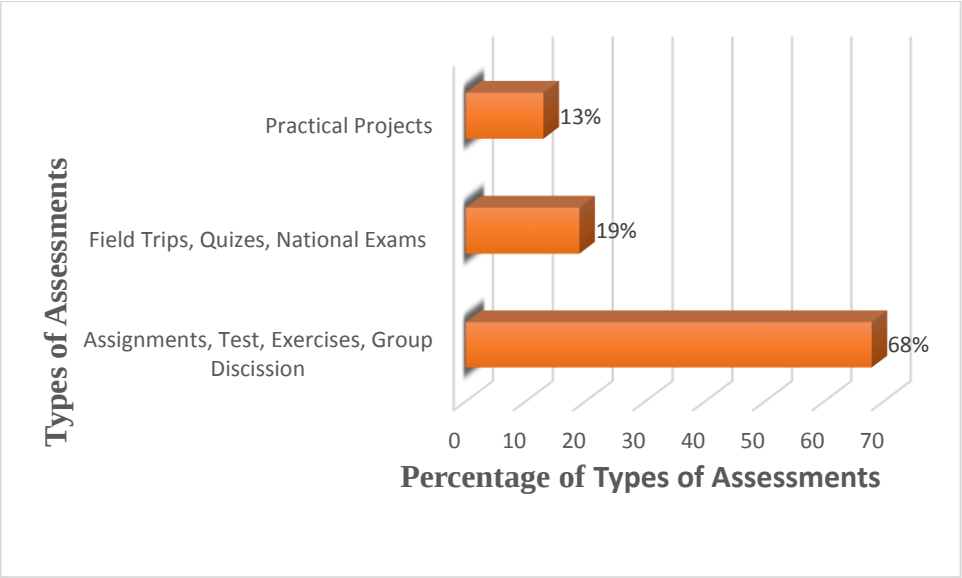


Figure 4. 4: ***Percentage distribution of lecturers' responses on types of assessment***

Figure 4.4 illustrate that 68 percent of lecturers preferred to administer types of assessments in a lecturer room which include assignments, test, exercises and group discussion whereas 19 percent of lecturers had preferred field trips, quizzes and national exams. The least number of lecturers representing 13 percent had preferred using practical projects. This is an indication that practical projects that are to facilitate the competency acquisition among the students were not administered so often and as a result the students could not be equipped with practical skills that are relevant to the labour market.

Similarly, question number 24 in a lecturer's questionnaire required lecturers to explain why the preferred form of assessments were administered to students and most of their responses were not different from each other. One of the lecturers argued that;

> *By using various types of assessments help us lecturers to assess if students are able to apply the theory work into practice and the theory assessments are less costly as compared to practical assessments.*

From the total of 31 respondents, who answered the same question, 48 percent expressed that assessment measures students' performance and assessment is a research tool for students as assignments help students to research more on the topic whereas 52 percent reported that assessment provided feedback to the students, teacher, school and it was used for certification. The Figure 4.5 shows the lecturers responses.

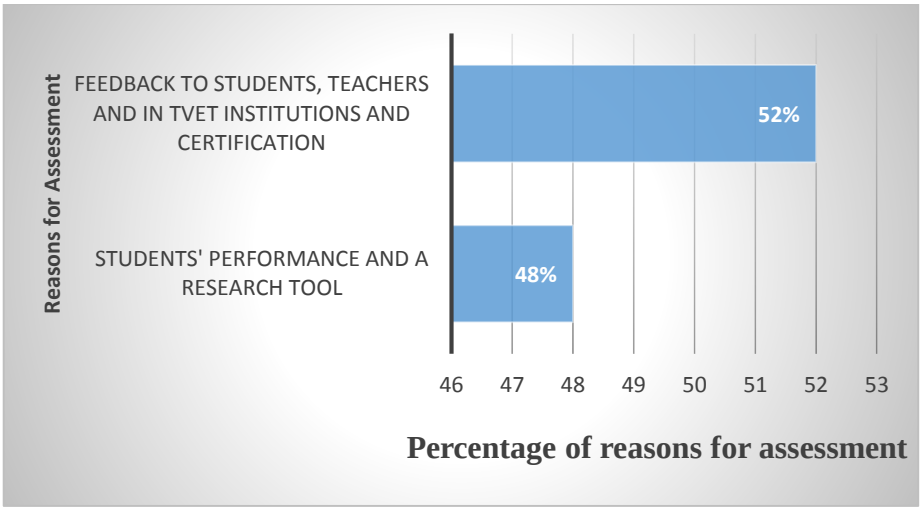


Figure 4. 5: ***Percentage distribution of lecturers' responses on preferred form of assessments***

When the officials from TEVETA were asked the same question 12 (see Appendix D), their responses seemed to be coinciding with those of lecturers but officials explained in a more practical way as well as from a policy point of view. Official A explained that;

> *We do assess students in both formative and summative assessments. The formative assessments consist of 40 percent which include both theoretical (tests) and practical assessment were as summative assessment consists of 60 percent in each programme and the two are summed up to lead up to someone qualification. The guidelines that are developed state that if someone has not cleared the formative assessment should not proceed to write the summative assessment. However, we have noticed some challenges in that area when it comes to the validity and reliability of the assessments. Because these institutions are run by the boards and are interested in how many students have passed so as to attract more money and lecturers for fear to be dismissed, they end up fidgeting with the formative assessments. The research carried out recently indicated that there was no correlation between the formative and summative assessments. That one we have noted.*

Responding to the same question, official B said that*;*

> *We have not relaxed when it comes to assessment of students' competencies and we have gone ahead to develop the practical tool kit which actually guide the learners on what practicals they have to do throughout their training. The practical tool kit is derived from the*

curriculum and gives step by step activities to enhance the performance of students.

In trying to analyse the responses from different respondents on assessment, it was noted that the theory part was more dominant than the practical one. Thus, the students could not be equipped with relevant practical competencies as required by the labour market. In addition, a researcher observed that, it was difficult for TVET institutions to produce skilled graduates in technical programmes and who in turn could not provide competent human resource for the country. For this reasons, theoretical assessments in TVET institutions cannot provide a measure on students' competency acquisition and therefore, there is need to engage students in various practical assessments.

4.4.4. Students' Competency

The assessment of students' competency is central to all the programmes offered in TVET institutions. This is because the concept of competency defines the skills, knowledge, values and attitudes that should be developed in students as they are prepared to go in the industry and start performing various tasks at the pace of work. Therefore, it was of importance in this study to assess the competency of second year students in technical courses. An observation checklist was used to assess students' competencies during practicals in the workshops with respect to their programmes being pursued for a period of two weeks. Further, the students were assessed against the prescribed statements regarding competency on a three-point Likert scale that is: 1, 2, 3 representing partially competent, competent and not competent respectively. Mode, mean and standard deviation were used for the analysis of students' competency. As indicated in Table 4.4, the values of standard deviation for all items were less than the mean values of all the items. Thus, mean would be an appropriate measure of central tendency for the analysis of students' competency.

Table 4. 3: ***Students' competency assessments (n=84)***

Statements Regarding Student Competency	**Mode**	**Mean**	**Standard Deviation**
Perform all duties as required in the workshop	2	1.89	.311

Prepare physically and mentally for lesson activity	2	1.86	.352
Attain a level of fitness appropriate to the standard of the safety rules	2	1.90	.297
Exhibit correct positioning in relation to actual demonstration of skills	2	1.83	.375
Interpret and apply the safety rules of the workshop	2	1.88	.326
Exhibit correct signaling for all rules and exhibit knowledge to all equipment tools	2	1.89	.311
Display appropriate handling technique of equipment or tools	2	1.88	.326
Respond appropriate to trainers' instructions during demonstration	2	1.85	.364
Communicate appropriately with his fellow students during practicals in the workshop	2	1.86	.352
Apply a positive and cooperative attitude towards the trainers	2	1.89	.311
Conduct pre-demonstration and discussions with trainers and students	2	1.88	.326
Ability to assess the practical competence of a lower skill	2	1.90	.295
Identify risk management strategies for safety	2	1.89	.311
Adhere to the ethical responsibilities of officials and demonstrate competence	2	1.95	.214

As displayed in Table 4.4, 16 statements regarding students' competency were assessed for each student who was sampled and from the results displayed on the table indicated that all the students were competent in applying various basic skills as shown with the response mode of two. The standard deviation was very low as compared to the mean, representing that the majority of second year students were able to perform various tasks given in a workshop with less challenges. This also demonstrated that the basic competencies that students acquired could have made them easily adopt industrial

practices and perform competently in various tasks. However, despite students having demonstrated practical skills very competently, still they had a challenge in understanding the theory part and reach a deep understanding of knowledge.

4.4.5. Understanding of Knowledge

The open-ended question (question 24 in a questionnaire for lecturers) required lecturers to explain whether students were able to reach deep understanding of knowledge in their courses. Respondents expressed their concern and views as follows;

26 out of 31 representing 84 percent, expressed the view that students rarely did reach deep understanding in their courses because the content in the courses were too theoretical and there was insufficient practical part in it. The lecturers had expressed this view in different ways. However, the three statements indicate how some lecturers had expressed it.

a) *That is 50/50, some students have challenges in understanding theory tasks due to low levels of education but good in hands on skills and vice versa*
b) *They can only reach when they incorporate industrial attachment which will give them practical experience*
c) *Not really because they only get basic understanding due to lack of necessary modern equipment and other teaching and learning materials in some courses are obsolete*

In responding to the same question, 5 out of 31 lecturers representing 16 percent expressed that students did reach deep understanding in their courses because the majority of them were able to pass the formative assessment and the national examination. The following are some of the views as they were stated by lecturers.

a) *Yes, students reach deep understanding especially when theory is combined with practical training.*

b) *Some students are able to reach deep understanding of knowledge because they manage to raise issues which sometimes pose a challenge to lecturers.*
c) *Since students are able to communicate what they learn in a lecture room to other students and lecturers, it shows a sign that they do reach deep understanding.*

Similarly, when the same question was asked (question 9 in the principals' interview schedule) to college principals, they expressed similar views. Principal 1 said that;

> *The caliber of students we are receiving is questionable. The students sometimes are unable to read and write and we sometimes use local language to clarify certain principles. Attaining a deep understanding is where there is a challenge. Some they do while others they don't especially those with low caliber and this may have been attributed to the enrollment. We do enroll students as low as with grade seven certificate in trade test level 3 and it actually becomes a challenge for those students to understand some concepts*.

The conclusion drawn from the results obtained from quantitative and qualitative data sets on the assessments administered to students confirmed that lecturers were using different types of assessments and the students were competent in basic skills hands on activities. Besides, students had a challenge to reach a deep understanding of knowledge.

4.5. Lecturers' Qualification and Experience

The quality of any TVET system ultimately depends on the quality of its lecturers and instructors. Thus, lecturers need to be highly qualified and have experience in both teaching and industry. In research question three the researcher attempted and to investigate the extent to which the lecturer's qualification and experience enhances students' competency acquisition in TVET institutions.

4.5.1. Academic Qualification and Experience of Lecturers

In trying to solicit this information, research item number 3, 5, and 6 in a questionnaire for lecturers required lecturers to indicate their qualification, years of experience in lecturing and in the industrial. Cross-tabulation was used in order to compare the relationship between qualification and the experience of lecturers in TVET institutions.

The cross-tabulation Table 4.5 illustrate the lecturers' qualification and their industrial experience.

Table 4. 4: ***Cross-tabulation of lecturers' qualification and years of experience in lecturing and in industrial***

N=31			Years of experience as in lecturing and industrial				Total	%
			below 5	5-10	11-14	above 15		
Highest professional qualification	Certificate	Lecturing	4	2	0	2	8	26
		Industrial	2	4	1	1	8	
	Diploma	Lecturing	4	7	1	5	17	55
		Industrial	7	3	1	6	17	
	Bachelor's degree	Lecturing	1	1	0	2	4	13
		Industrial	1	1	0	2	4	
	Masters	Lecturing	0	0	1	1	2	7
		Industrial	0	0	0	2	2	

Table 4.5 indicates that, a total of eight lecturers that is 26 percent had certificates as their highest professional qualification, 17 that is 55 percent had Diplomas whereas four that is 13 percent had Bachelor's Degrees and two that is seven percent had Masters Degrees. However, lecturers had varying working experience in both lecturing and working experience in industry as indicated on the Table 4.5. A total of nine lecturers out of thirty-one had experience below five years in lecturing while the majority of lecturers that is 22 had experience above five years. Further, a total of ten lecturers out of the 31 had experience with the industrial below five years and this shows that a total of twenty-one lecturers had experience with the industrial above five years.

The results displayed in Table 4.5 indicates that the majority of lecturers were qualified and had working experience of more than five years in both lecturing and in industry. Experience of lecturers is highly important for effective training because lecturers share experience from each other for successful training. Experience gained overtime, enhances the knowledge, skills, and productivity of lecturers.

Mostly, in response to the research question three, questions number 1 and 2 in the directors' interview schedule was asked to TEVETA officials to find out if TVET

institutions had competent, qualified and experienced lecturers to train students and the minimum qualification to teach in a TVET institution respectively. The college principals were also asked the same questions in the principal's interview schedule (question item 10 and 11). The following issues emerged and all the four respondents representing 100 percent agreed that, their TVET institutions were staffed with qualified and experienced lecturers. Official A when interviewed acknowledged that:

> *All the TVET institutions are registered under the minimum standard and part of the minimum standard is that, they should have qualified lecturers and all the lecturers should be accredited to TEVETA. As at now all the lecturers are qualified and are accredited to TEVETA. The basis of accreditation is that; (1) lecturers should be qualified in the area they are teaching and the certificate should be from the recognised body. (2) A lecturers' qualification should be above of that of the learners. This means that tradesmen should be taught by a craftsman, craftsmen should be taught by technicians, technicians by diplomas and diplomas by degree holders or above. (3) A lecturer should have a teaching methodology. Thus, the minimum qualification of a lecturer to teach in TVET institution is trade test level one (1). Because lecturers with that qualification can teach students in trade test level two (2) and trade test level three (3).*

In responding to the same question, official B suggested in confidence that;

> *We have adequate or enough lecturers but in other new programmes we have challenges such as creative digital media, refrigeration and air conditioning. There is also a challenge with lecturers' qualification in courses like bricklaying and plastering, carpentry and joinery. You would discover that a craftsman is being taught by a fellow craftsman, a diploma by a diploma. This is because there is no any qualification above diploma as yet which is offered in bricklaying and plastering, carpentry and joinery in the country.*

4.5.2. In-service Training

In-service training is one of the programmes which is important in ensuring that lecturers in TVET institutions are up-to-date with technological advancement in the world. In this new era of knowledge-based economy, lecturers need to be equipped with relevant competencies so as to make them enhance their profession and become competitive in delivering improved TVET programmes. This is significant because knowledge can become obsolete in a short period. In soliciting information on the in-service training,

question item 8 and 10 in a questionnaire for lecturers were designed (see Appendix D). Table 4.6 indicate the lecturers' responses about in-service training and upgrade.

Table 4. 5: ***Frequency and percentage distributions of lecturers' in-service training and upgrading***

Variable (n=31)	**f**	**%**	**Total**	
			Number	Cumulative %
In-service Training				
Yes	16	52	31	52
No	15	48		100
Upgrading				
Yes	12	39		39
No	19	61		100

Table 4.6 indicates that 16 lecturers which is 52 percent have gone for in-service training whereas 15 lecturers which is 48 have not attended any in-service training in their profession. A total of 15 lecturers out of 31 who have not attended any in-service training was extremely alarming in the lecturing fraternity because this might affect the competency acquisition among students. Lecturers could only be ahead in terms of knowledge and being updated with new technology through in-service training. Furthermore, the Table 4.6 illustrates that only 12 lecturers in total were upgrading themselves which is 39 percent whereas the majority of lecturers that is 19 in total which is 61 percent were not studying with any higher learning of institution.

Moreover, in order to have more insight on in-service training, question item 3 and 13 in directors' interview guide and principals' interview guide respectively, sought information on whether there was an effective policy to support in-service trainings for lecturers. All the participants who were interviewed, confirmed that, there was a government policy to upskill all the lecturers in TVET institutions. Official A commented that;

> *There is a government policy to provide in-service training for lecturers but due to inadequate resources, some lecturers have not yet been upskilled. Instead some have been sponsoring themselves not until recently the Ministry of Higher Education got a loan from the African Development Bank (ADB) and part of the funds have been channeled in upskilling lecturers in science related courses.*

In responding to the same question, official B from TEVETA asserted that;

> *The policy is there, but what we may not have is the implementation plan, because all the TVET institutions under the Ministry of Higher Education are run by the management boards. The management boards decide who should go for further trainings or not. Now the ministry has supported and many lecturers have been sent to China and have come back with degrees.*

The conclusion drawn from the results obtained from quantitative and qualitative data sets on the qualification and experiences of lecturers was that, all the lecturers were qualified to teach in TVET institutions because the minimum qualification that some lecturers had was a certificate which was above the trade test level one set as a minimum qualification by the TEVETA to teach in trade schools. Further, majority of lecturers had a working experience in the industry of more than five years and even the verbatim illustrated above attested to this fact. It was also noticed that when students who then after being assessed were deemed competent in basic hands on skills as shown in Table 4.6.

4.6. Industrial Attachments

The research question four sought to establish the extent to which industrial attachments were supported in TVET institutions as a way of enhancing the acquisition of relevant practical skills in students. In response to this research question the following were the results from data analysed from 31 lecturers who participated in the study. Question 21 in a questionnaire for lecturers asked lecturers to indicate their opinion on statements regarding TVET institutions and industry linkage. The response rates were presented on the five-point Likert scale that is; 1, 2, 3, 4 and 5 representing strongly agree, agree, neutral, disagree and strongly disagree respectively.

With regard, the mode, mean and standard deviation were used for the analysis of industrial attachments. As indicated in Table 4.7, the values of standard deviation for all items are less than the mean values of all items. Thus, mean would be an appropriate measure of central tendency for the analysis of industrial attachment. The results presented in the subsequent Table 4.7 helps to understand the extent to which industrial attachments were supported by TVET institutions as well as industries.

Table 4. 6: ***Responses of lecturers on TVET- industrial attachments***

Items	Mode	Mean	Standard Deviation
There is a supportive government policy that facilitates and encourages collaboration between TVET institutions and industries	2	1.68	.541
Industries and TVET institutions jointly draft competency-based curricula and courses of study	2	2.00	.516
Industries are involved in assessing students' performance	2	2.00	.632
TVET institutions make linkage with handcraft villages and in household business to conduct on the job training for students	5	4.26	.773
TVET lecturers are sometimes trained in new technology by industries so as to support and guide students.	4	3.87	.806
Cooperative training does help students to acquire further knowledge and skill for their future job	2	1.77	.560
TVET institutions conduct tracer studies and interact closely with industries	3	3.84	.779
The time given to students for industrial attachments is adequate	5	3.77	1.175
Industries assign well trained experts to guide students to practice skill development.	2	2.26	.893
Industries support TVET institutions by providing essential equipment', instructional technology and learning materials	4	3.87	.763

Industries adequately incorporate all students for industrial attachments and meet the demand of TVET institutions	3	3.81	.873
Valid N (list wise)	31		

The results displayed in Table 4.7 illustrate that the majority of lecturers had expressed agreement for the five (5) statements that asked about various ideas related to industrial attachments. In particular, with the first statement, the mode response was 2 associated with the response agree, while the mean response was 1.68 with the standard deviation of 0.541 implying that the majority of the respondents agreed with the statement that there was a supportive government policy that facilitates and encourages collaboration between TVET institutions and industries. Besides, other statements with the mode of two which expressed agreement, included; 'industries and TVET institutions jointly draft competency-based curricula and courses of study', 'industries are involved in assessing students' performance', 'cooperative training do help students to acquire further knowledge and skill for their future job' and 'industries assign well trained experts to guide students to practice skill development' and had a mean of 2.00, 2.00, 1.77, 2.26 and with a standard deviation of 0.516, 0.632, 0.560 and 0.93 respectively.

The other statements presented in the Table 4.7 to the respondents which included; 'TVET institutions conduct tracer studies and interact closely with industries', 'industries adequately incorporate all students for industrial attachments and meet the demand of TVET institutions' had a mode response of three which were associated with the mean response of 3.84, 3.81 and a standard deviation of 0.779 and 0.873 respectively and this implied that the majority of respondents' responses were neutral and they did not agree about the statements. Further, the mode response of three and a high standard deviation of 0.779 and 0.873 indicated that TVET institutions were not conducting tracer studies as well as interacting closely with the industry and industries were not adequately incorporating all students for industrial attachments so as to meet the demand of the TVET institutions.

Contrary to the majority of lecturers expressed a disagreement with the statements that had a response mode of four which included; 'TVET lecturers' are sometimes trained in new technology by industries so as to support and guide students', 'industries support TVET institutions by providing essential equipment, instructional technology and learning materials', and the statements had a mean of 3.87, 3.87 and a standard deviation of 0.806 and 0.763 respectively. In addition, statements which include; 'TVET institutions make linkage with handcraft villages and in household business to conduct on the job training for students' and 'the time given to students for industrial attachments is adequate,' had a mode response of five which expressed strong disagreement and their response means were 4.26, 3.77 with the standard deviation of 0.773 and 1.175 respectively. This also implied that TVET institutions at the time of the visit were not making linkage with handcraft villages and in household business to conduct on the job training for students and the time which was given to students for industrial attachments was not adequate.

With reference to industrial attachment, the two college principals and two officials from TEVETA were required to give their views on question 26 and 14 in principals' and directors' interview guides respectively. The questions sought information on how often were students going for industrial attachments as well as whether the instructors in the industry were involved in assessing students' performance. It was noticed that the data which was collected from the participants who were interviewed seemed to affirm with those of quantitative. However, at the time of interviews, the themes emerged related to the industrial attachment and they were discussed in the following sections. Principal 1 interviewed commented that;

> *As per tradition, every term, second year students are given introductory letters and confidential forms for industrial attachment. Then they come with recommendations letters from industries and the marks that are given are made part of continuous assessment. Previously, we used to monitor students at the time of their attachments, but because of inadequate resources, it has become very difficult to conduct tracer studies.*

In responding to the same question, official A from TEVETA did not agree with the views advanced by the principal and his alternative views were expressed as follows;

> *Industrial attachment is a component and a requirement in all the programmes under TVET for every student to practice. However, industrial attachment is not prescribed in any TVET curriculum and much as we would love our students to do it, it's not possible. Not because of their own wish or TEVETA, but it's just due to small industrial base in Zambia. We have few companies and which cannot absorb all students for practice. Initially, colleges should arrange industrial attachments for students rather than just writing letters. We are lagging behind in terms of industrial practices and that's why we always want our students to experience what is happening in the industry. One of the progress we have made is to facilitate the collaboration between TVET colleges and industries and advocate for learnership.*

In the same way, the researcher wanted clarity on information regarding effectiveness of a government policy that facilitates and encourages collaboration between TVET institutions and industries. In eliciting this information, the researcher was guided by item number 27 and 16 from the principals' interview schedule and directors' interview schedule (see Appendix C and 4). The response from TEVETA officials revealed that both parties that is TEVT institutions and industries do sometime sign a memorandum of understanding (MoU). A memorandum of understanding is a type of agreement between two or more parties. It expresses a convergence of will between the parties. In responding to the question, official A for TEVETA said that;

> *There is no memorandum of understanding or any prescribed government policy which governs the industrial attachment or stating where students should be attached, as at now, not until the skill development levy will be passed as an Act of parliament. For us is a unique case, as TAVETA we don't train but we do regulate and monitor as an authority. However, we just facilitate the MoU between training institutions and the industries. It is upon the training providers to ensure that students go for industrial attachment or not. But TEVETA has facilitated or linked institution to where students could be attached and sign a MoU so that both parties could respect the agreement.*

Moreover, in responding to the same question, principal 1 who was interviewed asserted that;

> *There is a strong political will from the government as well as the Ministry of Higher Education to facilitate the linkage between our institutions and the industries. But one setback that has been observed is that, there is a*

duplication of training. You would discover that industries such as mines and ZESCO had their own colleges to train their own students in the same courses we offer such as engineering, power electrical, bricklaying and plumbing and plastering. However, to address the duplication of courses, learnership was encouraged by the Ministry of Higher Education.

Learnership is a structured learning programme during which the learner spends some time learning theory and some time learning practical skills in the industry. The researcher noticed that it was necessary to collect information on learnership. Hence, the follow up question was asked to TEVETA officials to explain why learnership should be preferred as an effective form of practical training than the usual industrial attachment practiced between TVET institutions and the industries. And official A from TEVETA mentioned that;

The time given for industrial attachment is not adequate and learnership as worked well. It is a duo kind of training where in the morning students are in the industry and in the afternoon, they are in class learning theory. For instance, we facilitated a MoU between Zambia Business College (ZBC) and ZANACO Bank and it worked well. In the morning students were at ZANACO Bank and in the afternoon, students were in college learning theory. Moreover, industries were complaining that students could not operate earthing equipment and they were spending a lot of money to retrain them. We facilitated learnership between Northern Technical College (NOTEC) and with the mining industry where in six months' students could learn theory and the other six months, they spent it for practicals in the mining. This was because we have a nice curriculum but the institutions could not afford to procure heavy duty equipment for training. Some of advantages of learnership are that; by the time students are graduating they are already competent and this has helped to address the skill gap between the TVET institutions and the industries.

4.6.1. Skills Gap between TVET Institutions and Industries

The skills gap is one among the contentious issues that is under discussion in the industry sector as well as among the TVET providers. This has also become a challenge among the graduates from TVET institutions who are more often rejected by the industries. However, thirty-one lecturers were asked to give their views about the mismatch of skills between the industry and what is offered in TVET institutions. In eliciting this information, the researcher was guided by item number 26 from the questionnaire for lecturers (see Appendix B). The responses from the lecturers revealed that majority of lecturers' representing 81 percent confirmed that there was a skills gap between what was offered in TVET institutions and the industries whereas 19 percent did not agree that there was a skills gap. The responses are displayed in the following Figure 4.6.

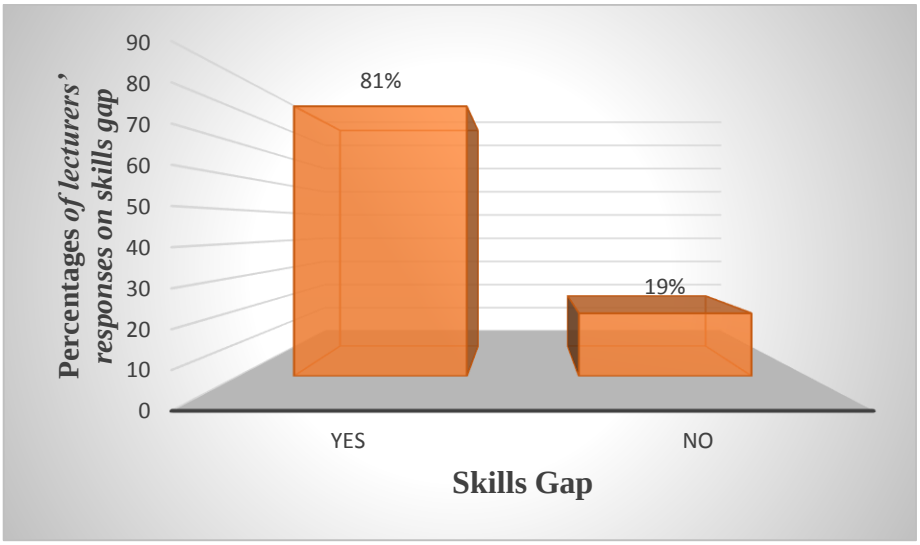


Figure 4. 6: ***Percentage distribution of lecturers' responses on skills gap***

Furthermore, the open-ended question (Question 27 in lecturers' questionnaire) required respondents to explain why there was a mismatch in skills between what was offered in TVET institutions and the industry. Lecturers' expressed their concern and views as follows;

27 out of the 31, 87 percent expressed the view that the mismatch in skills was due to advanced technology in the industry as compared to TVET institutions where they are still using few obsolete equipment and facilities for practical training. The lecturers had

expressed this view in some different ways. However, the statements below indicate how some lecturers had expressed it.

a) *It's because of the limited, obsolete materials and equipment used in institutions and they are costly to be repaired or sustained for training. Because of new technology used in industry, it provides no link with TVET institutions.*
b) *This means that TVET curriculum was lacking certain components which can enable graduates suit the industry demands.*
c) *True statement, most training is theoretical and not practical. There is lack of field trips to expose students to real work in industries.*

Other lecturers, 4 of them, who made 13 percent of the total, expressed the view in contrast that there is no skills gap because practical tool kit which was developed with the industrial cooperation is now being implemented and in it there are many project assessments that have been outlined and students are required to do all of them in order to acquire relevant skills as required in the industry. Moreover, it was noted that all participants including college principals and TEVETA directors when they were asked (question 28 and 16 in interview schedule for colleges' and principals') to express their views on mismatch of skills, were all giving the similar views affirming the lecturer's responses. And principal 1 commented that;

> *The mismatch was created as a result of obsolete equipment in our institution and that could be one of the reasons industries opted to have their own colleges and train their own students. The other reason was that TVET institutions have challenges in terms of financial resources and in that case, it was difficult to upskill lecturers with new technology and industries are very skeptical and suspicious of lecturers. They could have been updating lecturers on modern technology but from the look of things industries do not want to share their modern industrial practices and there is no any feedback. Sometimes students have a better understanding and more informed about new technology than the lecturers.*

4.6.2. Challenges Faced in TVET Institutions to Improve Students' Competency Acquisition

In trying to inquire from the lecturers on their views about the challenges they could have been facing in improving the quality of competency acquisition for students, question 29

in a lectures' questionnaire was designed. A total of 31 lecturers responded to this question and their responses are summerised in the following Table 4.8.

Table 4. 7: ***Frequency and percentage distributions of lecturers' suggestions on challenges faced to improve students' competency acquisition***

Views of Lecturers	f	%
Inadequate and obsolete training equipment and facilities which include; library, current text books for researching, internet facilities and machines	8	26
Accommodation for students is poor and sanitation is pathetic, poor infrastructure and transport.	3	9
Late funding from the government that affects efficiency in administration.	4	13
Lack of reliable transport to carry out industrial visits at will and field trips.	2	7
Lecturers in most cases are not sent for in-service training.	5	16
Lack of heavy capital investments in procuring modern equipment in the workshop so as to equip learners.	4	13
Lack of job security because of contracts and lack of motivation to lecturers.	3	9
Reduce on bureaucracy in decision making some of us we have not gone on leave for over ten years.	2	7
	31	100

From the suggestions expressed by lecturers it was noted that some used to give similar views on the challenges they were facing to improve competencies among the students. For instance, 26 percent of lecturers stated that obsolete training equipment and facilities which include; library, current text books for researching, internet facilities and machines were inadequate and obsolete, nine percent of lecturers indicated that there was poor accommodation for students, poor sanitation and poor infrastructure, 13 percent expressed that there administration was inefficient due to late funding from the government, seven percent of lecturers commented that there was lack of reliable transport to carry out

industrial visits at will and field trips. 16 percent of lecturers said that they were not sent for in-service training, 13 percent of lecturers asserted that lack of heavy capital investments in procuring modern equipment in the workshop so as to equip learners, nine percent of lecturers attributed to lack of job security because of contracts and lack of motivation to lecturers and seven percent reported that administration should reduce on bureaucracy in decision making and as a result some of lecturers have not gone on leave for over ten years.

Furthermore, the researcher sought to find out from the other participants namely; TEVETA directors and college principals on the challenges they used to face as administrators in the provision of TVET programmes in their institutions to improve students' competencies. In eliciting this information, the researcher was guided by item number 17 and 29 from the interview schedule for directors and college principals respectively. The responses from the participants revealed that they were aware that their institutions were facing some challenges to improving students' competencies. Responding to the question, principal 1 suggested that;

> *I am very much aware as an administrator that there are many challenges that we face as an institution. One of the challenges that personally have painfully experienced is the unemployment levels among the graduates from Trade schools. But we do encourage them to team up and form their companies or open up business centers after graduation. However, the dependency syndrome of being employed is putting students at an awkward position and the courses that we offer are thorough hands on. Sometimes the graduates from trade schools have changed their career especially when they discover that the salaries in the industries are very low.*

In responding to the same question in another separate interview, the official A for TEVETA stated that;

> *The lecturers in our TVET institutions are lagging behind and there is more research going on in the industry than in our institutions, the sadden part is that we always import technology and due to the big financial base in industries, they acquire technology very easily and fast. By the time our institutions would want to use that technology, it has become more expensive maybe phasing out particularly in engineering course but in social science related courses we are up to date.*

Moreover, in response to the same question, official B commented that;

> *I suggest that the big challenge is with the industries. Some industries are always too political and complain about logistics that should be catered for students at the time of their industrial attachment. Industries say we have space but we do not have resources to look after the students in terms of food, transport and a token of appreciation. Sometimes students damage our equipment and you would find that students have no opportunity to be attached to any industry as well as being exposed to what is happening in the labour market.*

4.6.3. Interventions to Improve Students' Competency Acquisition in Technical Courses

The open-ended question (question 30 in lecturers' questionnaire) was asked and required lecturers to suggest some possible solutions that should be implemented for the improvement of students' competency acquisition in TVET institutions. The lecturers expressed in some different ways their concerns and views that;

16 out of 31 lecturers, 52 percent, expressed the view that TVET institutions should enhance private-public partnership with the industry and industries should have a social responsibility to sponsor some students as well as updating lecturers in new technology. However, some lecturers expressed this view in a different way and the following are the three statements indicating how some lecturers had reported them;

> a) *Introduce programmes for upskilling lecturers in their area of specialisation.*
> b) *Many stakeholders should be involved in TVET curriculum development process including among others; industries and the lecturers who are the implementers.*
> c) *Modular systems of trainings for industrial attachment such as apprenticeship training, learnership should be introduced as to enhance cooperative trainings.*

In responding to the same question, 10 out of 31 lecturers representing 32 percent expressed the view that the scores for assessment were to bias such that the theoretical part (national examinations) carried more marks of 60 percent than the practical assessment which carried less than 40 percent. Thus, the assessment modes in TVET

institutions could not provide a basis to measure relevant competencies acquired by students in technical courses. Hence, following are some of the two statements as they were expressed by the lecturers;

a) *70* percent *should be done practically and 30* percent *theoretically as it should in Skills College and the same goes with funding, 70* percent *of funds must be allocated towards practicals that is hands on lessons and purchasing of teaching and learning materials.*
b) *Trainers should be given an opportunity to assess the learners using the methods they consider appropriate for the task at their own time because time tabled assessment is not helping learners and TVET institutions to achieve the educational objectives. For instance, students just copy and paste assignments.*

Mostly, in responding to the same question, two of the lecturers who made six percent suggested that the Ministry of Higher Education or the government should increase the funding to the TVET institutions so that the money could be used to improve internet facilities, infrastructure, procure modern equipment for practical training and produce teaching and learning materials locally.

Other lecturers, three of them who consisted of 10 percent expressed a need to enhance monitoring and supervision by the relevant authorities as well as improving conditions of service for lecturers. Below are some of the two views as they were expressed by lecturers;

a) *There is also a need for frequent monitoring and supervision by the relevant authorities to check on the teaching and learning conditions which are deteriorating.*
b) *Government or Boards should improve conditions of service by giving attractive salaries to lecturers so that highly qualified and experienced lecturers could be attracted and be retained in TVET institutions.*

It was noted that all solutions that were expressed by the lecturers were practical and if implemented, might improve students' competency acquisitions in TVET institutions in Zambia. 52 percent of lecturers were for the idea of private-public partnership with the industries, 32 percent suggested to increase marks for practical assessment, 10 percent were for the view to enhance monitoring and supervision by the relevant authorities in particular from the Ministry of Higher Education and six percent expressed the view of

increasing funding to TVET institutions as well as improving conditions of service for lecturers. Figure 4.7 presents a summary of lecturers' suggestions that could be implemented in improving students' competency acquisition.

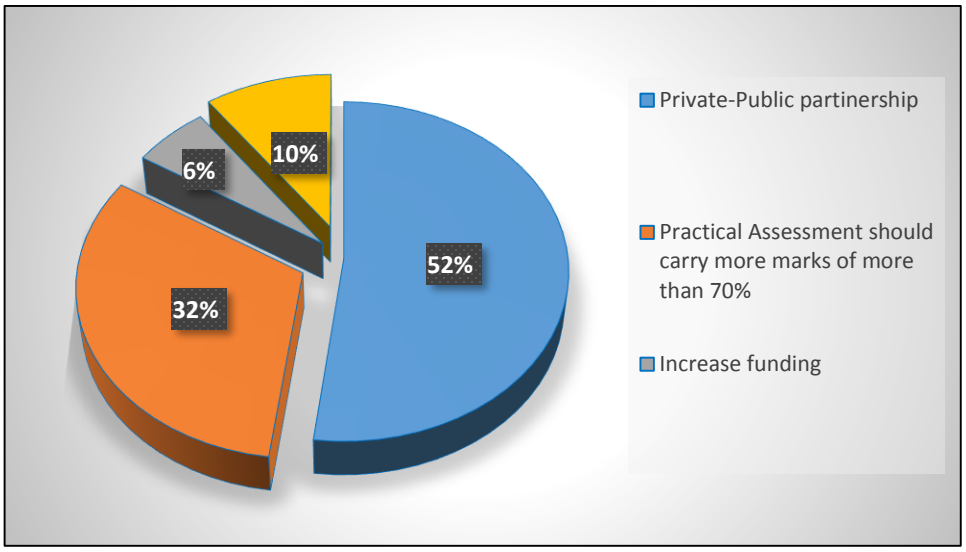


Figure 4. 7: ***Percentage distribution of lecturers' response on solutions to improve students' competency acquisition***

Similarly, when the same question (question 30 and 18 in interview schedules for directors' and college principals) was asked to directors and college principals at the time of separate interviews, their suggestions seemed to affirm with those of lecturers (see Appendix E and 6). However, their suggestions emphasised practical interventions from a policy point of view and official A asserted that;

> *The Apprenticeship Act should be introduced soon, though currently, it is under review by the two Ministries that is, Ministry of Labour and Ministry of Higher Education. In the Apprenticeship Act, regulations on industrial attachment will be clearly stipulated and industries will not shun to absorb all student for industrial attachment because some funds will be allocated for that. Furthermore, the Bursary Scheme which was introduced to students in Trade Schools should be effectively implemented and there should be a mechanism to ensure that students pay back the money.*

When the same question was asked, official B commented that;

> *Most of the challenges that TVET institutions could have been experiencing will be addressed by the introduction of skills development*

> *levy. However, if skills development funds will be used with its intended purposes, then it would assist in reviewing many TVET curricular, procure modern equipment, upskilling lecturers and embark on infrastructure development. Industries will also tap into skills development funds so as to meet the cost of training students. The other solution is to introduce other modes of learning, which is training delivery, for example, learnership and distance learning for the people working in industries. If we are to achieve the greatest development in the provision of TVET programmes in the country, TVET institutions should not only become importers and consumers of western modern technology but they should become inventors and innovators of their own as well as new technology.*

In addition, responding to the same question, principal 2 explained that;

> *Some content in our curriculum do not reflect our context and there is a gap in terms of knowledge. Our practical indigenous knowledge is not tapped in the education system thereby providing a skills gap. Our people in our culture have got perfect skills and knowledge and if that were integrated in the TVET curriculum we could be producing skilled students. For instance, skills including weaving, house thatching, wood curving, and our traditional crops, there is more money into these skills than even our students in electrical engineering who cannot even find decent employment.*

The assertions analysed by the officials were of significance to the quality provision of TVET programmes. In order for the students to become inventors' and innovators of new technology, there is a need by the government to invest magnanimously towards research development programmes and integrate our indigenous knowledge into the TVET curriculum.

The results have indicated that, though industrial attachment was practiced and supported, still some students were finding it difficult to be absorbed in the industries due to small industrial base in the country and skeptical tendencies by industrial owners for fear of equipment damage by students. The time which was allocated for industrial attachment was not also adequate to equip students with relevant competencies that were required by the industry. Furthermore, the participants who were interviewed were even more optimistic especially as seen in their responses above when they clearly brought out important views that also emerged as themes for the discussion which included; linkages

between the industries and TVET institutions, skills gap and interventions that could enhance students' competency acquisition.

4.7. Summary

By using both approaches (quantitative and qualitative), it was made possible to draw valid inferences that showed similar outcomes. In both approaches, the results confirmed that TVET institutions were crippled with inadequate facilities and obsolete equipment for teaching and learning. This indicated that TVET institutions were lagging behind in technological advancement as well as with modern industrial practices and the curriculum was relevant to the needs of the labour market, but the environment in which it was implemented need a lot to be desired. Further, in both institutions, the results indicated that the majority of lecturers were qualified and had experience with the industry but the challenge lecturers were facing was lack of exposure to the modern technology and were not upskilled due to unclear in-service policy. The findings further revealed that despite industrial attachment was a requirement for every student, it was not possible for all the students to be absorbed in industries. However, the possible suggestions were made on how to address the skills gap between the industries and the TVET institutions as well as on how to improve students' competency acquisition. In the following chapter, the discussions of the research findings will be presented and analysed in detail.

CHAPTER FIVE: DISCUSSION OF THE FINDINGS

5.1. Overview

In this chapter, a discussion based on the analysis of the data presented in the previous chapter is done. This is done in relation to the themes that emerged based on the research objectives and the discussions on how to bridge the skills gap between the students from the TVET institutions and the industry. In addition, the findings are discussed with reference to the theoretical framework used in this study and the literature revealed in chapter two.

5.2. Adequacy and Appropriateness of Teaching and Learning Resources in TVET Institutions.

In view of the fact that students are now exposed on a daily basis to the limitless knowledge emerging from different sources owing to media such as television and the internet in particular, it is difficult to imagine today's educational process going on in TVET institutions without the use of appropriate teaching and learning resources mainly; facilities and equipment, curriculum, prescribed books and written material such as newspaper or articles from scientific technical literature. The purpose and role of teaching and learning resources do not only consist of making the educational process more attractive and interesting but also encouraging active learning, the development of different skills and the adoption of desirable values and attitudes of students as argued by Bušljeta (2013). The adequacy and appropriateness of teaching and learning resources in TVET institutions has become a source of contravention in skills development particularly in developing countries in Africa.

It is supreme to note that, the relevance and appropriateness of teaching and learning resources play a vital role in enhancing student's competency acquisition in TVET institutions and bridging the gap in skills development. Therefore, teaching and learning resources in TVET institutions should be adequate and relevant to the place of work. However, considering the analysis for objective one in section 4.3.1 of chapter four, the study established that, teaching and learning resources (equipment and facilities) that were aimed to provide practical training so as to equip students with relevant competencies that

the industries needed were not adequate, appropriate, were obsolete and not up-to-date with technological advancement in the world as illustrated in figure 4.1. Generally, the lecture rooms and workshop equipment were inadequate for all the programmes that were offered in the TVET institutions as the results indicate in figure 4.2 in chapter four. Mostly, other facilities which included electrical power, water supply and sanitation, and sporting facilities were examined by using an observation checklist and the results indicated that the two TVET institutions had no challenges with the supply of electrical power and sanitation. Although some facilities were in bad shape such as sporting facilities, they had no much effect on the part of skills development.

Better still, the workshop tools vary according to the vocational programmes. For instance, the workshop for automotive mechanics should be equipped with running modern vehicle engines, different types of spanners and vehicles for practicals. Similarly, the workshop for General Agriculture should have various farming equipment which include, tractors, ploughs, planters and sprayers. Conversely, from the two TVET institutions visited, the researcher observed that, their workshops had obsolete equipment generally for automotive mechanics whereas for General Agriculture, only had few holes and a sprayer were seen in the garden at one institution. The workshop for carpentry and joinery was stocked with old equipment and only few were working. This was because equipment were too expensive beyond the capacity of the TVET institutions and the maintenance of the existing facilities and equipment was becoming unsustainable due to their obsolete condition.

Besides, at the time of practical demonstration in different workshops, it was observed that, many students were clouding one equipment which was an indication that, the equipment were not adequate for all the students. The findings are in congruent with the findings of NICHE, (2010) in which it was documented that insufficient training equipment lead to trainees' overcrowding during practical demonstration, a situation which in turn leads most of the trainees to only observing the demonstration and not actually having the opportunity to get some hands-on practice. For this reason, TVET remains theoretical in most cases and as a result TVET institutions under investigation

mighty acquire poor image and produce graduates with lower employability because they lack the competencies needed by the industries.

Moreover, Umunadi (2011) stated that, one of the issues of great controversy among TVE educators today is the issue of the poor state of workshop tools and equipment in TVE institutions in developing countries. Similarly, Umar and Ma'aji (2010) suggested that most of the TVE institutions in Nigeria had been forced to perform below standard due to non-availability, poor management or utter neglect of the required facilities in the workshops for effective skills acquisition. They also revealed that, some workshop tools and equipment were sub-standard and therefore could not be easily maintained to bring them to life again. In the same context, Barky (2005) reported that, poor facilities, lack of equipment and workshop tools make it impossible for the students in TEVT institutions to receive training that meets the standards for employment in industries or related organisations.

Mostly, the studies which were done in Zambia confirmed that TVET institutions were riddled with infrastructural challenges which include among others: old and obsolete training equipment, shortage of workshop and classroom accommodation and poor internet connectivity (Hamweete, 2007, Mwila, 2016 and Salimu, 2007). Furthermore, Nkhanza (2007) and Tembo (2005) reported in support that, there is serious mismatch between training equipment used in TVET institutions during training and what is obtaining in industry. The implication of such a situation could be that, the learning environment was not conducive for effective skills development and the number of hours allocated to learning could not have been enough. As a result, this has definitely affected the quality of training and development of the full potential of students as well as their knowledge and skills that could have made them contribute towards participation in the complex rapidly changing society. Generally, inadequate and non-functional training facilities in TVET institutions would result into the poor acquisition of competencies and poor students' performance and if this trend continues, there will be a shortage of highly skilled manpower to work in the industries. Therefore, the appropriateness of teaching materials and training equipment are significant to the acquisition of relevant competencies among the TVET graduates from the TVET institutions in question and

there is a need to provide adequate workshop tools, equipment and machines for effective implementation of TVET programmes.

It is critical to note that, teaching and learning materials are very significant in providing effective practical training to students and should be fully utilised as well as sufficiently organised. The reason behind organising learning materials is to help all students in TVET institutions to be efficient and develop marketable skills. There should also be a standard library stocked with relevant and adequate textbooks to be used by all the students. This is because, the role of the library is to enhance research and provide a variety of teaching and learning materials. However, the results on the adequacy of teaching and learning materials as displayed in Table 4.3 in chapter four illustrated that, the teaching and learning materials that were meant for practical trainings were not adequate for all the students. The findings are also in line with what was stated by Brown (1994) that the major challenge faced by TVET institutions in implementing its curriculum is the shortage of teaching and learning materials for practical activities and one of the characteristics of competency-based instruction programme is the effective utilisation of resources. Mwila (2016) also explained that, the TVET 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 to research and familiarise themselves with more recent developments in various spheres of knowledge. This indicated that, inadequacy of teaching and learning materials have adverse effects on the effective implementation of the TVET curriculum.

It was also noticed that, most textbooks that were stocked in the library and those that were used by lecturers were foreign. The conclusion on these foreign textbooks could be that, local authors have not either found it fit or given an opportunity to write books for TVET and publish. Since the books were bought from developed countries where the technology has advanced, lecturers had difficulties in interpreting the content that might have not been reflecting the context of this country, Zambia. Although there was an effort by the Ministry of Higher Education to start producing books in line with the current TVET curriculum, the process is long overdue. As a result, TVET institutions had some challenges in securing current teaching and learning materials for the students and this

could have contributed to the skills gap between the TVET institutions and the industry. The study conducted by Dadi (2014) confirmed that, most of the relevant authorities charged with a responsibility to provide TVET in Africa are not capable of producing their own teaching and learning materials for TVET institutions.

Furthermore, New York Comprehensive Center (2011) as quoted by Mwila (2016) suggested 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. However, it is difficulty to realise the objective suggested by New York Comprehensive Center (2011) because, the institutions had made little effort in improving the standard of their libraries and to secure up-to-date textbooks that could respond to the current technological practices now embraced by the society. TVET institutions have the mandate to fulfil the aspirations of its society and be responsive to the dynamic technological advancement practiced in the industries and in that case, TVET institutions should ensure that the teaching and learning resources are adequate, appropriate and up-to-date with industrial practices so as to facilitate the acquisition of appropriate competencies among the students pursuing technical courses.

5.3. The Relevance of the TVET Curriculum to the Needs of the Labour Market.

The major role of the entire education system is its contribution to social, political and economic development of any nation. In the same way, TVET institutions also play an equally important role in creating skilled human resource for the country (TEVETA, 2016). In order to achieve that, the TVET curriculum should be responsive to the needs of its society and relevant to the labour market.

The lecturers from TVET institutions in question were asked to indicate their opinion on whether the TVET curriculum that was implemented was relevant to the labour market. The mode, mean and the standard deviations were used for the analysis of the lecturer's responses and the findings from the analysis of the data that was collected as shown in Table 4.4 in chapter four suggested that, the TVET curriculum was relevant to the labour

market as well as responsive to its society because the courses that were offered had the potential to address the youth unemployment and poverty levels in the country. Further, the content of the curricular were up to date with technological advancement in the world though there was a need to revise the TVET curriculum in line with industrial practices in Zambia. This was also confirmed by college principals and officials from TEVETA that, the TVET curriculum was relevant to the labour market being that, the courses offered in TVET institutions were designed as a result of either a social process demand or industrial demand. In addition, the TVET curriculum development process was consultative as many stakeholders (relevant regulatory boards, lecturers and industries) were involved. These findings are in consistent with the findings of Awoniyi and Miyanda (2013) who reported that, the TVET curriculum was relevant and appropriate to the needs of industry as well as geared towards the changing needs of the industry.

Additionally, CANTA (2005) argued that, the market labour analysis is very vital particularly in the development of TVET curriculum. A Competency-based TVET curriculum should begin with the identification of training needs within various sectors and sub-sectors of the economy of a nation. Further, Mulder et al., (2011) supported the same findings by suggesting that, proper competency-based TVET curriculum development should be preceded by a profound labour market needs analysis and TVET curriculum needs to focus upon education that is realistic in terms of opportunities for gainful employment. For this reason, curriculum planners should develop curricula that are based on national occupational standards and that are appropriate to learning process. The quality TVET delivery should also be measured through a process of learner achieved competence and curriculum planners should have a projection of new required jobs emerging in the labour market so that students could be prepared with new competitive skills for the future jobs if the TVET curricula have to remain relevant to its society it saves.

Slightly contrary to the findings of this study and many other studies that are consistent with this study, CEDEFOP (2008) reported that, the endemic irrelevance of TVET curriculum may be one of the greatest obstacles to matching education and training provision successfully to students and labour market needs. With regards to CEDEFOP (2008) suggestions, the skills mismatch exhibited by students was not attributed to the

irrelevance of the TVET curriculum in this study but there were other factors beyond the curriculum that contributed to skills gap and one among the factors was the unconducive environment in which the TVET curriculum was implemented. Such unconducive environment was characterised with obsolete equipment, old teaching and learning materials, lack of programmes to up skill lecturers and lack of resources to modernise TVET institutions. Therefore, the claims by the CEDEFOP (2008) could not provide the basis to argue upon that, student's skills gap was as a result of curriculum irrelevance because the TVET curricula were revised to match current industrial practices and the content were up-to-date with technological advancement in the world. The only major challenge was with the curriculum implementation. But it is a crucial stage which require the input of many stakeholders including the institutions, the industry, relevant ministries and the students themselves.

Although it was found that the TVET curriculum was relevant to the labour market, the results in section 4.4.1 in chapter four revealed some challenges which were characterised with curriculum implementation and those findings were in tandem with the findings of Biemans et al., (2004) who argued in support that, curricula based on learning outcomes are not automatically learner centered nor guaranteed to benefit the learners. This is because, they do not account for learner's contributions during the process of learning. Similarly, Ngure (2013) supported the same findings by stating that, Curriculum implementation in most TVET institutions was largely theoretic, resulting in graduates who exhibit inadequate practical skills in the workplace. The point to note is that, the training in TVET institutions should not be theoretical, instead, it should be practical so that students are equipped with refined competencies that the labour market requires.

Incidentally, the findings indicated that, the duration of two years for craft certificate was long for skills acquisition and one of the college principals contributed that, TVET institutions preferably wanted to scale up short intensive courses that were considered to equip survival skills among the trainees within a short period. The finding is in agreement with the findings of Ngure (2013) who argued that, the duration of programs in TVET institutions was too long and the programmes had too much content that was difficult to comprehend by students. Kufaine & Chitere (2013) supported the same findings by

reporting that, competent based curriculum which is designed for most TVET institutions, trainers have a tendency of not following it and in many instances, do complain of bulkiness of content in the teaching modules. Such a situation, made the lecturers not to complete the prescribed content in the syllabi for each technical programme and students were not fully equipped with relevant competencies that could have made them to become more competitive in the labour market.

5.4. Assessment of Learning and Competency Acquisition

The assessment of the TVET curricula should not be an event that occurs after teaching to check on whether students have acquired relevant competencies, instead, it could be significant in driving high-quality learning and instruction that is designed to ensure the relevance of TVET curricula. As such, assessment should be a process that should be integrated into teaching and learning and it should play a central part in determining the effectiveness of the TVET curricula. In order to have an insight into assessment, a total of 31 lecturers were requested to give their opinions on a five-point Likert scale against the statements regarding assessment in a lecturers' questionnaire. Their opinions as reflected in Table 4.5 in chapter four showed that, learning activities that the lecturers were preparing in teaching adequately measured students' knowledge and basic hands on skills. The assessment was also continuous and the students were aware of how and when assessments were to be conducted. The results further indicated that assessment activities in TVET learning and instructional materials were derived from learning outcomes and the theory and practical assessments were combined for certification.

In addition, the results in section 4.4.3 in chapter four showed that, the lecturers were using different types of assessment to measure the students' performance so as to ensure feedback and certification towards students' qualification. Further, assessments were meant to enhance research and to bridge the gap between theory and practice. However, most of the assessments were too theoretical and the practical assessments were not sufficiently considered. In particular, project assessment was not a mandatory for students to graduate (see Table 4.5). The equipment and the facilities which were used by the lecturers during project assessment were at variance with those that were in the industries and this had contributed to the skills mismatch.

The findings of using various approaches by the lecturers was in congruent with what Mwila (2016) suggested that, the adoption of the diverse pedagogical approaches had been identified as a strong characteristic of the current TVET model. Moreover, Deibinger (2005) explained that, flexibility requires a range of assessment methods referring to a range of delivery modes, learning sites and needs are provided. According to this principle, assessment should cover both the on and off the job components of training. In this principle, assessment procedures should provide for the recognition of competencies no matter how, where or when they have been acquired. Also, assessment procedures should be made accessible to learners so that learners can proceed readily from one competence standard to another. In particular, project assessment should mandatory so that then, many stakeholders (TEVETA, relevant boards and industry) could have confidence in the skills acquired by students. In that case, projects assessments are generally important tools that should be used to assess the practical competencies among students.

In order to enhance competency acquisition for students in TVET institutions, it requires changes in assessment forms, for instance, by increasing the weight of practical examinations and assessment at the workplace. Better still, written examinations are used to assess theoretical knowledge and carry 60 percent of assessment towards certification. The examinations on TVET are developed by the centers of expertise and in rare instances by the labour market. Hence, assessment methods have to be valid in the sense that, they indeed describe and evaluate the professional skills and competence which are intended to be tested.

Nevertheless, the assessments as noted by the researcher had some challenges as the results in section 4.4.3 chapter four indicated. The challenges were that, formative assessment which carried 40 percent was often manipulated by lecturers to ensure that students pass and it was very difficult to trust the qualification of students from Trade schools. Besides, to enhance practical assessments, the Ministry of Higher Education and the industries had developed a practical tool kit which actually guided both students and lecturers on what practical activities students should perform throughout their training. The practical tool kit was derived from the curriculum and it gave step by step activities

to enhance the competency acquisition and performance among students. However, the projects in the practical tool kit were not also sufficiently implemented as a result of some challenges outlined in Table 4.8

Moreover, when the students were assessed by the researcher using the students' competency checklist and in it some basic skills which include; self-management, management of others, management of tasks and management of the environment during practical trainings were outlined. The results revealed that, they were competent only in such basic hands on skills in a workshop (see Table 4.6 in chapter four indicated). But such skills could not guarantee students to be deemed competent as they were being trained on obsolete equipment and facilities. This finding is not consistent with the findings of Daksa (2013) who observed that, TVET institutions were in a very weak condition in conducting practical assessment at institutional level which is the base for the provision of demand driven training, awareness creation and assigning trainees to their choice, trainers' competence and training facilities and the provision of practical training. However, within limited training facilities and limited financial support, lecturers endeavored to equip students with necessary skills.

Although students demonstrated basic practical skills, they still had a challenge in understanding the theory part and reach a deep understanding of knowledge. This was confirmed by both lecturers and college principals who suggested different reasons that could have contributed to such a situation. In particular, the content in the courses were too theoretical and there was insufficient practical part in it (industrial attachment). Besides, students with or without grade seven certificate and grade nine certificate were also enrolled in trade test and difference in training equipment (see section 4.4.5 in chapter four). This finding is in agreement with the views of Darling-Hammond (2006) who argued that, it is difficult for the learners to reach deep understanding of the knowledge they are exposed to unless they are able to construct their own concepts and make a relationship with other subjects. In support, Fenwick, et al., (2013) had a skeptical attitude to understanding students' knowledge and they suggested that, knowledge is the most critical component in the education sector and brings out a lot of questions to whether students do attain deep understanding in terms of knowledge acquisition particularly in

TVET institutions. The significant question that could be asked is that; if the students had some difficulties in understanding the subject matter, how could they perform well in practical trainings? This is worth discussing because there is a strong relationship between the content and competency. The students need to construct their own concepts out of the content, translate knowledge, make relationships, retain knowledge for a period of time and thereafter, they should communicate that acquired knowledge to others and into perfecting their practical skills. This would enable the students to acquire competencies that could make them become productive and self-reliant.

5.5. Lecturer's Qualifications and Experience in Lecturing and in Industry

The quality of any education system ultimately depends on the quality of interactions and relationships that occurs between students and their lecturers. Thus, the quality of teachers' education is crucial to determine the knowledge and skills of future workers. Without adequate number of professionally qualified lecturers, TVET cannot offer the qualified skilled workers, (Rajesh and Majumdar, 2010). In support, Kambyat and Shmal (2010) commented that, the 21st century shows radically different economy and society which have impacts on a TVET programme. Due to increasing innovation in technology, globalisation, ICT revolution, sustainable development, a new set of knowledge and skills have to be developed and focused in developing TVET lecturers to enable them to prepare the competent human resource needed for the country. It was of these assertions that, in this study, it was important to explore the qualifications and experience of lecturers.

The findings of the study, in Table 4.7 in chapter four showed that, all the lecturers who were teaching were qualified and the majority of them had a qualification above the certificate. They also had experience in both lecturing and in industrial of more than five years. This was also noticed by the researcher at the time of the visit that the two TVET institutions were offering craft certificate with the minimum duration of two years and Trade Tests Level 1, 2 and 3, the qualifications which were lower than a certificate and Trade Test Level 1, 2 and 3. In addition, the results established that, the number of lecturers was very adequate considering the student enrolment which was low in second years but the only shortage of lecturers was only in few new courses emerging on the labour market which included among others; creative digital media, refrigeration and air

conditioning as suggested by one of the TEVETA officials (see section 4.5.1 in chapter four).

Nevertheless, this finding is not supported in the literature which was interrogated by TEVETA (2015) in which it was documented in disagreement that the shortage of TVET lecturers or instructors represents one of the obstacles to TVET development and quality acquisition among students in Zambia. Further, Siandele (2016) reported that, TVET institutions in Choma district were not adequately staffed to provide quality skills training relevant for economic development. In the same vain, Dadi (2013) expressed divergent views by reporting that, the quality of TVET lecturers or instructors has suffered as a result of the low reputation of their profession and most of them have relatively low formal qualifications, severely affecting TVET delivery at higher qualification levels. Rajesh and Majumdar (2010) also argued in disagreement to the finding that, the existing TVET Lecturers or instructors are more often not practically skilled and not competent to teach or lecture in TVET institutions in accordance with the occupational standards.

In addition, Ngure (2013) in his study argued in disagreement that several lecturers in the TVET institutions were not adequately qualified and were not capable to carry out research, as a result, they could not adequately impart research skills to the trainees. Some of the professionally trained staff members migrated from this sector to others and even to some other countries that had more attractive work terms and conditions. Those who remained in the institutions operated other businesses to supplement their low earnings. However, considering the literature interrogated in this study, none of the studies suggested that TVET lecturers were qualified and competent. Because, their qualifications and competency were not measured against predetermined standards as stipulated by TEVETA but in this research, it was found out that, all the lecturers were qualified to teach in TVET institutions and had the right qualifications above that of the students' which they were likely to get at the end of their programme and had met the minimum requirements of TEVETA.

Mostly, the only two challenges which were noticed were on the professional development of lecturers and industrial experience. This could had put lecturers in awkward situation as they could not acquire new knowledge to enable them equip students with appropriate

competencies that matches with technological advancement. To a less extent lecturers could not teach sufficient practical skills as indicated on the mode of assessments and that could have made students to acquire appropriate competencies that are required by the industry.

5.6. In-service Programmes for Lecturers

The in-service training programmes are considered to be significant to the professional development of lecturers. With the same view, Kambyat and Shmal (2010) reported that, the excessive pace of technological change had profound effects on the relevance of knowledge over time. As a result of rapid innovations in science and technology, knowledge loses its relevance within a year time. The results in Table 4.8 showed only 52 percent of lectures had once attended an in-service programmes while the other lecturers who made 48 percent had never attended an in-service programme. The results also indicated that though there was a policy to guide in-service programmes for lecturers, the inadequacy of resources and management boards' decision hampered effective implementation of the policy. This finding is not in line with the findings of ILO (2015) in which it was reported that, there seems to be a lack of a clear career pathway or clear stages of professional development. Pre and in-service programmes for lecturers and instructors are often not in place, creating difficulties for personnel working in a sector such as TVET, which is highly dependent on innovations and technology-driven to function effectively without their own training support framework.

Moreover, ILO (2010) reported that, for the purpose of effective TVET training, lecturers needed to be well trained in both pre-service and in-service training programmes. The purpose of a pre-service training for TVET teachers and trainees is to lay the foundation for building of professional capabilities in TVET teaching and practicing multidisciplinary teamwork. However, without updating the knowledge, skills and competencies acquired during pre-service training, TVET lecturers run the risk of rapidly becoming obsolete in their teaching capacity. Therefore, in many countries of the world, in-service training for TVET lecturers has been embraced as one among the practical solutions that could enhance lecturers' professionals and improve on TVET service delivery.

It is also worth noting that, the results in Table 4.8 in chapter four illustrated that, most of the lecturers had not yet upgraded and were still in possession of their first qualifications. Although there was a clear government policy to support in-service training programmes, only a few lecturers had been sponsored by the government whereas the majority had sponsored themselves to pursue different courses. This had resulted in myriad qualification levels depending on the motivation of each particular lecturer and that affected the specialised knowledge in their teaching programmes. This phenomenon is pertinent to many fields in TVET. As a result, the TVET instructors need to be appraised in their knowledge and skill to remain competitive in today's world of rapid change in technological innovations so as to equip students with relevant competencies as demanded by the society and the industry.

With regards to industrial experience of lecturers, the results displayed in Table 4.7 in section four illustrated that, the majority of lecturers had experience in teaching and with the industry of more than five years. This finding is not in harmony with the findings of Kigwiru (2014) who argued that, the majority of lecturers had inadequate industrial work experience in TVET institutions. Ngure (2013) also explained that, the experience of lecturers is highly important for effective training because lecturers share experience from each other for successful training. Experience gained overtime enhances the knowledge, skills and productivity of lecturers and it is through the real-world application of techniques that lecturers reach their full potential. Apart from lecturers acquiring higher qualifications, it is also important for them to gain a wider experience in their professional and with the industry.

The findings of Kigwiru (2014) might have been correct because the industrial experience noted in this study among the lecturers was mostly of that kind before they joined the lecturing profession. As most of the times, lecturers rarely visited industries for new technological updates. Indeed, one of the officials from TEVETA commented that, there was also a challenge in up skilling lecturers with new technology as industries were very skeptical and suspicious of lecturers. As noticed by the researcher, industries do not update lecturers on modern technology and there is no any feedback from the industries. Such a

situation is retrogressive to the success of TVET service delivery if lecturers are not updated with innovations from the industries.

Moreover, ILO (2010) reported in support that innovations also require very close contacts with enterprises and other stakeholders including employment services, labour market institutions and other social partners with other vocational lecturers and of course, with TVET students for purposes of effective teaching/training, career guidance and more. This is because, adequate initial industrial experience and regular updating enables the lecturer reflect on and demonstrate the appropriate work context to his or her students. Moreover, Simiyu (2009) argued in support that, teaching and industrial experience enables trainees to gain hands-on experience. With this, it is significant that lecturers gain industrial experience on a regular basis before they become obsolete in their lecturing fraternity and equip students with poor competencies.

5.7. Industrial Attachment Support

The findings from the lecturers revealed that, there was a government policy which governed industrial attachment practices as indicated in Table 4.7. On the contrary, the officials from TEVETA who were interviewed expressed that there was no policy in place that prescribes the practices for industrial attachment and it was not prescribed in any curriculum but it was one of the requirements supported by the Ministry of Higher Education such that all students could practice it. It was also noticed from the findings that, lecturers had little knowledge regarding the industrial attachment practices because the TEVETA officials clearly stipulated that, industrial attachment would be integrated as a component in the skills development Act which soon would be passed into a law and the challenges that are being experienced now would be minimised. Choy and Hauka (2009) supported the same findings by reporting that industry attachments have long been accepted as a core component of training for trainees and are well structured and coordinated.

Industrial attachment is one among the components that attract attention between the TVET providers and the industries and it is considered by the TVET providers to provide practical exposure to new technology and innovations that prevails in the economic sector

of the country. Not only does industrial attachment provide cooperation between TVET institutions and the industries, it also prepares students in TVET institutions with relevant and practical manipulative skills that could be used in the employment sector. Industrial attachment should also be supported by different stakeholders and by a policy.

Moreover, it was noticed by the researcher that, the aspect of integrating indigenous knowledge into the TVET system has not been given its deserving attention by TVET providers. There are a lot of untapped skills from the society that could have provided a basis for effective industrial attachment. With this, TVET institutions could not make linkage with handcraft villages and in household business to conduct on the job training for students and this was supported by one of the college principals (see section Table 4.7 and section 4.6.3 in chapter four). This finding is in agreement with the findings of Ngure (2013) who argued that, African countries had its own craftsmen for centuries. However, these craftsmen had been given a lower status by the traditional people for a long time. Potters, blacksmiths, weavers and tanners who could have been the base for technological advancement in the country had been undermined. This state of affairs has adversely affected the indigenous technological development in the country. If the TVET institutions could have made linkages with handcraft villages and small business enterprises engaged in vocational artistic works to conduct on the job training for students, they could have expanded the base for industrial attachments and empower students with different survival skills. The majority of students could have had an opportunity to go for industrial attachments and acquire competencies that are relevant to their society.

Similarly, the researcher had noticed that, the industrial attachment was only limited to students instead of extending it to lecturers. The lecturers were not given an opportunity by their TVET institutions and industries to experience industrial practices. As a result, students had a better understanding and more informed about new technology than the lecturers (see section 4.6 in chapter four). This finding is in tandem with the findings of Dadi (2014) who purported that, TVET instructors were not allowed to know what is going on in industries to support them in guiding their training. In the same vein, Choy and Hauka (2009) argued that, although industry attachment for lecturers and trainers is equally important, it has not received parallel attention, coherence or coordination at the

policy or organisational levels. Since industries did not play their role in updating and enhancing the skills of lecturers, lecturers were not adequately exposed to the appropriate work environment. This had a great impact on lecturers' competency to equip students with competencies related to the work environment. Thus, there is a need to redefine the terms of industrial attachments so that even lecturers would be given an opportunity to visit industries and experience new technology.

Moreover, despite the industrial attachment being practiced in two TVET institutions, the time which was given to students to do it was not adequate. The findings of the study revealed that, TVET institutions did not conduct tracer studies and they did not interact closely with industries during students' practical trainings to identify their skill gaps so that they might use the information to improve their programmes (see Table 4.7). These findings are in congruent with the findings by Wallernborn (2010) who documented that, Scholars, learners and employers across the globe agree that the workplace is the most authentic learning environment to train a competent workforce and where students have access to authentic experiences. The workplace provides a context for learners to transform and construct socially meaningful knowledge and skills. As a result, industrial attachment should be well coordinated by giving it adequate time and ensure that tracer studies are conducted through interacting closely with industries during industrial attachment.

Additionally, Mwila (2016) stressed that, undeniably, it is imperative that lecturers 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 lecturers the opportunity to modify their methods of giving instructions and reshape them in line with the dynamics of the industrial demands. Time is one of the essential factors in practical trainings and students were supposed to be given more time to practice industrial attachment and this could have made them to acquire relevant competencies that were in consistent with industrial requirements.

Besides, the findings of this study revealed that, industries were not adequately incorporating all students for industrial attachments and could not meet the demand of TVET institutions (see Table 4.7). The officials from TEVETA also confirmed that, it was

not possible for all students to have an opportunity to practice industrial attachment due to small industrial base in Zambia and initially, TVET institutions were supposed to arrange industrial attachment for their students in order for it to be successful than leaving it only to students themselves to look for industries which they did not even know their whereabouts. NICHE (2010) also documented that, in developing countries, even where there is collaboration and willingness, industries do not have enough places to accommodate trainees, which cause overcrowding during traineeships. The findings had a very negative implication to the student's competency acquisition because it is in industries in which students are supposed to have adequate practical trainings and effectively enhance skills on different modern equipment that could not be found in their TVET institutions.

On the other hand, some industries complained about equipment damage during practical trainings, inadequate resources and logistics that were to be catered for students at the time of their industrial attachment which included food, transport and a token of appreciation (see section 4.6). The findings are in line with what was reported by Ngure (2013) that production equipment would be damaged or improperly handled by inexperienced trainees and additional equipment is needed for training in order not to disturb the regular production. In addition, accident insurance for trainees and long training periods may make enterprise participation costly. In order to avoid such accidents in industries, there is a need by TVET institutions to equip students with practical skills that could enable them adhere to safety rules and industries to assign trained experts to guide students during industrial attachment

Similarly, the researcher noted that, the industrial attachment was not given its due attention by TVET institutions and at the time of the visit, all TVET institutions had a week and unstructured monitoring mechanisms for industrial attachment. Indeed, the researcher found no any form of evidence which was kept in terms of record keeping (progress charts' and 'progress records) that the students had been having opportunities to go for industrial attachment. This had a serious implication on the student's competency because there was no any detail of proof that the students were attached to some industries. With the same view, Perry and William (1994) argued that, there are two basic types of

competency records that are recommended for use in a competency-based program, namely; 'progress charts' and 'progress records. Progress charts are familiar devices and primarily a management tool that can be used by the instructor to determine instantly how each student is progressing in the acquisition of the pre-stated competence. It commonly appears as a wall chart. In addition, progress chart is a useful device which helps in the management of TVET instruction. They, however, do not supply all the detailed information that the instructor may need. They contain all competencies as well as other details of recordings. Therefore, it could be deduced that, record keeping in TVET competency programmes is one of the activities of significance that should not be overemphasised.

In addition, industries did not support TVET institutions in terms of providing essential equipment', instructional technology and learning materials (see Table 4.7). The only assistance as noted by the researcher was by the industries accepting a few students for industrial attachments. This finding is not in consistent with the practical findings of Daksa (2013) who argued that, industries should work together with TVET institutions as partners in research development and in dissemination of appropriate technology and they should assist TVET institutions to assess, review curricula and share information regularly. Furthermore, industries should provide equipment to TVET institutions for students' practical trainings so that they could link theory with practice. If the industries could have been consistent to assist TVET institutions by providing necessary equipment for students' practical trainings, the challenges of incompetency exhibited by students in industries could have been minimised.

Therefore, from the discussions, the researcher noted that, TVET institutions have been left sorely alone with a burden to provide competency-based trainings and to procure equipment in all technical course meant for practical trainings. The only possible solution that might seem to have worked in this vain was to engage in cooperative training. The results in Table 4.7 indicated that, cooperative trainings do help students as well to acquire further knowledge and skill for their future. Ngure (2013) expressed in support that, under this system, the industries/companies and the TVET institutions share the responsibility of providing the students with the best possible job qualifications. TVET providers will

be inspired with confidence to venture into more agreements with small companies and the micro enterprise sector as these companies constitute the target labour market for a large group of students. This would also enable students to have an opportunity to practice on latest machines and perfect their competencies that the industries in future would depend upon. Further, in a long run, unemployment and poverty levels among the graduate students from two TVET institutions would be minimised because students would have acquired relevant survival competencies that could make them self-reliant, creative and productive.

5.8. Skills Mismatch between TVET Institutions and Industry

The majority of participants (lecturers, college principals and TEVETA directors) confirmed that there was a skills gap or mismatch of skills between what was offered in TVET institutions and the industries in technical courses (see section 4.6.1). This finding is in congruent with the findings of TEVETA (2015) in which it was reported that, there were 48.9 percent skills shortages in terms of artisans, technicians and technologists in the construction sector and 27.3 percent of different skills requirements in the hospitality industry. Further, UNESCO (2015) reported that, there is a huge gap between demand and supply of skilled labour. The skills gap as mentioned in various literature cited in this section meant that, the graduates from TVET institutions exhibited competencies which were not needed in industries or the graduates were incompetent to perform various tasks assigned in the labour market.

The shortage in skills particularly in the construction sector as reported by TEVETA (2015) could not be disputed as the researcher also noticed that, the enrollment levels in carpentry and joinery and in bricklaying and plastering was extremely very low. The average of two students in these programmes (carpentry and joinery, bricklaying and plastering) was a maximum number. Further in other technical courses, the enrollment level was reducing at an alarming rate. In that awkward predicament, it was difficult in the construction industries to employ adequate local skilled graduates from TVET institutions. Thus, most industries had been hiring skilled workers from other countries and this had denied local trained people much needed employment opportunities and sustainable income that could had improved their livelihood.

Besides, the majority of lecturers that made up 87 percent expressed the view that, the mismatch in skills was due to advanced technology in the industry as compared to TVET institutions where they are still using few obsolete equipment and facilities for practical trainings. Further, the college principals explained that TVET institutions had challenges in terms of financial resources, thus, it was difficult to procure modern training equipment and facilities for practical trainings and industries were very skeptical and suspicious of lecturers and therefore, they could not update lecturers on modern technology. This finding is not in congruent with the findings of Wallernborn (2010) who argued that, the skills gap exhibited in students particularly from TVET institution is due to curriculum and inappropriateness of training programmes in the construction sector and in order to overcome this, there is a need to recruit more highly skilled workers to improve performance such as planning, managing and designing construction projects. The focus of Wallernborn was on the TVET curriculum and the industrial attachment which he suggested were the factors contributing to skills gap. But the TVET curriculum need to be detached from the skills gap as the study had revealed that it was developed to address such issues and to be relevant to the needs of the labour market. However, the skills gap could have been as a result of various challenges that TVET institutions might have some time been experiencing.

Alternatively, the lecturers were asked to suggest some of the challenges they could have been facing to improve students' competencies and the results in Table 4.8 showed that, lecturers in TVET institutions were facing different challenges. The college principals and TEVETA officials affirmed to the challenges expressed by the lecturers and some of the aforementioned ones were in line with what other researchers had contended. In particular, Umar and Ma'aji (2010) stated in support that, most of the TVE institutions have been forced to perform below standard due to non-availability, poor management or utter neglect of the required facilities in the workshops for effective skills acquisition. Similarly, studies that had been conducted in Zambia in the TVET context had revealed that, the physical infrastructure of most TEVET institutions were dilapidated, insufficient, and fully utilised. 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, Nkhanza, 2007, Salimu, 2007 and Hamweete, 2008 and Mwila, 2016).

The researcher noticed that, the stated challenges have been experienced for a period of time and had some negative implications to the good reputation of TVET institutions. In fact, many stakeholders (parents, industries and faith based organisations) had little confidence in these TVET institutions and consequently, some mining companies had opted to open their own TVET training institutions thereby duplicating technical courses. This has put TVET institutions in an awkward situation together with its outputs (graduates) because, students could no longer be employed in various industries thus partially increasing to unemployment and poverty levels among the skilled youths in the country. The other implication of these challenges would be that, the research output from the students would be low and that circumstance could infringe upon TVET institutions from producing innovative and creative graduates who could raise economic productivity.

Moreover, if the results in Table 4.8 could affirm that lecturers were not motivated due to lack of incentives and poor conditions of services, then there is a likelihood that they might not have confidence to teach and equip students with necessary competencies. At large, this is likely to retard social-economic development and in the long run, it will make it difficult for Zambia to reach the targets of Sustainable Development Goals particularly, number four which focuses on ensuring inclusive and equitable quality education and promote lifelong learning opportunities for all (UN, 2015). Therefore, lasting solutions to incompetency exhibited by graduates from TVET institutions which has created skills gap with the industries needed to be explained. The following were some solutions suggested by participants that could help in improving students' competency acquisition in technical courses.

5.9. Interventions to Improve Students' Competency Acquisition in Technical Courses

One of the major concerns in this study was to find some solutions that could improve the acquisition of competency among students in TVET institutions as well as bridging the skills gap between TVET providers and the industries. With this, lecturers, college

principals and TEVETA directors (curriculum planning development and curriculum manager) were asked to suggest some possible and practical interventions that could be implemented in TVET institutions for the improvement of students' competency acquisition. The findings in this study revealed five major practical solutions in summary which included among others; strengthening private-public partnerships with the industry, revising modes of assessments, increasing funding, enhance monitoring and supervision by the relevant authorities and improving conditions of service for lecturers by the government (see section 4.6.3 in chapter four).

Moreover, Public-private partnerships (PPPs) are increasingly perceived as an appropriate policy approach to provide TVET education for all in many different contexts. When implemented correctly, it could allow TVET providers to take advantage of specialised skills offered by certain private organisations and improve quality in technical education. TVET providers could also increase efficiency and choice, and expand access to other educational programmes (Open Society Foundations, 2016). Although the study revealed that private-public partnerships has been implemented through the collaboration of other stakeholders (industries and relevant boards) in the curriculum development process and the signing of some Memorandum of Understanding (MOU), it seemed to be effective only at the policy level. Private-public partnerships should transcend to the level of TVET providers such that Memorandum of Understanding on behalf of students and lecturers for industrial attachment is signed. Not only that, TVET institutions should also expand partnerships with small community enterprises that are engaged in artistic creation which include wood curving and sculpture. If this is done, it would expand on skills development and ensure that students are equipped with holistic practical competencies. Therefore, TVET provision is a societal duty and the responsibility should not be left to the TVET institutions only but other stakeholders should also assist TVET institutions by providing bursary scheme to some students and donate appropriate equipment for practical trainings.

It was also noted by the researcher that; apprenticeship training was the best ideal arrangement under private-public partnerships. Since under apprenticeship training, students spend a period of time for practical trainings at the place of work rather than being in class learning theory, it is one of the recommendable solutions that could link

theory and practice. Ideally, this was supported by Wallernborn (2010) who postulated that scholars, learners and employers across the globe agree that the workplace is the most authentic learning environment to train a competent workforce. The workplace provides a context for learners to transform and construct socially meaningful knowledge and skills. Training providers and industries, through employers, form partnerships to offer situated learning opportunities in the workplace so that learners have access to authentic experiences that only the workplace can offer.

Regarding the historical development of TVET in Zambia as revealed in chapter two, Kelly (1998) suggested that, in 1960, apprenticeship training received the backing of industry and government. This was after the initiative in 1956 which was particularly made by Ndola Rotary club to establish Northern Technical College which was organised on this basis of apprenticeship and a block release system aimed at giving trade qualifications according to the standard set by the City and Guilds of London Institute. The results were that, the performance of the college was outstanding and the graduates were skilled to be indentured and become apprenticed. Actually, in this new era of technology advancement, apprenticeship as a mode of training should be encouraged primarily to all TVET institutions situated in rural places whereas learnership should be encouraged to all TVET institutions located in urban or peri-urban where there are a lot of industries nearby. This was also suggested by one of the officials from TEVETA that, learnership has worked well in equipping students with the practical working skills. By the time students could have completed their training, they are already competent and familiar with the place of work.

Mostly, the results in section 4.4.3 indicated that the nation examinations carried sixty percent whereas the practical assessment carried forty percent. Within that forty percent, there was a percentage of tests. This is also supported by Reetz and Hewlett (2008) who argued that, in order to enhance competency acquisition for students, it requires changes in assessment forms, for instance, by increasing the weight of practical examinations and assessment at the workplace. Better still, written examinations are used to assess theoretical knowledge which has an adverse implication with the acquisition of students' competency. The situation meant that, the assessment in TVET institutions was too theoretical and only tailored to assessing knowledge not practical skills.

Suffice to note that, the findings of this study established that the modes of assessment should be revisited by increasing the marks for practical trainings up to 70 percent and 30 percent to be assigned to the theory part (see Table 4.4). This suggestion was worth discussing in this section because, the findings of this study revealed that national examinations which were conducted towards the end of each programme were allocated with 60 percent where as 40 percent was practical based. However, as the researcher noticed, it was difficult for the society to have confidence in this mode of assessment as even 40 percent allocated for practical trainings could not be worth to measure the competencies against the prescribed standards and it was sometimes tempered with by the lecturers so that even the incompetent students were made to pass the formative assessment.

In order for TVET institutions to produce competent and highly innovative graduates who could compete internationally and revolutionalise the economic sector of this country, the assessment should be practically based. This means that, 70 percent of the total assessment should be derived from practical activities and 30 percent of the total assessment should be assigned to national examinations. But 70 percent should not be solely left to TVET institutions themselves, it should be shared into two equivalent part of a fraction such that, 35 percent should be derived from industrial attachments. This is because, the study done by Almed and Mukhtar (2014) in Malaysia indicated that, lecturers' attitude and willingness to implement School Based Assessment (SBA) are unpredictable despite having the necessary beliefs. A lot of time and effort would be required in order to see positive changes in lecturers' attitude and willingness to implement holistic assessment. This would also ensure that, industries are involved in assessing the performance and evaluate the competency that the students could have acquired in the tenure of their programme.

With regards to increase the funding to TVET institutions, it was one among the suggestions that was highlighted by lecturers and college principals from the two TVET institutions in question (see figure 4.7). Mwila (2016) citing Dasmani (2011) reported in support that, despite the importance given to TVET by many governments, the training system in Africa was largely underfinanced. In the same vain, other researchers including

Salimu (2007) and Hamweete (2008) reported in support that TEVET management boards were hit by lack of finances and appeared to be far from becoming fully and financially self-sustaining. This implied that, the funding from the government was erratic and inadequate and therefore, the researcher observed that, some challenges that were faced by TVET institutions as outlined in Table 4.8 were due to inadequate funding from the government. The management boards seemed to have failed to raise sufficient funds that could support daily activities in the running of their institutions.

Generally, the provision of technical and vocational skills and especially formal TEVET was expensive, since facilities, material, equipment and maintenance costs were high. Based on the results of this study and of other scholars, it can be concluded that, the provision of technical courses requires huge financial investment to procure teaching and learning resources for practical trainings. If that is not done, TVET institutions will continue to train students with poor competencies and in the long run, industries would be giving employment opportunities to foreigners and thus making graduates from TVET institutions unemployed and continue to live abject poverty. In addition, if such a situation remains unaddressed, it would retard the economic national development.

Significantly, the other suggestion which seemed to have been overlooked by many stakeholders involved in providing TVET was monitoring and supervision. With this regard, the results in figure 4.7 revealed that the Ministry of Higher Education had a week monitoring and supervision system in place and rarely did the officials from the Ministry of Higher Education visit TVET institutions. In support, Ololube and Major (2014) argued that, supervisors are routinely required to conduct monitoring and supervision by visiting colleges and perform the functions which include; posting and transfer of lecturers, correspondence matters, settling disciplinary and disputes and also to observe lecturers' lesson demonstrations. This implied that administrators and lecturers from the two TVET institutions were left alone to provide TVET service delivery. As a result, TVET institutions were training students without monitoring and supervision and this could have affected the competency acquisition among the students. Since in the TVET education system, there are set of goals and objectives to be achieved, there is a need by officials from the Ministry of Higher Education and other relevant boards to embark on monitoring

and supervision of TVET institutions as well as improving the conditions of service for lecturers. This would ensure that, the individual lecturer within the college environment will perform his/her obligation as enshrined in the condition of service and equip students pursuing technical programmes with necessary competencies.

5.10. Implications of Theoretical Framework on the Study

The findings of this research could not be detached from the theoretical framework used in this study, Social constructivism theory emphasises on the social nature of knowledge and the belief that knowledge is a result of social interaction and language usage, thus, it is a shared rather than an individual experience (Amineh, & Asi, 2015). In addition, social interaction always occurs within a socio-cultural context, resulting in knowledge that is bound to a specific time and place. Considering these assumptions of social constructivism theory, the teaching and learning resources present the symbolical nature of TVET education and the meaning needed to be discovered. Further, the teaching and learning resources present a language that needs to be interpreted and understood by both lecturers and students. For this reason, the social interaction that occurs within a socio-culture context that is in a lecturer room or workshop plays a vital role in the transmission of relevant competencies among the students. The students need to interact with lecturers and perform practical demonstrations on appropriate modern facilities and equipment. The students should continue to search for the truth that is being presented in textbooks if they are to develop competencies that will reflect aspirations of both the industry and the society at large.

Similarly, social constructivism theory is based on specific assumptions about reality which is constructed through human activity. For that reason, different stakeholders should firstly construct TVET curricular which should be responsive and relevant to the society it saves. It is in these TVET learning institutions that learners should interact with curriculum and discover the reality so as to acquire appropriate competencies that are relevant to the societal needs. Besides, social constructivist teaching approaches emphasises on lecturers to use different teaching approaches that involve learning with others and that could link theory and practice. Instructional models based on the social constructivist perspective highlight the need for collaboration among learners with

practitioners (parents, industries and relevant boards) in the society and the relationships among practitioners, their practice, and the social organisation and political economy of communities and practice are all important and effective in a society's practical knowledge. Thus, the social constructivism theory has proved efficiently to provide a better understanding on how students were to acquire relevant knowledge and practical skills in TVET institutions in question.

5.11. Summary

The phenomena of competency acquisition in technical courses among the TVET students has attracted attention to different organisations (institutions of higher learning and industries) which are engaged in TVET service delivery and in this chapter, the results of the study in question have been discussed under the subsequent themes that emerged in relation to the objectives. In particular, adequacy and appropriateness of teaching and learning resources, relevance of the curriculum, assessment, lecturers' qualification and their experience, in-service programmes, industrial attachment support and theoretical frame work with implication to the study. The objectives of this study have been achieved and interventions that could respond to the improvement of competencies that are needed by the labour market have been discussed. This was aimed to create competent, motivated and adaptable workforce capable of deriving economic growth and development in the country. In the next chapter, conclusions of the study and some recommendations based on the research findings are presented.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Overview

In this chapter, the researcher summarises the appropriate research findings and draws the conclusion. As a remainder, the main purpose of the study was to analyse student's competency acquisition in technical courses based on TVET institutions curriculum implementation in Eastern Province. The TVET delivery system requires different stakeholders (students, TVET institutions, boards of relevant authorities and industries) to commit their social responsibility to assist TVET institutions and in that vein, the researcher presents summary of the findings, conclusion and significant recommendations to such stakeholders and some possible suggestions for future research in the following sub-sections.

6.2. Summary of the Findings

This study was intended to address a problem of poor competency acquisition among the students from TVET institutions based on a TVET curriculum implementation in Eastern Province. The study was also designed with a focus on four objectives as stated in section 1.4, in chapter one. The study focused on technical courses, therefore, the research findings could not be generalised to the students in TVET institutions because technical courses did not give the overall representation of programmes offered in TVET institutions. The sub-sections that follow give the summary of the findings in relation to the themes that emerged.

6.2.1. Teaching and Learning Resources in TVET Institutions

Teaching and learning resources play a substantial role in ensuring that students acquire relevant competencies that can be utilised in a competitive labour market. Teaching and learning resources in this study included workshop equipment, facilities and learning materials. The study established that, the two TVET institutions, their teaching and learning resources were not adequate and not appropriate to equip students with relevant practical skills that are required by the labour market. It was also noted that, TVET institutions had inadequate as well as obsolete equipment in their workshops and facilities. Learning materials were also not adequate and most of them were not appropriate to be

used in implementing the existing TVET curricular. This implied that, TVET institutions delivered technical training in poor facilities and the implication was that, students were equipped with poor competencies that could not make them competitive in the labour market.

6.2.2. Relevance of TVET curriculum

In this study, it was revealed that, the TVET curriculum in particular designed for technical courses was up-to-date with technological advancement in the world. It was also relevant as it was designed with a focus to address the current demand of the labour market in Zambia and societal challenges which include youth unemployment and poverty levels. Further, the technical programmes that were offered were necessitated by both society and industrial demand and the TVET curriculum was developed in collaboration with different stakeholders. The findings of this study were not in harmony with the findings of other studies that were interrogated in the literature. However, though TVET curriculum was relevant, it was implemented in unconducive environment characterised with inadequate, obsolete, inappropriate teaching and learning resources as well as lecturers were not upskilled with modern industrial practices. Besides, there was a prominence of theoretical assessment at the expense of practical ones. As a result of this situation, the students' competencies acquired were at variant with the competencies that were required by the labour market.

6.2.3. Qualification and Experience of Lecturers in TVET Institutions

It was established in this study that, all the lecturers in TVET institutions in question had professional qualification that meant the required standards of TEVETA. That simply meant that, all lecturers were qualified to lecturer contrary to other studies interrogated in the literature. It was further revealed that; the majority of lecturers had both experience in lecturing and industrial experience of more than five years. However, the challenging situation that was noticed was with the in-service training programmes. There was no government policy regarding in-service training for lecturers and that situation had resulted into myriad professional development among the lecturers. The acquisition of specialised knowledge and skills among the lecturers is very vital to their professional development as well as teaching relevant competencies to their students. The lecturers

were also not given an opportunity to be up skilled with modern industrial practices by industrials and in that case, they were not conversant with the practical training the students received during industrial attachment. This could have resulted into skills mismatch between the practical training offered in TVET institutions and the industry.

6.2.4. Industrial Attachment Support

Despite industrial attachment being significant in bridging the skills gap between TVET institutions and the industries, it has received little support from both TVET institutions and the industries. Only a few students had an opportunity to be attached to some industrials and that was attributed to a small industrial base in the country and lack of an effective policy to govern industrial attachment. Consequently, the majority of students were not informed with modern industrial practices and more often, they were becoming a misfit in industries such that, their competencies were deemed insignificant by the labour market. Not only that, industrial attachment was also limited to established industries without expanding it to some small community vocational enterprises in which other artistic skills and indigenous knowledge could have been explored so as to make TVET curricular more comprehensive.

6.3. Conclusion

The conclusion of the study is that, students in TVET institutions investigated received poor training and were not equipped with relevant competencies needed in the industry. This was as a result of the factors that influenced the poor implementation of the TVET programmes. Such factors included among others; failure by TVET institutions to secure latest equipment and facilities for practical trainings and to develop relevant learning materials (text books) to implement the existing curriculum. In addition, TVET institutions and industrial linkage did not play their joint role in producing competent students to provide skilled labour force to the real world of work and to coordinate in-service programmes for lecturers. This could have ensured harmony in providing practical trainings to students and produce motivated, innovative and competent graduates who would contribute to the national development of the country, Zambia.

6.4. Recommendations

The research findings, discussions and the conclusions made in this study guides the following recommendations.

i. Since teaching and learning resources play a vital role in equipping students with relevant competencies, TVET institutions should engage in various income generating activities and the government should increase funding to TVET service delivery so that TVET institutions could have the capacity in terms of financial resources to procure latest equipment and teaching material for students' practical training.
ii. The Training Standards Division under TEVETA and TVET institutions should increase weight (marks) for practical assessments and involve experts from the industries to assess the performance of students particularly at the time of industrial attachment. This would create public confidence in the student's qualifications and improve on the quality of competencies.
iii. There is a need by the government through the Ministry of Higher Education to put in place a clear and supportive policy regarding in-service training for lecturers so as to avoid myriad in lecturers' professional development.
iv. TVET institutions should embark in signing different memorandum of understanding with different industries and this would bring about the implementation of different practical modular of trainings of industrial attachment in particular, apprenticeship and learnership. This would also facilitate cooperative training and TVET institutions to train productive, innovative and motivated human resource that would drive the economic development in Eastern Province, Zambia.

6.5. Proposed Areas for Future Research

While there are still many areas left unanswered which include leadership management style in TVET institutions and other programmes, these areas could have provided additional information to improve on students' competency in TVET institutions. It is therefore essential to propose the following as areas of further research in this section.

i. This research focused on technical programmes in TVET institutions. A study can be carried out in other programmes to examine student's competency acquisition and such programmes would include Creative Digital Media, Refrigeration, Hospitality, Health and Business.
ii. Since the study in question was conducted in Eastern Province. The researcher recommends that another study be conducted in a different setting in particular the urban and thereby be replicated on TVET institutions to see if additional information would be provided regarding students' competency acquisition.
iii. Finally, an investigation is desirable on the possible methods to assess the nature of competency of TVET students under competency-based curriculum.

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APPENDICES

Appendix A: Letter of ethical clearance

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DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

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Fax: +260-1-290 258/253 952 | **Email:** director@drgs.unza.zm | **Website:** www.unza.zm

Approval of Study

07 February 2019

REF. NO. HSSEREC: 2018 - AUG - 024

Mr Edward Chileshe
Nyimba Secondary School
P/B 1
Nyimba

Dear Mr Chileshe

RE: "STUDENTS'COMPETENCY ACQUISITION: AN ANALYSIS OF TVET INSTITUTIONS CURRICULUM IMPLEMENTATION IN EASTERN PROVINCE, ZAMBIA"

The University of Zambia Humanities and Social Sciences Research Ethics Committee IRB has approved the study noting that there are no ethical concerns.

On behalf of The University of Zambia Humanities and Social Sciences Research Ethics Committee IRB, we would like to wish you all the success as you carry out your study.

In future ensure that you submit an application for ethical approval early enough.

Yours faithfully,

Dr. J. Ilubala-Ziwa
VICE CHAIRPERSON
THE UNIVERSITY OF ZAMBIA HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE IRB

cc: Director Directorate of Research and Graduate Studies
Assistant Director (Research), Directorate of Research and Graduate Studies
Assistant Registrar (Research), Directorate of Research and Graduate Studies
Acting Senior Administrative Officer (Research), Directorate of Research and Graduate Studies

Excellence in Teaching, Research and Community Service

Appendix B: Letter of Permission from the University of Zambia to Conduct Research in TVET institutions

THE UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION

Telephone: 291381
Telegram: UNZA, LUSAKA
Telex: UNZALU ZA 44370

PO Box 32379
Lusaka, Zambia
Fax: +260-1-292702

Date 13th JUNE, 2018

TO WHOM IT MAY CONCERN

Dear Sir/Madam

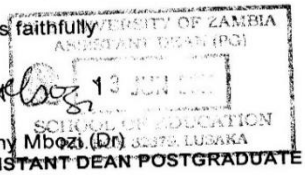
RE: FIELD WORK FOR MASTERS/ PhD STUDENTS

The bearer of this letter Mr./Ms. EDWARD K. CHILESHE .....Computer number. 2016147567 .....is a duly registered student at the University of Zambia, School of Education.

He/She is taking a Masters/PhD programme in Education. The programme has a fieldwork component which he/she has to complete.

We shall greatly appreciate if the necessary assistance is rendered to him/her/.

Yours faithfully



Emmy Mbozi (Dr)
ASSISTANT DEAN POSTGRADUATE STUDIES- SCHOOL OF EDUCATION

cc: Dean-Education
Director-DRGS

Appendix C: Consent Letter: Principals (TVET Institutions)

The University of Zambia
School of Education,
Department of LSSE,
P.O Box 32379
Lusaka.

…….., May, 2018.

The Principal

Ukwimi Trade School

P. O Box 560180

Petauke.

Dear Sir/Madam,

RE: PERMISSION TO COLLECT DATA FROM LECTURERS AND STUDENTS

Reference is made to the above captioned subject. I am writing to request for permission to carry out a research among lecturers and students in your institution.

The research topic is; 'Student Competency Acquisition: An analysis of TVET institutions curriculum implementation in Eastern Province.' The purposes of this research will be to; (1) determine the availability of teaching and learning resources. (2) investigate the qualification and experience of lecturers, (3) establish the effectiveness of industrial attachment. Thus, it will require lecturers and students giving some information related to their understanding. To this effect, lecturers will be asked to respond to a questionnaire and students to be observed during workshop sessions.

This study is in fulfilment of the requirements of the researchers M.Ed. in Curriculum Studies at the University of Zambia. Therefore, participation in this research is voluntary and their contributions will be treated with confidentiality and purely used for academic purposes.

Thankyou in anticipation for your assistance.

Yours faithfully

……

Edward K. Chileshe

Student computer number: 2016145670

Appendix D: Questionnaire for Lecturers/Trainer in TVET Colleges.

THE UNIVERSITY OF ZAMBIA

SCHOOL OF EDUCATION

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

DEPARTMENT OF LANGUAGE AND SOCIAL SCIENCES EDUCATION

MASTER OF EDUCATION (CURRICULUM STUDIES)

My names are; Chileshe Edward Kings, a postgraduate student at the University of Zambia pursuing a Master of Education in Curriculum Studies and carrying out an academic research study in which your voluntary participation is very important. The main purpose of this questionnaire is to gather the basic information for the study on "Student Competency Acquisition: An analysis of TVET institutions Curriculum Implementation in Eastern Province." Thus, your authentic cooperation in providing relevant and candid information is highly essential for the success of the study. Hence, please be honest and genuine when responding to the items in the instrument **by a tick (√) or an explanation in the spaces provided**. The information you will give will be treated with utmost confidence and will only be used solely for academic purpose of this study.

Instructions

a. Please, do not write your name or mention any name of any person in any part in this questionnaire for the purpose of confidentiality.
b. Read the questionnaire items carefully before you answer them and attempt all the questions according to the instruction given for each part.

Questionnaire NO:

[__|__|__]

SECTION A: **Social Demographic characteristics.** ***(Tick (√) the appropriate answer)***

1. Gender of respondent:

(1) Male ( ) (2) Female ( )

2. What is your age? ……

3. What is the highest professional qualification that you have obtained?

(1) Certificate ( ) (2) Diploma ( ) (3) Bachelor's Degree ( ) (4) Masters ( ) (5) PhD ( )

4. Years of experience as a Lecturer/Trainer.

(1) Below 5 ( ) (2) 5-10 ( ) (3) 11-14 ( ) (4) Above 15.

5. Years of experience in any industry.

(1) Below 5 ( ) (2) 5-10 ( ) (3) 11-14 (4) Above 15

7. Have you attended any in-service training in your career?

(1) Yes ( ) (2) No ( )

8. If your answer to question 7 is yes, please, specify the form of training.

……
……
……

9. Are you pursuing further studies with any institution of higher learning?

(1) Yes ( ) (2) No ( )

10. If your answer to question 9 is yes, indicate the course you are pursuing.

……
……
……

11. How is the learning environment in this institution?

(1) Conducive ( ) (2) Not conducive ( )

Section B: Specific questions for the study

Instruction: Please indicate your views about the following statements by a **tick (√)** in the space provided on the item given in rating scales. If the question is given in open ended, please attempt to write your precise answer.

12. The following are series of statements regarding the nature of infrastructure at your institution. Please read each statement carefully and indicate your response by **ticking (√)** against each item from the given rating on a 5 point Likert scales.

No.	**Statements**	Scale Option			
		1	2	3	4
		Very Adequate	Adequate	Fairy Adequate	Inadequate
A	The adequacy of the required training facilities and equipment in the workshop for skills transfer				
B	Adequate lecture rooms				

13. How relevant are facilities and equipment's to the TVET curriculum?

(1) Very relevant ( ) (2) Relevant ( ) (3) Not relevant ( )

14. If your answer is "Not relevant" for question 13, what factors do you think contribute to it? Briefly explain.

……

……

……

……

15. The followings are statements regarding the TVET curriculum and its responsiveness to the current demands of the labour market. Please indicate your response by **ticking (√)** against each item from the given rating on a 5 point Likert scales.

No.	**Statements**	Scale option				
		1	2	3	4	5
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

A	The TVET Curriculum addresses the current labour market demands in Zambia.					
B	Graduates from TVET institutions acquire relevant competencies.					
C	Courses offered at the college have the potential to address unemployment and poverty levels in the country.					
D	There is a competency-based curriculum for TVET institutions which is implemented.					
E	The course contents of the TVET curriculum are up to date with technological advancement in the world.					
F	The durations of the TVET programmes are too short to complete course contents.					
G	There is need to revise the current TVET curriculum to the current needs of the society in Zambia.					

16**.** Briefly explain what you understand by the term "Competency Based-Curriculum".

……

……

……

……...

17**.** The following are statements regarding teaching and learning materials based on TVET. Please indicate your response by **ticking (√)** against each item from the given rating on a five-point Likert scales.

	Statements	Scale option				
		1	**2**	**3**	**4**	**5**
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
A	Learning materials are adequate to all students for both theory and practical learning					
B	Learning materials for instruction are appropriate for the tasks					
C	Learning materials for instruction are available for the tasks to all students					
D	Learning equipment's and machines are relevant to the occupation in the world of work					
E	Learning materials are effectively utilised during teaching instruction by all students					
F	Learning materials develop competencies (knowledge, skills, abilities) in TVET students					
G	The college library is stocked with current and appropriate lecturers' and students' text books					

18**.** The following are statements regarding assessment modes based on TVET. Please indicate your response by **ticking (√)** against each item from the given rating on a five-point Likert scales.

No.	Statements	Scale option				
		1	2	3	4	5
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
A	Learning activities adequately measure students' knowledge required in a work of place					
B	Assessments engage students in applying knowledge, skills in the industry					
C	Assessment is continuous					
D	Students are aware of how and when assessments will be done					
E	Project assessment is mandatory to all students for them to graduate					
F	Assessment activities in TVET learning and instructional materials are derived from learning outcomes					
G	Both theory and practical assessments are combined for national examinations					

19**.** The following are statements regarding TVET institutions and industry linkage. Please indicate your response by **ticking (√)** against each item from the given rating on a five-point Likert scale.

No.	Statements	Scale option				
		1	2	3	4	5
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
A	There is a supportive government policy that facilitates and encourages collaboration between TVET institutions and industries.					
B	Industries and TVET institutions jointly draft competency-based curricula as well as determine training needs.					
C	Industries are involved in assessing students' performance					
D	TVET institutions make linkage with handcraft villages and in household business to conduct on the job training for students.					
E	TVET lecturers are sometimes trained in new technology by industries so as to support and guide students					
F	Cooperative training does help students to acquire further knowledge and skill for their future job.					
G	TVET institutions conduct tracer studies and interact closely with industries.					
H	The time given to students for industrial attachments is adequate					

I	Industries assign well trained experts to guide students to practice skill development.					
J	Industries support TVET institutions by providing essential equipment's, instructional technology and learning materials.					
K	Industries adequately incorporate all students for industrial attachments and meet the demand of TVET institutions					

SECTION C

Briefly explain the following questions where necessary.

20. Are you satisfied with the form of assessments that are administered to students?

(1) Very satisfied ( ) (2) Satisfied ( ) (3) Not satisfied ( )

21. List the form of assessments that you administer to students frequently in a lecture room?

……
……

22. Briefly explain why the preferred form of assessments are administered?

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……
……
……

23. Briefly explain whether students are able to reach deep understanding of the knowledge in their courses?

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According to Newsletter for TEVETA (2015), it was stated that there is a mismatch or skills gap between the industry and what is offered in TVET institutions.

24. Are you confirming to this statement?

(1) Yes (2) No

25. If your answer to question 26 is either yes or no. Briefly explain your understanding to this statement.

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……
……

26. Are you satisfied that students graduate with sufficient hands on skills which are relevant to the labour market? Briefly explain.

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27. What are some of the challenges this Trade School could have been facing so as to improve the quality of competency acquisition for students?

……

……

……

……

28. Briefly suggest some solutions that should be implemented for the improvement of students' competency acquisition in TVET Institutions.

……

……

……

……

Please, check that no question has been inadvertently missed out. Thank you for your participation and cooperation.

THE END

Appendix E: Directors' Interview Schedule

Interviewee Details: Name: …… **Gender:** ……..
Title: …… **Institution:**……**… Venue:**…… **Date……**
Starting Time:……**Ending Time:**……**Phone Number:……**

The main purpose of this interview is to gather information for the study. The research title is, 'Student's Competency Acquisition: An analysis of TVET institutions curriculum implementation in Eastern Province. The researcher seeks to explore the availability of teaching and learning resources as well as the lecturer's qualification and their experience in enhancing competencies among students. Further in this study, the effectiveness of industrial attachments will be investigated. Therefore, your cooperation in providing relevant information is highly essential for the success of the study and the information will be treated with confidentiality. Please, be honest and genuine when responding to each question.

Note: It is possible to conduct the interview by language you may be comfortable with.

Lecturers/Instructors

1. In TVET institution, are there competent and qualified instructors/lecturers to train students in the acquisition of various competencies?
2. What is the minimum qualification for a lecturer to teach in TVET institution and are there enough qualified and experienced lecturers/instructors?
3. Explain if there is an effective policy for in-service lecturers to go for further studies.

Curriculum for TVET Institutions

4. How is the competence-based curriculum for TVET institutions relevant to the labour market?
5. Are the courses that are offered in TVET Institutions tailored to the demands of the labour market?
6. To what extent are experts from industries involved in the development and updating of the TVET curriculum so as to keep it up with technological advancement in the world?
7. How often the TVET curriculum is revised and when was it the last time revised?

Infrastructure and Training Material for TVET Institutions

8. Do TVET institutions have adequate as well as appropriate training facilities and equipment for students to acquire relevant skills?
9. How relevant are equipment/facilities to the TVET curriculum and are they up to date with technological advancement in the world?
10. How adequate is the support from the Ministry of Higher Education in terms of purchasing new equipment and facilities for TVET institutions?
11. How adequate and appropriate are teaching and learning material in TVET institution and are they up-to-date with the technological changes in the world?

Assessments

12. What are the means of assessment for student's certification in terms of competency acquisition? In this case, the formative and summative assessments. Explain.
13. Are the students able to demonstrate the acquired practical skills competently and efficiently in the industrial?
14. How often do students go for industrial attachments so as to enhance their practical skills?
15. According to Newsletter for TVET (2015), it was stated that there is a mismatch or skills gap between the industry and what is offered in TVET institutions. Explain your understanding of this statement.
16. Is there any memorandum of understanding between the TVET/TAVETA and with any industry in Zambia where the students should go for industrial attachments?
17. What are some of the challenges the TVET institutions could have been facing so as to improve the quality of competency acquisition for students?
18. What are some of the solutions that should be implemented for the improvement of student competency acquisition in TVET Institutions?

Thank you very much for your participation and cooperation.

Appendix F: Principals' Interview Schedule

Interviewee Details:

Name: …… **Gender:** ……. **Title:** ……

Institution: ……..... **Venue:** …… **Date:** ……

Starting Time:……**Ending Time:** …… **Phone Number: ……**

The main purpose of this interview is to gather information for the study. The research title is, 'Student's Competency Acquisition: An analysis of TVET institutions curriculum implementation in Eastern Province. The researcher seeks to explore the availability of teaching and learning resources as well as the lecturer's qualification and their experience in enhancing competencies among students. Further in this study, the effectiveness of industrial attachments will be investigated. Therefore, your cooperation in providing relevant information is highly essential for the success of the study and the information will be treated with confidentiality. Please, be honest and genuine when responding to each question.

Note: It is possible to conduct the interview by language you may be comfortable with.

Curriculum for TVET Institution

1. For how long have you been an administrator at this institution and do you have any experience with the industry?
2. How do you understand the term 'competency acquisition' for students?
3. Is there curriculum competence-based in place and to what extent is it up-to-date to technological advancement in the world?
4. How effective and relevant is a curriculum to the labour market?
5. Are the courses that are offered in TVET Institutions tailored to the demand of the labour market?
6. How has been the performance of students in terms of competency acquisition for the past three years?

7. To what extent are experts from industries involved in the development and updating the TVET curriculum to keep it up with technological advancement in the world?
8. How often the TVET curriculum is revised and when was it the last time revised?
9. Is the duration given to each programme enough to complete the curriculum?
10. Are students able to reach a deep understanding of the knowledge acquired in their courses?

Lecturers' in TVET Institution

11. In this TVET institution, are there competent and qualified instructors/lecturers to train students in the acquisition of various competencies?
12. What is the minimum qualification for a lecturer to teach in TVET institution and do you have enough qualified and experienced lecturers/instructors?
13. How often the in-service trainings or refresher courses are specifically provided for lecturers in their area of specialisation?
14. Is there a deliberate programme put in place to encourage lecturers to go for further studies?

Infrastructure and Learning Material

15. Does your institution has adequate teaching and learning material that are up-to-date?
16. Do TVET institutions have adequate facilities and equipment for students to acquire relevant skills?
17. How relevant are equipment/facilities to the TVET curriculum and are they up-to-date with technological advancement in the world?
18. When was the last time the institution procured equipment/facilities for students to use during teaching and learning?
19. Do you receive any support in terms of equipment donation or in monetary form from donors apart from the government?

Assessment and Methods

20. What are the common methods used when teaching the students either in a lecture room or in a workshop?
21. Which mode of assessment is more prominent in student's certification; is it the theory or practical assessment?
22. What is the minimum qualification for students to be enrolled in each course?
23. How are the students able to demonstrate and relate the knowledge into practical skills?
24. Are the students capable of acquiring deep understanding of the subject matter?
25. How many hours are allocated to theory and practical learning and are these hours enough?

Industrial attachments

26. How often do students go for industrial attachments? And if they do, are instructors in the labour market involved in student's competency certification?
27. Is there any government policy that facilitates and encourages collaboration between TVET institutions and industries?
28. According to Newsletter for TVET (2015), it was stated that there is a mismatch or skills gap between the industry and what is offered in TVET institutions. Explain your understanding of this statement.
29. What are some of the challenges that you have been facing as an administrator in the provision of TVET programmes in this institution?
30. What are some of the solutions that should be implemented for the improvement of students' competency acquisition in TVET Institutions?

Thank you very much for your participation and cooperation.

Appendix G: Observation Checklist for instructional Material, Administration and Facilities.

Institution:…… Date: ……

Accompanied by: …… Position: ……

SIG: ……

I) A 5 point scale will be used to assess teaching and learning material, where; 1 = Excellent, 2 = Very good, 3 = good, 4 = Fairly good, 5= Bad

1 TEACHING AND LEARNING MATERIALS	**Statements**	**1**	**2**	**3**	**4**	**5**	**Comments**
	a) Learning materials are well organised and adequate to all students.						
	b) Learning materials for instruction are available and appropriate for the tasks.						
	c) Learning equipment's and machines are relevant to the occupation in the world of work.						
	d) Learning materials are effectively utilised during teaching						
	e) Learning materials are comprehensive and up to date.						
2. Administration	a) competency-based curriculum is in place						
	b) Time table is available						
	c) Organisation of charts for teaching and learning						
	d) Staff list for lecturers displayed						
	e) Internet services						
3. Physical facilities	a) adequate classrooms and furniture						
	b) Water supply						

	c) Toilets						
	d) Sporting facilities						
	e) Library stocked with current books						
	f) Laboratories						
	g) Electrical power						

II) An assessment will be done in this section based on the sliding scale of 1-3. 1 stands for adequate, 2 for inadequate and 3 for not available.

Items that affect teaching and learning	1	2	3	Comments
Instructional Materials				
a) Student's textbooks				
b) Lecturer's guides				
c) Visual aids (charts)				
d) workshop equipment's				
e) Chalk				
f) Chalkboards				
g) Schemes of work and lesson plans				
h) Syllabus.				

Comments from the institution.

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DATE STAMP

Name: Edward K. Chileshe. Student Computer Number: 2016145670.

Appendix H: Observation Checklist for Students' Competency

Instructors' Name: …… Gender: ……

Programme: …… Year of Study: ……

The practical assessment requires the instructor to demonstrate the competencies during a minimum of two or three lessons.

A three (3) point Likert scale will be used where, 1=Partially Competent, 2=Competent, 3= Not Yet Competent

Competencies		**Assessment Tool**	**Competent, Not Yet Competent**			**Researchers' Comments** *(Evidence / not enough evidence, feedback)*
1] Manage Self			1	2	3	
Perform all duties as required in the workshop.	A	Practical Demonstration				
Prepare physically and mentally for lesson activity.	B	Session Plan (game plan)				
Attain a level of fitness appropriate to the standard of the safety rules.	C	Practical Demonstration				
Exhibit correct positioning in relation to actual demonstration of skills	D	Practical Demonstration				
Review instructor's performance including response to lectures	E	Self-assessment				
2]Manage Tasks						
Interpret and apply the safety rules of the workshop.	A	Practical Demonstration				
Exhibit correct signaling for all rules and exhibit knowledge to all equipment's/ tools	B	Practical Demonstration				
Display appropriate handling technique of equipment's or tools	C	Practical Demonstration				

Respond appropriately to trainers' instructions during demonstration.	D	Practical Demonstration				
Communicate appropriately with his fellow students during practical's in the workshop	E	Practical Demonstration				
3]Manage others						
Apply a positive and cooperative attitude towards the trainers	A	Practical Demonstration				
Provide signaling support to fellow students	B	Demonstration Practical				
Conduct pre-demonstration and discussions with trainers and students	C	Practical Demonstration				
Ability to assess the practical competence of a lower skill	D	Practical Demonstration				
4]Manage Environment						
Identify risk management strategies for safety	A	Practical Demonstration				
Adhere to the ethical responsibilities of officials and demonstrate compliance	B	Practical Demonstration				

At the end of the practical assessment if there is a 'Not Yet Competent' discuss with the trainer and the student how to achieve a competent student.

Comments from the Trainer.

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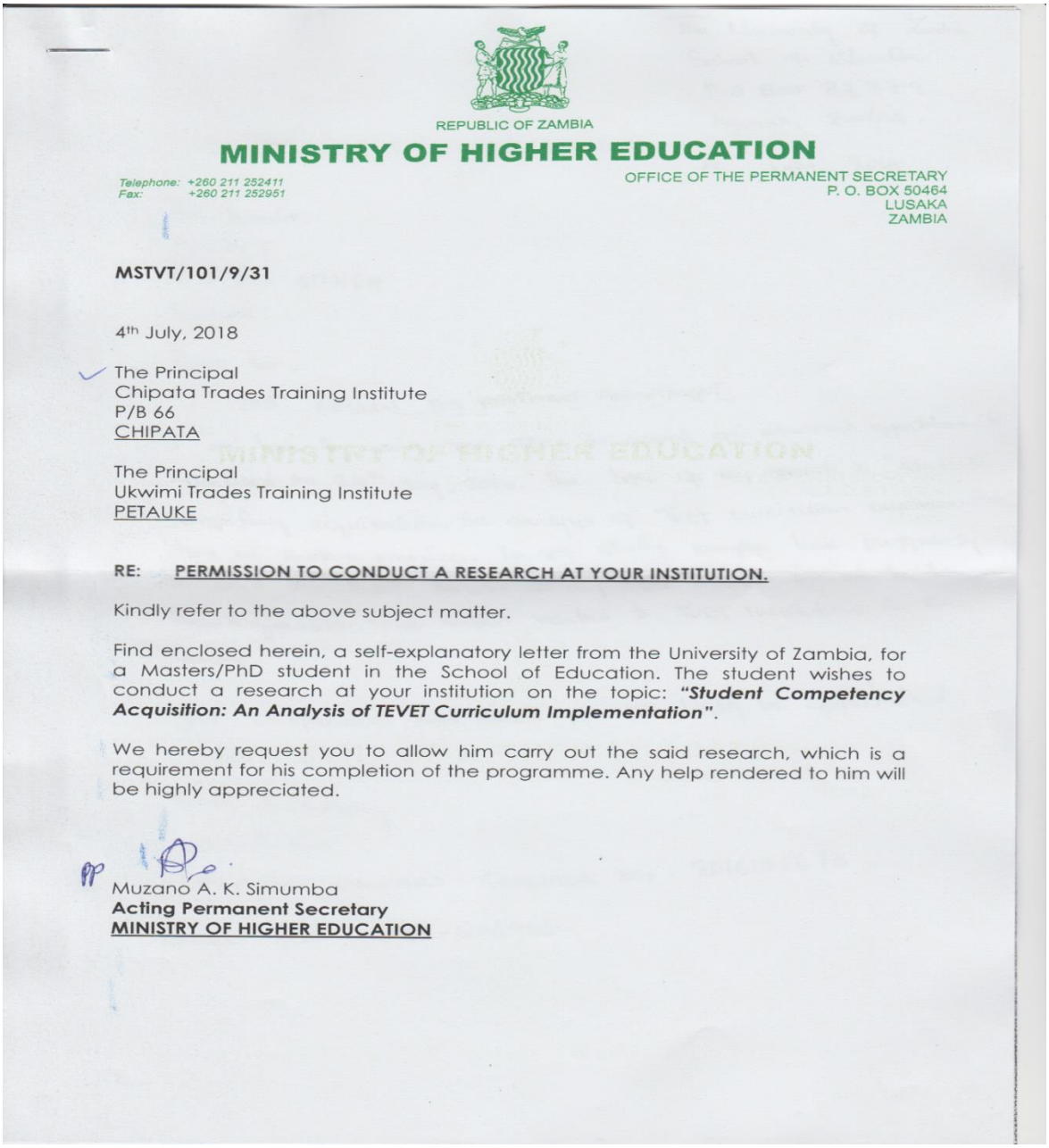
DATE STAMP

Name: Edward K. Chileshe. Student Computer Number: 2016145670.

Appendix I: Letter of Permission from the Ministry of Higher Education to Conduct Research in TVET institutions



REPUBLIC OF ZAMBIA

MINISTRY OF HIGHER EDUCATION

Telephone: +260 211 252411
Fax: +260 211 252951

OFFICE OF THE PERMANENT SECRETARY
P. O. BOX 50464
LUSAKA
ZAMBIA

MSTVT/101/9/31

4th July, 2018

The Principal
Chipata Trades Training Institute
P/B 66
CHIPATA

The Principal
Ukwimi Trades Training Institute
PETAUKE

RE: PERMISSION TO CONDUCT A RESEARCH AT YOUR INSTITUTION.

Kindly refer to the above subject matter.

Find enclosed herein, a self-explanatory letter from the University of Zambia, for a Masters/PhD student in the School of Education. The student wishes to conduct a research at your institution on the topic: ***"Student Competency Acquisition: An Analysis of TEVET Curriculum Implementation"***.

We hereby request you to allow him carry out the said research, which is a requirement for his completion of the programme. Any help rendered to him will be highly appreciated.

pp

Muzano A. K. Simumba
Acting Permanent Secretary
MINISTRY OF HIGHER EDUCATION

Appendix J: Letter of Acknowledgement from Ukwimi Trades

All correspondence should be addressed to
The Principal
Telephone: 0216-371337/0216-371437
Email:ukwimitrades@gmail.com

In reply please quote No.....

REPUBLIC OF ZAMBIA

MINISTRY OF HIGHER EDUCATION

UKWIMI TRADES TRAINING INSTITUTE

P.o Box 560180
PETAUKE
ZAMBIA

13th July, 2018.

The Director Post Graduate,
The University of Zambia
School of Education
Department of Languages and Social Sciences
P.O Box
LUSAKA.

Dear Sir/Madam,

RE: ACKNOWLEDGEMENT FOR THE RECEIPT OF MR. CHILESHE EDWARD.

I write to acknowledge the receipt of Mr. Chileshe Edward from the University of Zambia who was on Educational Research to our Institution which was one of his targets.

I hereby certify that Mr. Chileshe carried out his research work successfully and was availed with every kind of data he requested for.

Mr. Chileshe was so liable and portrayed dedication to his research Data Collection. Kindly take his report as authenticated.

We wish him well and we thank you for being part of us in our Training learning linkages.

Yours faithfully

D. NKUNDWE
VICE PRINCIPAL – UKWIMI TRADES TRAINING INSTITUTE.

Appendix K: Letter of Acknowledgement from Chipata Trades

All correspondence should be addressed to
The Principal
Chipata Trades Training Institute Management Board

In reply please quote
No:.....

REPUBLIC OF ZAMBIA
Ministry of Higher Education
CHIPATA TRADES TRAINING INSTITUTE
P.O. BOX 510066, CHIPATA - ZAMBIA
Tel: +260-216-222510
Cell: +260-977-370-130
Fax: +260-216-222772
E-mail: chipatatrades@yahoo.com

Our Ref:

Your Ref:

18th July, 2018.

The Director (DRGS)
The University of Zambia
School of Education
Dept of LSSE (Curriculum Studies)
P.O Box 32379
LUSAKA

We acknowledge the visit of Mr Chileshe Edward Kings, a post graduate student at the University of Zambia pursuing a master of education in Curriculum studies, and carrying out an academic research study in the TEVET Institution.

The main purpose for his research is to gather the basic information for the study on "student's competency acquisition" and analysis of the TEVET institutions curriculum implementation in the Eastern Province, and he has been accorded a chance and provided with information accordingly.

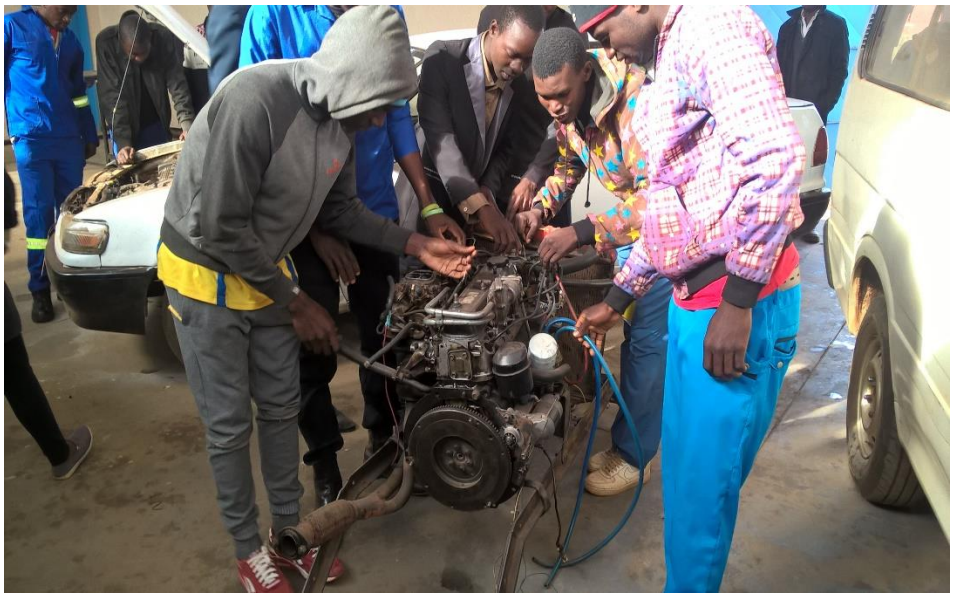
It is our hope that the information so collected shall be used strictly for academic purpose and for good National use.

Yours faithfully

Mirriam Mwale
PRINCPAL

Appendix L: Photos depicting some aspects of the TVET programme

2. Students for Automotive Mechanics during practicals in a workshop



3. A student in Carpentry and Joinery of one Trade College

4. A student in Bricklaying and Plastering

8. Orchard of one of the Trade College

Appendix M: Map of Zambia and Eastern Province (Study Site)