

# The Vocational Pedagogy of Teaching and Learning of Vocational Subjects at TVET Colleges

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## Background and Introduction

The quality and effectiveness of all education systems largely depends on the quality of teaching and learning in the classrooms, workshops, laboratories and other spaces in which education takes place. Good teaching and learning, active, engagements of students, well-designed courses and resources are necessary for the excellent provision of education. The provision of quality technical and vocational education and training (TVET) is generally viewed as playing a vital role in promoting both economic and socio-economic growth, increasing productivity, empowering citizens and alleviating poverty. TVET or Vocational education serves dual purpose, i.e. further educational institutions as well as world of work. Technical and Vocational Education and Training Colleges and Community colleges (ACET) provide vocational skills to youth and communities for middle level jobs. It is assumed that students completed occupational courses from these sectors should have marketable skills required by various industry and employers in the country. The major challenge for African economies over the next decade is to find productive employment for the 7 to 10 million annual new entrants to the labor force—a consequence of historical rapid population growth and a swelling of the labor force by today's school-leavers. The pedagogy of TVET or vocational pedagogy is varied in order to achieve the varied occupational outcomes within the dual outcome of vocational education. This implies that vocational education requires two types of expertise, viz. teacher with work experience and workers with pedagogic knowledge and experience. In South Africa Technical and Vocational Education (TVET) is undergoing radical transformation in entire facet. If we are really to contribute in the transforming of TVET in all of its many forms then we need to understand the teaching and learning methods which work best in our context. If we need to describe with clarity and confidence the relevant teaching and learning for a range of different learners seeking to acquire skills, competences for the 21<sup>st</sup> century, a robust model of 'vocational pedagogy' is required. There is limited research on acceptable and agreed 'vocational pedagogy' in TVET. Most of research in TVET focused on system level such as skills needed and qualification/curriculum

development (UNESCO-UNEVOC, 2014). There is need to develop a well-grounded and useful theoretical underpinning for vocational pedagogy that will provide a structure in which vocational teachers can develop quality, effective teaching and learning programmes. TVET lecturers should be informed by adequate theory of vocational pedagogy to take the best possible decisions in their many different 'designed teaching and learning environments' (classrooms, workshops, studios, training rooms etc) and so develop the best possible vocational pedagogy for the context in which they teach (Lucas, Spencer and Claxton, 2012) . There is lack of consistent empirical evidence to show the impact of vocational pedagogies on learner outcomes, and possible occupational performance (Psifidou, 2012).

The supply of sustainable occupational skills is central to economic growth and development in South Africa. Like many countries, South Africa regard technical and vocational educational at both schools and college sector as a major contributing factor in improving the competitiveness of enterprises and national economies' (Rauner and Maclean, 2008). Curricular and education policy transformation are been undertaken globally to revitalize Technical and Vocational Education and Training (TVET) sector for economic growth and solving socio-economic problems. Technical and Vocational Education and Training (TVET) and vocational education are viewed as key levers for addressing a myriad of social ills such as poverty, youth unemployment and skills shortages. It becomes imperatives for TVET colleges and technical schools to apply the appropriate vocational pedagogy in classroom by integrating digital technology in the teaching and learning of technical mathematics.?? Hattie (2003) support this by saying "it is what teachers know, do and care about which is very powerful in [the] learning equation". The principle of teaching and learning by doing and making enable learners and students to know and apply the knowledge in various context including workplaces (Moghamsi, 2016). The pedagogy of vocational subject is very important in order to produce skilled labour force in South Africa. There are little or no studies that focus on vocational pedagogy in South African TVET colleges. This study will investigate the teaching and learning of vocational pedagogy in some selected TVET colleges in Limpopo province. The focus occupational subjects of this study include Electrical, Mechanical and Civil Engineering. There are various vocational pedagogy used to teach different occupational subject at TVET colleges. This study will start with reviewing literature on vocational pedagogy.

## **Preliminary literature review**

### **Vocational pedagogy for vocational education**

Vocational pedagogy has different meanings, or connotations which reflect different educational traditions and influences. Some of the differences reflect national understandings about the scope of a teacher's decision-making (Cedefop, 2015). For example, in Slovenia 'vocational pedagogy' (*poklicna pedagogika*) is defined in the

literature as a pedagogical discipline that deals with the wider issues of VET, such as organisation, principles, and financing of VET, cooperation between the worlds of work and education (Muršak 2004). Similarly, in Hungary, the literature suggests that the concept (*szakképzés pedagógia*) is understood in a broad sense to include: the basic principles and funding issues of VET; interactions between VET and the economy; options to develop occupation specific competences; the substantive and methodological questions of VET; approaches to dealing with learners with special educational needs. The Swedish national literature refers to vocational pedagogy as 'didactics' which also has a broad meaning, comprising planning, execution and evaluation of teaching and learning methods (Johansson et al., 2007). However, in other countries, vocational pedagogy is understood in a more narrowly defined sense as involving planning and executing activities in the workshop or classroom. For example, in England, 'pedagogy', as distinct from 'curriculum' is usually taken to refer to the processes of teaching, in particular interaction with learners, but also planning and designing learning situations (Lucas et al., 2012).

There is a difference in the way pedagogy is shaped between learning in school-based and work-based environments. For example, Danish respondents confirmed this differentiation in the dual system of IVET: the teaching methods in the school-based part of VET programmes are often more traditional compared to the more practical-oriented in the workplace. They suggested that variations in teaching practice between different learning environments and venues have to do with traditions within the specific skilled occupation or profession and variation in the level of regulation in the school based and work-based part of education. (Lucas et al., 2012) view vocational pedagogy as manipulation of classroom talk, activities, challenges, groupings, environments, available resources, and role models to attain occupational learning outcomes. There is presently a lack of broadly agreement on specific vocational pedagogy, partly due to constantly changing environment in the sector, so the ground rules for occupational education change. There is also misunderstanding about the sole beneficiary of vocational education. Is it for students or is it for employers? Vocational pedagogy is an under researched and under-theorised area, partly, due to the lack of agreement about global purpose of vocational education. Any vocational pedagogy has to deal with contemporary challenges such as changing demands from employers and new qualifications and transformation of institutions, such as the TVEC sector in South Africa. There are a growing number of specific attempts to understand e-pedagogy and the role of digital technology in teaching and learning. Lucas et al. (2012) argue that part of the challenge in vocational education is attributed to the dual professional identify of vocational practitioners as both workers skilled in a particular occupation and as vocational teachers at TVET colleges.

In the Swedish literature, (Johansson et al., 2007) draw a distinction between vocational didactic (*yrkesdidaktik*) which is mostly guided by constructivist learning theory and subject-specific didactic (*ämnesdidaktik*) which is mostly related to cognitive learning theory (Table 1).

### **Table 1: Vocational and subject-specific didactics**

<b>Vocational didactic</b>	<b>Subject-specific didactic</b>
Mostly informed by constructivist learning theory,	Mostly guided by cognitive learning theory
Teaching and learning cut across a wide range of scientific knowledge areas	Based on university knowledge fields, there is a desire to keep subjects separate
Vocational education inherits its didactic from working life, often with blurred knowledge area	Subjects are based on more or less well framed disciplines
Vocational didactic is action-oriented and what is learned is not separated from its usefulness	Focus on theory and the quality of Knowledge
There is generally a problem to solve, which requires both theoretical and practical skills	Based on the didactic question of 'how?' which is answered by theory
There is often tacit and informal learning included in vocational didactic	The knowledge can often be communicated verbally or in written form
Occupations are framed by various rules and regulations, which have to be integrated in Vocational training.	Subject-specific didactics do not have the same 'embeddedness
Demands from labour market stakeholders carry considerable weight, as does working context	Demands from stakeholders leave greater freedom for interpretation

**Source:** Adapted from Cedefop (2015)

There is growing insistence that vocational programmes cannot be delivered in the same way as academic programmes. For instance, in Denmark, unlike in general education, the new way of teaching and learning in Vocational Education and Training is centred on practical tasks and activities to catch students' interest, attention and motivation (Svendsen, 2006). This practical approach is similar to the tradition of apprenticeship learning (*mesterlære*) which highlights the importance of non-verbal and physical elements as part of acquiring practical competence within the profession (Aarkrog, 2012) while at the same time supporting the dual nature of vocational

education and training: the basic connection between vocational education and training at TVET colleges and (Brown and Katznelson, 2011), and between theory and practice. The main emphasis is on 'knowing how' than to declarative knowledge of 'knowing that', though students emphasise that both are important and cannot be separated (Juul, 2005). Tanggaard and Brinkmann, (2008) argue that vocational learning is both cognitive and practical. In contrast, there is little pedagogical difference identified in the literature between general education and vocational education in countries such as Basque region of Spain, Italy, Lithuania, Hungary and Romania. For instance, in Romania, the absence of an alternative conception of vocational pedagogy reflects that, in practice, pedagogy in technical and vocational education is, for the most part, is still based on traditional pedagogy (Cedefop (2015).

### **Problem statement**

There is a shortage of vocational skilled personnel in the country. Most TVET graduates are not employable, because most industry regard these graduates as not occupationally competent. TVET graduates are not capable of creating their own employment necessary for sustainable living. Literature mention various reasons why TVET Colleges graduates are not employable. Some of the reasons include (1) equipped workshop (2) vocational pedagogy in the classrooms and workshops (3) work integrated learning (4) establishment of partnership. There is a need for academically and professionally qualified lecturers at TVET Colleges. This implies that lecturers should possess appropriate pedagogical knowledge, vocational and occupational knowledge, content knowledge, and industrial experience. Furthermore, practical activities should be offered in a well-equipped occupational workshops. The implementation of this approaches will ensure the preparation of well skilled youth who are employable in our work places. Effective implementation of vocational, education and training programmes requires participation of all stakeholders such as industry, TVET, SETA as well as ACET colleges. This study attempt to address contemporary challenges that are encountered at vocational education and training sectors in order to ensure economic impact of VET programmes.

### **Research Questions**

**The main research question underpins this study is:**

What types of vocational pedagogies are practised in TVET colleges?

**The Sub-questions posed are:**

**RQ1:** What are the teaching and learning methods used in classrooms and workshops? (*Observation, Interviews & Questionnaire*)

**RQ2:** What are relevant workshop materials and equipments for teaching and learning vocational subjects? (*Observation, Document analysis & Questionnaires to learners*)

**RQ3:** How are the theory and practises integrated in the teaching and learning of vocational subjects? (*Observation, interview & Questionnaires to learners*)

**RQ4:** What partnership exist between TVET colleges and industries? (*Interviews, Questionnaires & Document analysis*)

**RQ5:** How does WIL programmes inform vocational curriculum in TVET colleges? (*Interviews, Document analysis & Questionnaire*)

***Relationship between instruments and research questions***

<b><i>Research Questions</i></b>	<b><i>Instruments</i></b>		
<b><i>RQ1</i></b>	<b><i>Interviews</i></b>	<b><i>Questionnaires</i></b>	<b><i>Observation</i></b>
<b><i>RQ2</i></b>	<b><i>Observation</i></b>	<b><i>Questionnaires</i></b>	<b><i>Document analysis</i></b>
<b><i>RQ3</i></b>	<b><i>Interviews</i></b>	<b><i>Questionnaires</i></b>	<b><i>Observation</i></b>
<b><i>RQ4</i></b>	<b><i>Interviews</i></b>	<b><i>Questionnaires</i></b>	<b><i>Document analysis</i></b>
<b><i>RQ5</i></b>	<b><i>Interviews</i></b>	<b><i>Questionnaires</i></b>	<b><i>Document analysis</i></b>

**Theoretical framework**

The emphasis TVET vocational pedagogy is about increasing students' adaptability to the new learning strategy of the vocational didactics practice to improve their competence and skills. Kalule (2016) described Pedagogy as the organization of the social activities, organizational structures, and cultural practices by which student, come to acquire and engage vocational competence for specific occupation or vocation.

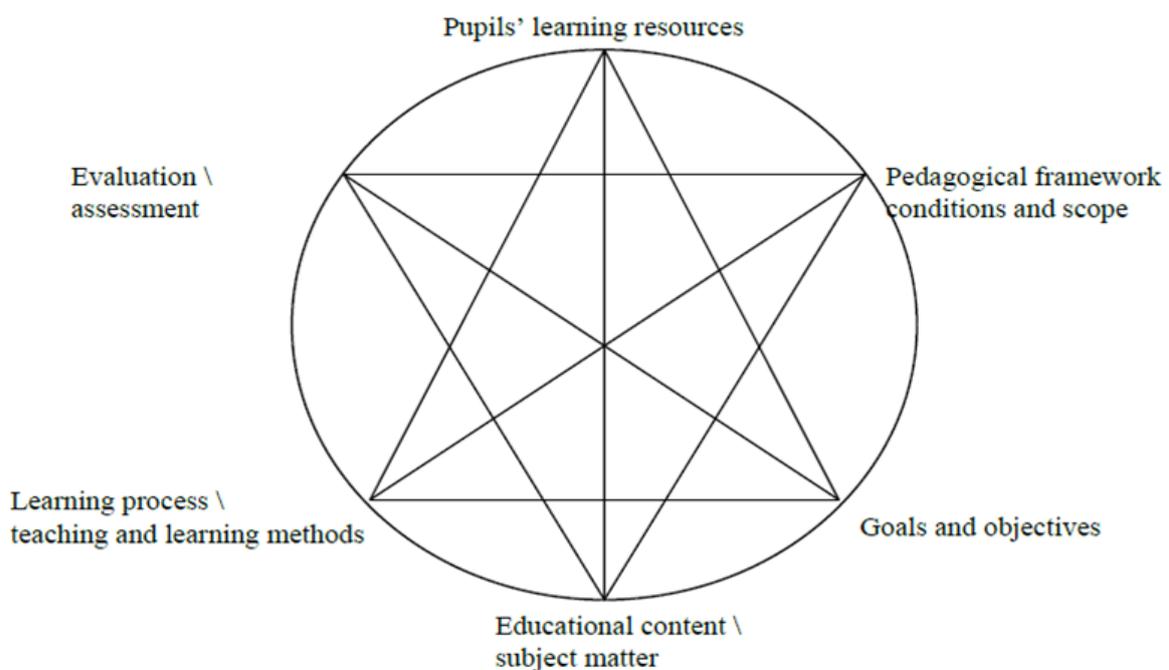
**The model of didactical relations**

Vocational didactic relations model show the interdependency of the elements which make up learning. This relations model for planning and evaluating the vocational pedagogies consists and relates six phenomena namely: learning experiences, resources, objectives, content, learning process and evaluation (**Arinaitwe,2011** ). Through experience and by comparison, the vocational didactic relations model adopted in Norway is similar to the scheme of work employed for the preparation of the teaching and learning, particularly during pre-1994.

It is important to note that teaching and learning in this era of vocational skills and knowledge explosion and expansion is no longer about helping learners to accumulate knowledge that is passed onto them by the TVET lecturer (Kalule, 2016). Rather it is about helping students to make sense of the new information no matter its source, integrating it with the existing ideas and applying their new understanding in a meaningful and relevant ways (Killen, 2007).

This model explains the continuity of the teaching-learning processes from the curriculum, its goals, and what we need to use when expanding it. It is suitable for the designed curriculum, and how we assessed students at the end of the learning process. The interdependency of the elements of learning as put forward by Tobiassen in the didactic relations model is shown in the figure 1 below.

**Figure 1: Vocational Didactic Relations Model**



**Source: (Kalule, 2016).**

This model is a suitable valid tool for planning learning processes in vocational education and training. It is important that the considerations of the model be examined on the adaptability to each lecturer /instructor/trainers own practice. The dimensions of the model allow a high degree of flexibility – as long as the lecturer /trainer is aware of the connections between the elements (Petersen & Tønnesen, 2006). In this context, we used the model as an underpinning framework during the project from seeking information about the teaching and learning and the vocational competence and learning outcomes that a TVET student has attained in the vocational field connecting it to the available resources at the college can be used to obtain those learning outcomes.

## **Learning experiences**

The TVET lecturer/instructor must acknowledge that every student comes with him/her a set of physical, psychological and social conditions, which have an effect on his/her learning. Physical conditions, refer to their natural abilities to see, hear, talk, feel and sense. The psychological aspect addresses elements such as attitude, motivation and knowledge where as the interpersonal skills such as the student s ability to work in group in cooperation with others forms part of social conditions. Learning experiences comprise of knowledge, skills, attitudes and values learners possess (Tobiassen 2001, p. 45) . Tobiasssen further asserts that it is important for the lecturer to take the students" learning abilities into consideration when planning how to organise the students" learning and teaching activities.

## **Resources**

Teaching and learning resources are all those items which may be physical such as infrastructure, tools and equipment, other materials which could be durable such as such as reference books, magazines, journals, curriculum documents and those in form of electronic document (Kalule, 2016). The 4<sup>th</sup> industrial revolution compel lecturers to utilise various digital technologies to enhance learning and technical performance. Also referred to as educational frames, (Tobiassen, 2002, p. 46) asserts that the frames can either be a limitation for the teaching or can give new possibilities for learning situations. Reflecting upon Tobiassen"s view, it is my observation that once there is inadequate materials for use in the learning process, then there are many possibilities of learning not to take place.

## **Objectives**

Johnson and Johnson (1999, p. 3) describe learning objectives as the desired future state of a student in demonstrating competencies or mastery in the vocational subject area being studied. The objectives must reflect specificity of how the learning should take place. Reflecting on Johnson and Johnson"s view, objectives are a guide to all other activities in a learning session since they specify the way in which both the learners and a teacher are expected to interact in the learning process. However, from own experience, this is only viable if the objectives are well communicated, well understood and their significance in the learning appreciated by the students.

## **Subject matter content**

Referred to as subject matter, (Dewey, 1997, 85) describes content as ready-made systematized classification of the facts and principles of the world of nature and man.

Reflecting upon Dewey's view the content is developed by particular people and given out to lecturers for passing on to learners . On further analysis of Dewey's view, it is my belief that pre-developed content is not relevant as the world is never static.

People's needs are ever changing, the natural environment is also changing and the technology is also rapidly advancing to suit the peoples' needs. Subject content is all the identified items that are deemed relevant for learning with a purpose of meeting the peoples' challenges of the time. In addition to being worth learning, the content must be relevant to all the stakeholders of an vocational education and training system. This view is shared by (Freire, 1996, p. 77) who emphasises that content identification should be based on the country's faculty resources, areas of expertise, needs, expectations of stakeholders such as employers, expected vocational skills for the future of workforce as well as advances in technology.

### **Learning process**

It is my understanding that a learning process is an on-going activity in which the various stages of any learning activities are clearly exhibited. Therefore a learning process signifies the act of teaching and learning with all its associated activities (Kalule, 2016). It is an inclusive exercise during which the students' and lecturers' actions portray the learning strategies employed by the lecturer in a classroom environment. As an activity that governs learning, it should be intensive, with a variety of methods and techniques to cater for all students. For that matter it is important that the students' participation in learning is dependent on the lecturer's creativity in organising a variety of activities and methods for their support and it is a key to their success.

### **Evaluation**

According to (Johnson & Johnson 1999, p. 6) evaluation is an aspect in a learning process that focuses on a follow up of the progress of learning of students. To my understanding the element of progress pointed by Johnson & Johnson is reflected at all stages in a learning process. Generally three stages of initiation, development and conclusion are considered at evaluating of learning becomes check points in the learning process. According to Kalule, (2016) evaluation is the process of checking on the learner's progress to ascertain whether learning takes place or not and to work out means of alleviating the situation.

Akello & Kagoire, (1996) describe evaluation as having three stages namely: diagnostic evaluation, formative evaluation and summative evaluation. Reflecting upon Akello & Kagoire's description, the aspect of diagnosing implies calling for learners' experience in form of already acquired knowledge and skills about a vocational subject. It is my belief that diagnostic evaluation is a point of departure for effective learning as it provokes the learners and puts them on board ready to learn. Turning to the formative stage, a learner is expected to be checked upon in the process of his/her learning. This kind of evaluation is reflected at the various stages in a

learning session. In instances where challenges are identified, say in methodology or resources, measures are immediately sought for and implemented for the learning to progress. Formative evaluation is support by (Johnson & Johnson, 1999, p. 157) who argue that it is essential for a lecturer to regularly monitor and intervene in learner"s learning process to assess the progress.

## Research methodology

The methods section describes the rationale for the application of specific procedures or techniques used to identify, select, and analyze information applied to understanding the research problem, thereby, to ensure a study's overall validity and reliability. This proposed study project describe the planning session of the research project, Use of Action research approach, research design, tools and methods, the research participants and ethical considerations. The methods section of a research provides the information by which a study's validity is judged (Kallet, 2004). The fieldwork planning shows the proposed time schedule for the project, the type of research and the research design employed, the participants in the project, the research methods and tools, data analysis; data transcription, coding, presentation, discussion and analysis as well as reliability and validity of instruments.

The research employs participatory action research (PAR), which include interviews, questionnaires, observation, informal conversational and open-ended, participatory observation and documentary analysis. The methods of data collection and a descriptive approach to research design was will be employed. For the effective use of the mentioned methods, the use of voice recorder, video camera, digital camera, reflective logs and group evaluation minutes as research tools will be requested.

Action research is about evaluating existing vocational pedagogy and didactics practice to check whether it is good to produce required workforce. The research project will identify any areas that practitioners feel need improving and finding ways to improve them (McNiff, 2016, p. 16). The study will easily determine within the parameters of the objectives, and within practice of teaching and learning the performance of students or graduates in the field. Through studying and working within TVET practice, the TVET academics and researchers turn into a reflective practitioners, critical thinkers, and an agent for personal and social change.

**Table 2: Proposed Field Work Plan**

Week	Date	Activity	TVET College
1,2,3,4	06- 30 Aug TERM 3: NCV: 23/07- 28 /09	<ul style="list-style-type: none"> <li>Consultative Meetings with the Principals, and academic/participants</li> <li>Meeting the participants to reflect</li> </ul>	Lephalale Modimolle Capricon Seshego

	<b>NATED: Trimester3: 3 Sep-13 Nov</b>	<p>on the content of the project proposal</p> <ul style="list-style-type: none"> <li>• Visitation of the college and scheduling for field work</li> </ul>	<p>Botlokwa Waterburg Mokopane Letaba Tzaneen Vhembe Sibasa Makhado Mopani Phalaborwa/Namakgale Sekhukhune Motetema Bugersfort</p>
5,	03-07 Sep 10-14 Sep	Collecting data	<p>Lephalale Modimolle</p>
6	17-21 Sep	Collecting data	<p>Capricon Seshego Botlokwa</p>
7	25-28 Sep	Collecting data	<p>Waterburg Mokopane</p>
<b>MEETING FOR REFLECTION AND CONSOLIDATION</b>			
8	01-05 Oct	Collecting data	<p>Letaba Tzaneen</p>
9	08-12 Oct	Collecting data	<p>Vhembe</p>

			Sibasa Makhado
10	15-19 Oct	Collecting data	Mopani Phalaborwa/Namakgale
11	22-26 Oct	Collecting data	Sekhukhune Motetema Bugersfort
12	29-31 Oct , 1,2 Nov	<b>Meeting to reflect, consolidate and capture data collected</b>	
13	05-09 Nov	Data consolidation and capturing	
14	12-16 Nov	Data consolidation and capturing	
15	19-23 Nov	Data analysis, transcriptions	
16	26-30 Nov	Data analysis, transcriptions	
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### **Data collection instruments**

The data collection instruments which will be used in this mixed method research entails observation, interviewing, document analysis and Questionnaire. The researcher will employ data collection instrument to triangulate the collected data. According to Olsen (2004), triangulation is referred to mixing of data instruments that gives light to what the study is researching about. The aim of triangulating is to maximise the findings through confirmation of what the instruments measurements during data collection (Bryman, 2013). However, the study aimed at investigating types of vocational pedagogies that are practised in TVET colleges.

### **Data analysis**

Data analysis will occur simultaneously with data collection. According to Harding (2013), in data analysis process, the researcher should become familiar with the data through reading, providing a detailed description, classifying data into themes and then interpreting that data. Therefore, this study will analyse data from the observation, document analysis, interviews, and questionnaires instruments using qualitative and quantitative methods.

### **Ethical consideration**

All the ethical procedures will be adhered to in the study's research. Participants will also be informed that their details would be confidential and no names would be exposed. Furthermore, the participants will not involve in a discussion of sensitive topics, which would involve invasive, intrusive or potentially harmful procedures. When

collecting the data for this study, the researcher will also follow the following ethical principles for researchers by

- Protecting the rights, interests and sensitivities of the respondents;
- Reporting the research findings in a full, open fashion to the scientific community;
- Striving to maintain objectivity and integrity in the conduct of the scientific research at all times;
- Minimizing the possibility that the results would be misleading;
- Disclosing the research method used and;

It will be of utmost importance that this study is conducted in a scientific in nature and that the outcomes be used to inform the vocational pedagogy of TVET teaching and learning practices as well as relevant policymakers as well as all other interested stakeholders about the TVET colleges. The findings reports of this study will be presented and submitted to TVET colleges. Recommendations based on these findings will be used to pave the way for remediation.