

**QUALITY ASSURANCE OF POST-SCHOOL ENGINEERING EDUCATION AND  
TRAINING PROGRAMMES FOR ADULT LEARNERS**

**by**

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**THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE  
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UNIVERSITY OF THE FREE STATE  
BLOEMFONTEIN**

**September 2020**

**PROMOTER: Prof. F.J. Nieuwenhuis**

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I hereby declare that the work submitted here is the result of my own independent investigation. Where help was sought, it has been acknowledged. I further declare that this work is submitted for the first time at this university/department towards a PhD degree and that it has never been submitted to any other university/faculty/department for the purpose of obtaining a degree. I furthermore cede copyright of the thesis in favour of the University of the Free State.



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21-Aug-2017

Dear **Mr Johannes Boonzaaier**

Ethics Clearance: **Quality assurance of post school mechanical engineering education and training programmes for adult learners**

Principal Investigator: **Mr Johannes Boonzaaier**

Department: **School of Higher Education Studies (Bloemfontein Campus)**

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## LETTER FROM LANGUAGE EDITOR

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### DECLARATION

31 August 2020

### TO WHOM IT MAY CONCERN

I herewith declare that I did the language editing of the research report on *Quality assurance of post-school engineering education and training programmes for adult learners* by Johannes Nicolaas Boonzaaier.

The track changes function was used for corrections, comments and recommendations, and the student was responsible for accepting/ rejecting the changes and recommendations, and for finalising the document.

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## ACRONYMS

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ABET	Adult Basic Education and Training
AgriSETA	Agricultural Sector Education and Training Authority
APQN	Asia Pacific Quality Network
AQF	Australian Qualifications Framework
AQP	Assessment Quality Partner
CAC	Curriculum Advisory Committee
CACE	Central Advisory Council for Education
CBA	Competency-Based Assessment
CDAC	Curriculum Development and Assessment Coordination
CEO	Chief Executive Officer
CEP	Community of Expert Practitioners
CESM	Classification of Educational Subject Matter
CET Colleges	Community Education and Training Colleges
CETCs	Continuous Education and Training Centres
CHE	Council on Higher Education
CHEA	Council for Higher Education Accreditation (USA)
CHET	Centre for Higher Education Transformation
CIPC	Companies and Intellectual Property Commission
COAG	Council of Australian Government
COTT	Central Organisation of Technical Training
CRC	Curriculum Review Committee
CRDP	Comprehensive Rural Development Programme
CSC	Curriculum Steering Committee
CSM	Curriculum Steering Meeting
CSSA	Chartered Secretaries Southern Africa
DAFF	Department of Agriculture, Forestry and Fisheries
DBE	Department of Basic Education
DEA	Department of Environmental Affairs
DED	Department of Economic Development
DEEWR	Department of Education, Employment and Workplace Relations
DHA	Department of Home Affairs
DHET	Department of Higher Education and Training
DIF	Difficulty, Importance and Frequency
DoE	Department of Education
DoL	Department of Labour

DPRU	Development Policy Research Unit
DQP	Development Quality Partner
DTI	Department of Trade and Industry
ECD	Early Childhood Development
EISA	External Integrated Summative Assessment
ENLACES	Latin America, Caribbean
ESASS	External Summative Assessment
ESU	European Students Union
ETD	Education, Training & Development
ETDP	Education, Training and Development Practitioner
ETDP SETA	Education, Training and Development Practices Sector Education and Training Authority
ETQA	Education and Training Quality Assurance body
FASSET	Financial and Accounting Services SETA
FDI	Foreign Direct Investment
FE	Further Education
FET	Further Education and Training
FETCs	Further Education and Training Colleges
GDP	Gross Domestic Product
GENFETQA	General and Further Education and Training Quality Assurer (also known as Umalusi)
GET	General Education and Training
GFETQF	General and Further Education and Training Qualifications Framework
HE	Higher Education
HEI	Higher Education Institution
HEIs	Higher Education Institutions
HEMIS	Higher Education Management Information System
HEQC	Higher Education Quality Committee
HEQF	Higher Education Qualifications Framework
HET	Higher Education and Training
HRDC	Human Resource Development Council
HRDSA	Human Resource Development of South Africa
HRD-SA	Human Resources Development Strategy for South Africa
HSRC	Human Sciences Research Council
IDZ	Industrial Development Zone
ICASS	Internal Continuous Assessment

IEB	Independent Examinations Board
IFG	International Finance Group
INPO	Institute of Nuclear Power Operations
INQAAHE	International Network for Quality Assurance Agencies in Higher Education
IoDSA	Institute of Directors in Southern Africa
IPPS	Institute for Post School Studies
ISAT	Integrated Summative Assessment Task
ISCED	International Standard Classification of Education
ISCs	Industry Skills Councils
ISETT	Information Systems Technologies, Electronics, and Telecommunications Technologies (South Africa)
IT	Information Technology
LD	Licence Document (National Nuclear Regulatory)
LFS	Labour Force Survey
LG	Licence Guide (NNR)
LMIP	Labour Market Intelligence Partnership
M&E	Monitoring and evaluation
MBA	Master's in Business Administration
MESALC	Map of Higher Education in Latin America and the Caribbean
MiWORC	Migrating for Work Research Consortium
MoE	Ministry of Education
MRV	Most Recent Value
MTM	Market Type Mechanisms
NAICU	National Association of Independent Colleges and Universities
NAMB	National Artisan Moderation Body
NATED	National Accredited Technical Education Diploma
NC(V)	National Certificate (Vocational)
NCFE	National Committee on Further Education
NCHE	National Council on Higher Education
NCV	National Certificate Vocational
NDP	National Development Plan
NGO	Non-Governmental Organisation
NGP	New Growth Path
NNR	National Nuclear Regulator
NPC	National Planning Commission
NPHE	National Plan for Higher Education

NQC	National Quality Council
NQF	National Qualifications Framework
NSC	National Senior Certificate
NASCA	National Senior Certificate for Adults
NSDS	National Skills Development Strategy
NSF	National Skills Fund
NSFAS	National Student Financial Aid Scheme
NSSE	National Survey of Student Engagement
NTIS	National Technical Information Service
NTSI	National Training Strategy Initiative
NVQs	National Vocational Qualifications
OAU	Organisation of African Unity
OBE	Outcomes-Based Education
OC	Occupational Certificates
OE	Operating Experience
OECD	Organisation for Economic Co-operation and Development
OFO	Organising Framework for Occupations
OHS	Ordinary Household Survey
OJT	On-the-Job Training
OTG	Operator Training Group
PHEI	Private Higher Education Institution
PIHEs	Private Institutions of Higher Education
PISA	Programme for International Student Assessment
PIVOTAL	Professional, Vocational, Technical and Academic Learning
PQM	Programme and Qualifications Mix
PSAM	Public Service Accountability Monitor
PSET	Post-School Education and Training
QCTO	Quality Council for Trades and Occupations
QDF	Quality Development Facilitator
QLFS	Quarterly Labour Force Survey
RIACES	Ibero-American Network for Accreditation of the Quality of Higher Education ( <i>Red Iberoamericana para la Acreditación de la Calidad de la Educación Superior</i> )
RSA	Republic of South Africa
RTOs	Registered Training Organisations
SA	South Africa
SACPO	South African College Principals Organisation

SADC	Southern African Development Community
SAICA	South African Institute of Chartered Accountants
SAIPA	South African Institute of Professional Accountants
SAIFCET	South African Institute for Further and Continuing Education and Training
SAIVCET	South African Institute for Vocational and Continuing Education and Training
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SAQA	South African Qualifications Authority
SARS	South African Revenue Services
SARUA	Southern African Regional Universities Association
SASRI	South African Sugarcane Research Institute
SAT	Systematic Approach to Training
SDLA	Skills Development Levies Act
SET	Science, Engineering and Technology
SETA	Sector Education and Training Authority
SETAs	Sector Education and Training Authorities
SIPs	Strategic Integrated Projects
SME	Subject Matter Expert
SME	Small and Medium-sized Enterprises
SMMEs	Small, Micro and Medium Enterprises
StatsSA	Statistics South Africa
STC	Shukela Training Centre
STEM	Science, Technology, Engineering and Mathematics
TCR	Training Change Request/Task Change Request
TETA	Transport Education and Training Authority
TIMSS	Trends in International Mathematics and Science Study
TMG	Training Material Group
TPA	Task Performance Assessment
TPER	Training Programme Effectiveness Reviews
TPG	Training Programme Guide
TPI	Training for Performance Improvement
TTM	Task to Training Matrix
TVET	Technical and Vocational Education and Training
TVSD	Technical and Vocational Skills Development
UK	United Kingdom
UKCES	UK Commission for Employment and Skills

UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations International Children's Emergency Fund
UNISA	University of South Africa
UNU-WIDER	United Nations University – World Institute for Development Economic Research
UoT	University of Technology
VET	Vocational Education and Training
WB	World Bank

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## SUMMARY

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This study investigated quality assurance in engineering education and training in TVET colleges in South Africa against an appropriate background of the continuous changes in higher education and training, as well as the labour market. There is a significant impact on the expectations placed on higher education due to global and national labour market requirements, movements and challenges that refer to economic pressure, the knowledge economy, as well as unemployment rates. A further impact on the higher education and training arena is the rapid expansion of and access by a diverse student population.

In both private and public TVET education and training providers, quality assurance is a problematic and troublesome journey, because of the complex and burdensome education and training environment. Public and private TVET providers are substantial role players in TVET education and training provision. The stated intention is to create a regulating framework that is more enabling.

The focus of this thesis was on public and private TVET providers at post-school level, where quality assurance in the current regime was analysed and contextualised to establish what is required and its impact on the operations public and private providers by regulatory frameworks. A mixed-methods research approach was used to investigate the experience of public and private TVET providers' management, Education and Training Quality Assurance (ETQA) or Quality Assurance (QA) Managers, ETD practitioners lecturers/instructors and current students. This followed a document analysis on teaching and study aids.

In conclusion, there is a call for a centralised oversight body with a far more streamlined system, better stakeholder consultation, less political interference with a deeper appreciation of the contributions both public and private TVET providers make to education and training of learners in South Africa.

**Keywords: engineering education and training; engineering curriculum; skills and abilities; public and private TVET providers; stakeholders; quality assurance; institutional leadership; internationalisation; learner profiles; role of industry, policies and practices; post-school TVET education and training, regulatory authorities, resources.**

# QUALITY ASSURANCE OF POST-SCHOOL ENGINEERING EDUCATION AND TRAINING PROGRAMMES FOR ADULT LEARNERS

## CHAPTER 1

### INTRODUCTION AND ORIENTATION TO THIS STUDY

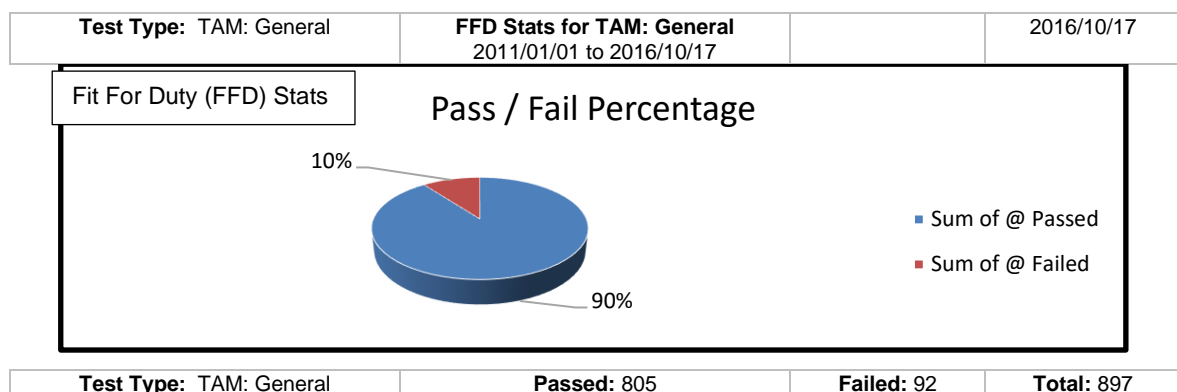
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#### 1.1 INTRODUCTION AND BACKGROUND TO THE RESEARCH PROBLEM

The focus of this study was on quality assurance in private and public tuition providers operating in Technical Vocational Education and Training (TVET) and Higher Education and Training (HET) institutions at the post-school education level for engineering training programmes for adult learners in South Africa.

“It should be noted that TVET private providers as a sector have not been intensively researched, either qualitatively or quantitatively” (Umalusi 2008:2) because state policy and the research underpinning the policy tend to focus on public provision as a priority. Private higher education also received little attention at national level as it was viewed as competition for the public sector (CHE 2009a:1). Thus, it merits investigation.

Most of the contractor qualified artisans and engineering technicians of Eskom (the South African Electricity Supply Commission) working at the Koeberg nuclear power station, have qualified through public TVET providers. These prospect (contractor and new) employees, however, need to be screened and assessed by means of basic theory and practical tests to determine if they can be allowed into specific sites at Eskom Koeberg Nuclear Power Station. Even though they are supposed to be qualified, more than 10% of them fail these tests, indicating that there must be a problem with the training programme(s) they completed at TVET institutions (cf. Figure 1.1, which portrays statistics from 2011 to date).



**Figure 1.1: Technical assessment results downloaded from System Analysis Process (SAP) system database (Source: Eskom Generation TAM results from Fit for Duty Stats)**

### 1.1.1 A brief overview of post-school education and training

The political changes that started taking place in South Africa in 1994 caused a notable change in education, and initiated a move to upskill large numbers of previously disadvantaged people (National Training Board 2004:n.p.). Three National Skills Development Strategies (NSDS) were issued in attempts to address the shortage of well-trained individuals in previously disadvantaged groups. These strategies were the NSDS I (2000-2005), NSDS II (2005-2010) and NSDS III (2010-2015). Following the first two strategies, the third National Skills Development Strategy (NSDS III) (Department of Higher Education & Training 2010:n.p.), continues to emphasise the need for increased access to training and skills development opportunities to achieve the fundamental transformation of inequities linked to class, race, gender, age and disability. This is coupled with the imperative of meeting the educational needs of a fast-changing, more upwardly mobile society which is driven by “expansion, resource scarcity, increased competition, accountability to more stakeholders and the growing complexity of knowledge” (Mhlanga 2008:1).

Furthermore, the globalisation and internationalisation of education have placed demands on education systems throughout the world for higher standards and better quality (Larsen 2008:n.p.; The European Centre for the Development of Vocational Training 2009:46; Martin & Stella 2010:8), leading to the creation of quality assurance frameworks, underpinned by political ideologies, as well as quality assurance policies and practices.

The global trend towards quality assurance in education has led to a plethora of regionalised educational protocols, such as the Bologna Process, the Bruges-Copenhagen Process, the Lisbon Strategy and its successor, the ‘EU2020’ Strategy (all in Europe); the Brisbane Communique (in Australasia), ENLACES (in Latin America and the Caribbean), the African Higher Education Area (in Africa), and the SADC Protocol on Education and Training. Locally, South Africa established the South African Qualifications Authority (SAQA) in terms of the SAQA Act, No. 58 of 1995 (Mehl 2004:22). Quality assurance has since been expressed in the development of policies, structures and systems at national and institutional levels, such as:

- the Accelerated Shared Growth Initiative – South Africa (AsgiSA);
- the Joint Initiative for Priority Skills Acquisition (JIPSA);
- Broad-Based Black Economic Empowerment (BBBEE);
- the Skills Development Act, No 97 of 1988, and the accompanying Skills Development Levies Act, No 9 of 1999;

- the promulgation of the National Qualifications Framework Act, No 67 of 2008, and the establishment of Quality Councils (the Higher Education Quality Council, (HEQC);
- the GENFETQA General and Further Education and Training Quality Assurer (also known as Umalusi); and
- the Quality Council on Trades and Occupation (QCTO).

Due to these and other acts, policies and projects, the quality assurance landscape keeps changing and becoming more complex (Patel 2008:4).

For example, each of the quality councils has devised its own criteria, quality assurance policies and processes, application forms, and monitoring systems. In addition, the Department of Basic Education (DOBE) and the Department of Higher Education and Training (DHET) (formerly a single Department of Education) have their own criteria, policies, application forms and monitoring systems. Until 2011, providers were expected to register with and be accredited by at least two different quality assurance bodies. Various scenarios are depending on which level of education the provider offers, for example: registration with the Department of Education (DoE) and accreditation by a SETA; or registration with the DoE, Umalusi and/or the CHE, and accreditation by the HEQC and/or a SETA. Since 2011, providers are required to register with and be accredited by only one of the quality councils, namely Umalusi, the HEQC or the QCTO. According to the NQF (n.d.:n.p.; The NQF & QA 2000) accreditation refers to the process whereby

*“ ... an institution or provider meets the quality requirements laid down by the responsible body, it is therefore approved to carry out its functions and deliver what it says it can deliver”.*

This process could possibly also include learning programme approval; sometimes accreditation and learning programme approval involves two separate processes. Approval of the learning programme may be a criterion that is required for accreditation, though not always. In other instances, accreditation by a certain body means providers have to submit programmes for learning programme approval to a different body too, depending on who is responsible for the standards involved.

Accreditation can also be referred to as the certification, usually for a particular period of time, of a person, a body or an institution as having the capacity to fulfil a particular function within the quality assurance system set up by SAQA.

Consequently, the burden of the ensuing costs and resources due to bureaucratic changes has to be borne by private providers that have to comply with a number of compliance

regimes, rather than quality assurance *per se*. Private TVET providers must provide their own funding, while public TVET Colleges receive government funding.

In contrast, public institutions are compelled by law to be accredited (National Qualifications Framework n.d.:n.p.), irrespective of their performance or outputs. However, many debates at conferences, in the press, in parliament and academia (News24.com 2010:n.p.; Ministry of Education 2001:n.p.; Bloch n.d.:n.p.; Nkomo n.d.:n.p.) point to deep systemic problems in the public education arena, such as:

- inequalities in the school system (CHE 2007:42; Luescher, Schreiber & Moja, 2018);
- the school system's failure to interface well with higher education and training (CHE 2007:20);
- in the higher education and training system itself, the overall quality and quantity of graduate and research outputs (National Plan for Higher Education 2001:n.p.);
- failures relating to management, leadership and governance (Leuscher 2007:12; Reddy, Wildschut, Luescher, Petersen & Rust, 2018);
- lack of representative staff profiles (CHE 2009:20);
- entrenched institutional cultures (National Plan for Higher Education 2001:n.p.); and
- the increased competition between institutions (CHE 2009:1).

In 2009, the Minister of Higher Education and Training at the time (Nzimande 2009:n.p.) reported that despite progress in changing the racial profile of higher education institutions and introducing a national skills development strategy that was intended, specifically, to redress historical inequity, not much significant change could be reported since the National Plan for Higher Education had been mooted in 2001.

The then Minister of Finance, Pravin Gordhan (2011:n.p.), in his 2011 budget speech indicated that:

*“Education takes up the largest share of government spending – 21 per cent of non-interest allocations – and receives the largest share of the additional allocations”.*

He added that the Ministers of Basic Education and Higher Education and Training

*“... exercise stewardship ... over the largest network of service providers in our economy, and the most important programme of investment in future growth and redistribution”.*

Given the generous budget, and a focus on education in South Africa, the expectation was

excellence in the quality of education for the entire education system; however, in the view of this and other researchers who are active in the field, this expectation did not realise.

In general, schoolchildren lack adequate numeracy and literacy skills; only 26.6% of matriculants achieve university entrance (Scherer 2013:n.p.), and university throughput rates are lower than 50% (characterised by high drop-out rates and students taking longer than four years to complete undergraduate degrees) (Kadali 2011:n.p.). Varghese (2006:43) reports that the academic performance of students studying at private institutions of higher education and training (HET) in Africa is generally better than that at public universities and TVET institutions, despite the likelihood of these students having a lower-level academic profile.

What should or could be done to improve the quality of the South African higher education, more specifically that in the field of engineering? This study is aimed at partly answering the question by examining the quality assurance (QA) of private and public TVET providers' engineering training.

### **1.1.2 The NQF and SAQA quality spiral**

Implicit in SAQA's outline of the quality spiral as depicted in Figure 1.2 is the understanding that *quality is not a thing, but quality is an ongoing event* (The NQF & QA: 8 May 2000). The outline of NQF structures and systems in Figure 1.2 below captures the dynamic relations between the separate functions of standards-setting and quality assurance. In essence, the quality process is seen, to begin with, standards-setting and the registration of standards and qualifications on the NQF. Once registered, Education and Training Quality Assurance bodies (ETQAs) can then be accredited to monitor and audit the provision, assessment and achievement of specified standards and/or qualifications (The NQF & QA, 2000).

Evaluation and reporting requirements for accredited bodies (ETQAs & providers) provide a direct and dynamic feedback mechanism to standards setting, ensuring the continual improvement of the standards and qualifications registered on the NQF. The NQF quality spiral and the quality assurance system have to encapsulate this dynamic notion of quality as a continuous event to ensure the ongoing development and redevelopment of standards and qualifications to meet individual learners' and society's needs (The NQF & QA, 2000). It thus is clear that to ensure a quality education and training system, the NQF must ensure that education brings about a positive result in the lives of all South Africans. To achieve this, standards set in participatory and representative processes need to be achieved and assessed in ways which assure all users of this framework of lifelong learning; these

standards must be achieved, maintained and continually improved. The quality spiral becomes visible when the structures and processes required for developing the NQF registered standards and qualifications, with their specific assessment and accreditation requirements, are overlaid with the structures and processes required for ensuring the provision and achievement of such standards and qualifications (The NQF & QA, 2000).

In Figure 1.2, we can see the QA spiral according to SAQA (The NQF & QA, 2000).

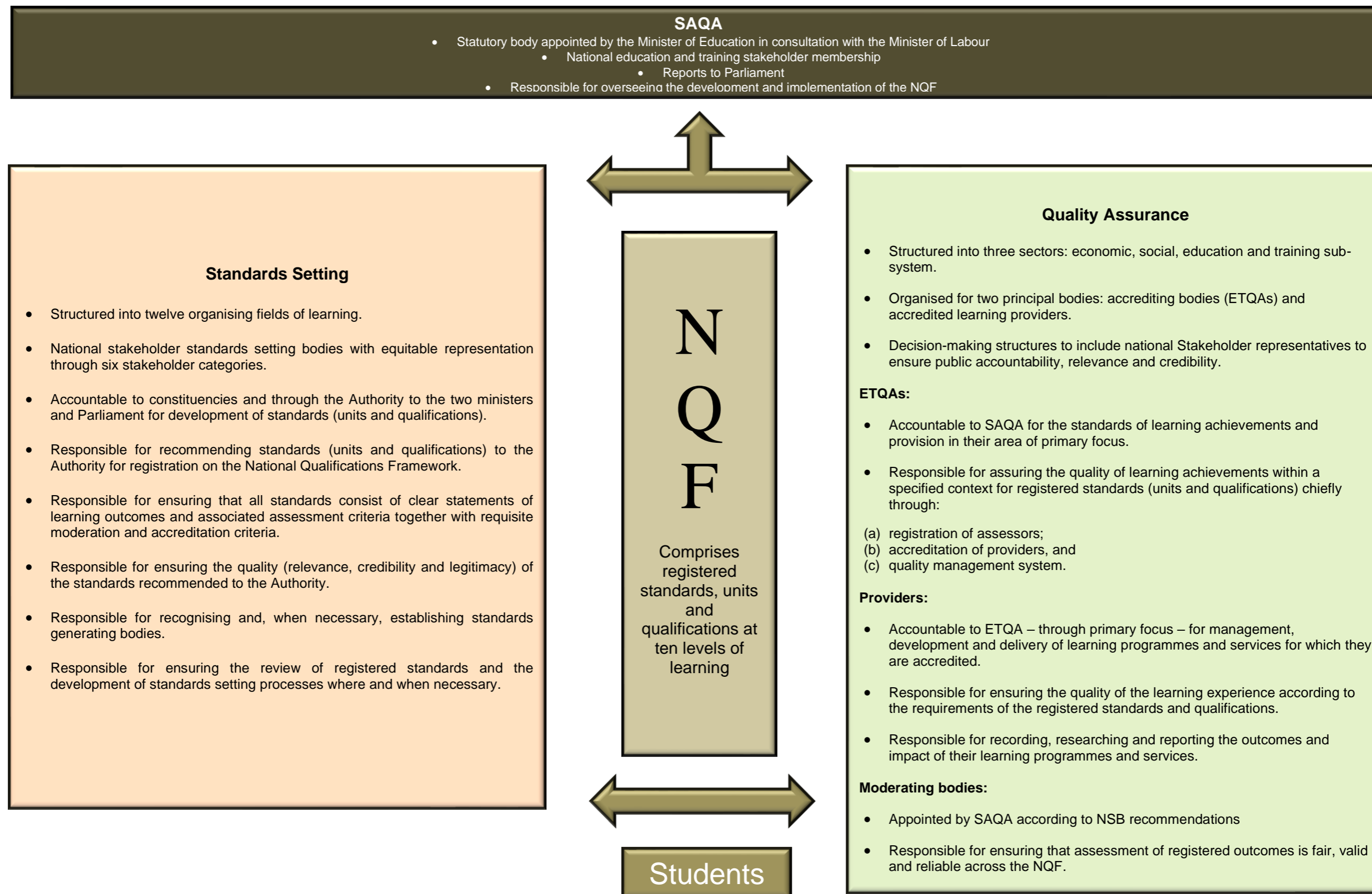
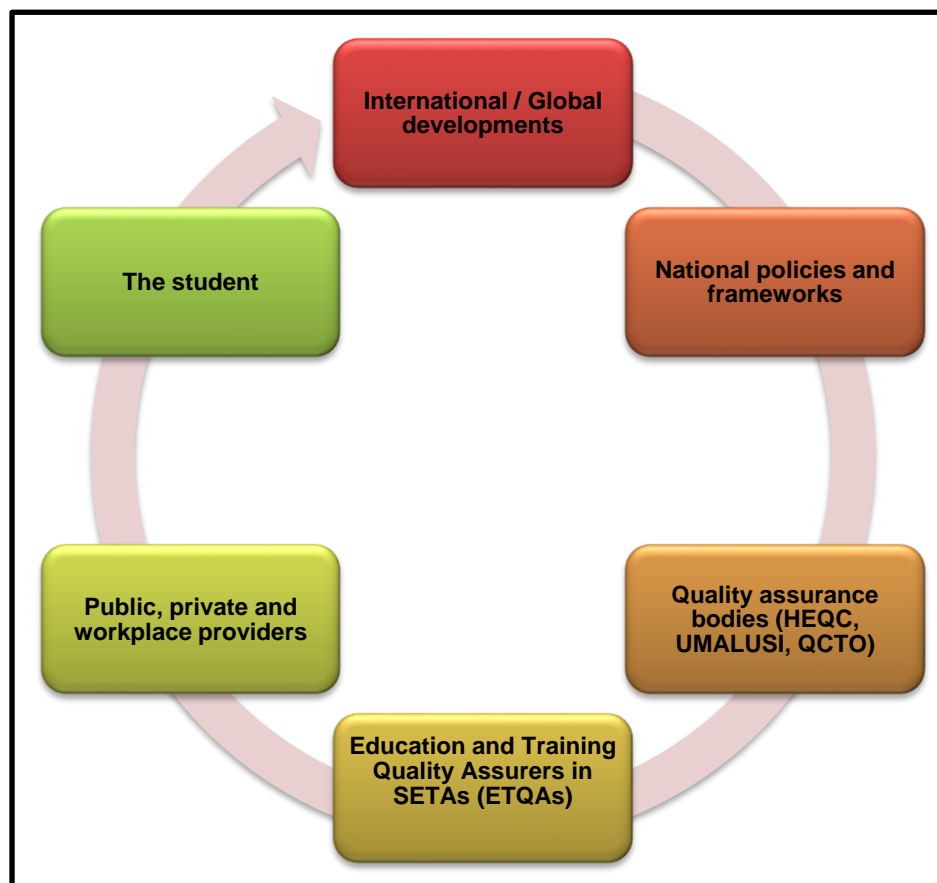


Figure 1.2: SAQA Quality assurance spiral  
(Source: The NQF & QA 2000:8)

The diagram below (cf. Figure 1.3) is a hierarchical representation of quality assurance in education in South Africa as derived from the official SAQA Quality Assurance spiral depicted above.



**Figure 1.3: Depiction of quality assurance in education in South Africa (derived from SAQA Quality Assurance Spiral)**

As already stated, understanding of who private providers, are, how they operate, and what the outcomes of the tuition they provide involves, is limited. This again raises a question, already asked in 2010 (Haakstad 2010:2), namely:

*“... with reference to external quality assurance, how distant can quality assurance be from the actual objects of assessment [namely the students – my insertion] – and still make valid observations and judgements?”*

The law requires private TVET providers to be accredited (South Africa: Further Education and Training Colleges Act, 2006, No 16 of 2006; South Africa: Higher Education Act, 1997, No 101 of 1997), although many are not (Nxesi 2006:8; SACSAS 2010:8; MQA 2011:11). In January 2013 (SAQA 2013a:n.p.), 87 accredited private higher education institutions (PHEIs) were accredited, a further 31 were provisionally accredited PHEIs, and 974 institutions were private providers that used to be further education and training (FET)

accredited providers (currently called TVET providers) (Umalusi 2013:n.p.). These private providers offered certificate, diploma and degree courses in a wide range of disciplines, including health and beauty, theology, marketing, business skills, technology, and arts and culture.

According to the Association of Private Providers of Education, Training and Development (APPETD) (2009:n.p.) in South Africa, it represents approximately 600 private providers with 600 000 learners in the Higher Education and Training (HE), TVET, and Adult Basic Education and Training (ABET) sectors. These providers include in-house training providers, distance education providers and training centres. Clearly, private providers, therefore, make up a significant part of the post-school educational infrastructure.

Private providers may offer tuition for full qualifications, unit standards training, skills programmes, learnerships or short learning programmes at all levels of the National Qualifications Framework (NQF) if they are accredited for such programmes (Umalusi 2008:29). According to Metcalfe (2010:n.p.),

*"Government sees that there is an important role to be played by the private providers within the National Skills Development Strategy (NSDS) III" and that "there is ... a niche market for private providers and a need for private providers to address rapid response areas".*

However, there is concern about private providers as evidenced by a press release in which Dr Rakometsi, the Chief Executive Officer (CEO) of Umalusi, is quoted as saying the following: "We are very concerned about the reputation of private provision in South Africa – private providers operating illegally exploit and mislead learners and this is very damaging to the whole private education sector – by this, we mean independent schools, private TVET Colleges and adult learning centres" (Umalusi 2010a; 2010b:n.p.).

It is **not** the intention to focus in this research on illegal, unaccredited private providers. Nevertheless, this concern brings the private provider in the spotlight and motivates the investigation. Both public and private providers will be investigated to make findings of the true state of affairs regarding quality assurance in TVET higher education and training for engineering training.

The motivation for this study was that a great deal of the literature on quality assurance discourse in the education sector is directed at public higher education institutions, and on TVET Colleges which fall within the HET band. While HEIs, such as PHEIs or other private providers also have been the focus of considerable research, few research reports are available on the **actual experience** of public and private higher institutions, as well as TVET

education providers and even less on other public and private providers, such as providers of short courses, and those involved in workplace TVET. It seems that most of the literature relates to experiences from the perspective of the quality assurer. This study, therefore, breaks new ground by seeking to present the education authorities and quality assurance bodies with a picture of the experience of the “implementers” of quality assurance in the public and private TVET education arena, and may, therefore, provide some input into future policy development in engineering programmes for post-school, adult learners.

A greater understanding of the position of the private provider by the education authorities could make a contribution to ironing out some of the tensions and fears of providers. Standardising processes and procedures that are currently required, which could lead to a reduction in the need for staff, facilities and resources, and therefore a more cost-effective system of quality assurance holds potential benefits for the government and the providers. It would also be easier to monitor and control quality assurance activities, and could possibly enhance the quality of the education system – with the spin-off of better-qualified students who have greater potential for employment/employability.

## **1.2 STATEMENT OF THE RESEARCH PROBLEM**

According to Figure 1.1, the Eskom Technical Training Group (TTG) and Technical Assessment Measures (TAM) results (downloaded from the SAP system base), a significant proportion (i.e. 10%), of engineering artisans and technicians who are screened and tested by Eskom Koeberg before they may be allowed to perform services in particular sections of Eskom Koeberg, fail the tests. Since most of these artisans and technicians qualified through public TVET providers, it is necessary to investigate why not all these engineering artisans and technicians are found to be sufficiently competent. One way to do this is to investigate the quality of the training provided by public TVET providers and compare that to the training programmes offered at private TVET providers. This will require not only an investigation and comparison of relevant programmes but also of how quality is assured in these programmes. Since the researcher has ample experience of quality assurance (QA) in various contexts the problem was investigated from a QA perspective.

## **1.3 PARADIGMATIC, DISCIPLINARY, THEORETICAL AND CONCEPTUAL FRAMEWORK**

### **1.3.1 Research paradigm**

The pragmatic research paradigm allows elements of both constructivist and post-positivistic analysis, interpretation and reporting of data and opens the door for the

researcher to apply mixed-methods research to investigate the identified research problem (Mertens 2010:11).

### **1.3.2 Relevant theories and concepts**

The theoretical framework for this study was informed by theories pertaining to adult, vocational engineering education, quality assurance and programme development/design/review as reported in local, national and international literature, and policy documents (as applicable). The aim, therefore, was to compile an appropriate theoretical and conceptual framework for quality assurance in the context of the implementation and review of post-school education and training programmes for adult learners in general. The resulting theoretical and conceptual framework then served as the basis for designing the relevant quantitative and qualitative research instruments, as well as the analysis and interpretation of the research data.

Since this study focused on quality assurance of post-school engineering education and training through programmes for adult learners, it overlaps with at least four of the eight key themes identified by Tight (2012:8) in the context of research in higher education and training, namely:

- Teaching and learning;
- Course design;
- Student experience; and
- Quality assurance.

### **1.3.3 Demarcation within Higher Education Studies**

The learners involved in this study mainly were post-secondary, adult learners (i.e. 18 years or older), who had enrolled for relevant engineering programmes in the post-school, adult education context in South Africa. Since this sector is the responsibility of the Department of Higher Education and Training, the study falls within the field of Higher Education Studies in the South African context.

Furthermore, this research falls in the area of post-school, adult education and training for the engineering occupation and specifically focused on quality assurance of engineering training programmes for post-school, adult learners, offered by TVET Colleges in South Africa. As such it relates to higher education and training in the South African context and falls within the field of Higher Education Studies. This study overlaps with the key theme of

quality assurance as identified within the field of research in HET, as identified by Tight (2012:7).

Most public TVET Colleges offer engineering training programmes that are rather generic in terms of their curriculum. However, it seems that they do not necessarily address certain engineering skills that are desperately needed in some SA businesses and industries. This skills gap is most probably one of the main reasons why more and more private providers of these programmes emerge.

The study thus can be described as an investigation conducted in the subfield of quality assurance in the field of higher education studies, with specific reference to private and public Technical Vocational Education and Training (TVET) college higher education providers.

#### **1.4 STATEMENT OF THE PROBLEM AND RESEARCH QUESTIONS**

In the preliminary research, it was found that most public and private providers consider quality assurance to be a process that is driven internally, and which is conducted regardless of the requirements of accrediting bodies. This indicates that private providers' concerns about the quality of their provision are rooted in the clear realisation that their businesses would not survive without quality provision. Therefore, the issue is not so much whether private providers offer, or at least aim to offer, a quality service, but about what is required of them to prove this. One of the key issues of quality assurance in higher education is that private providers must, in some cases, be accredited by two or more quality assurance bodies. No reason could be found for that.

For private providers to undergo several quality assurance audits for accreditation with one or more quality assurance bodies is burdensome. Micro-providers, having more often than not, limited financial and human resources available, find this requirement even more difficult. According to the Department of Trade and Industry (the DTI) (2008:xxiv1), almost 80% of the economically active enterprises in education were either micro-enterprises or very small enterprises. This was confirmed in an updated National Register of Private colleges, and was published in accordance with Regulation 15(3) of the Regulations for the Registration of Private Further Education and Training, 2007 (RSA, 2008). According to SAQA (2004), such organisations require “developmental support” to enable them to conform to minimum quality assurance criteria; however, SAQA also states that the “cost of gaining accreditation may prove to be unaffordable for the majority of these providers”

(SAQA 2004:7).

Based on this narrative description of the problem stated above (cf. 1.2), the following main research question was formulated.

#### **1.4.1 Primary research question**

The main endeavour with this study was to answer the question: How effective are the quality assurance (QA) systems for engineering training programmes for post-school, adult learners at public TVET providers, in comparison with QA systems used for this purpose by private TVET providers who offer the same programmes; and how might these QA systems be adapted and/or enhanced in future?

#### **1.4.2 Secondary research questions**

To be able to find an answer to the main research question, several subsidiary questions were formulated to steer the investigation in a structured way. These were:

- i. What are the current local and global perspectives, needs and directives about quality assurance in engineering training programmes for post-school, adult learners in TVET?
- ii. What are the implications of existing legislation, policies and systems on/for quality assurance for engineering training programmes for post-school, adult learners in TVET in South Africa?
- iii. How do **public** TVET providers interpret and implement the relevant policies and systems for assuring quality in their engineering programmes for post-school, adult learners?
- iv. How do **private** TVET providers interpret relevant policies and systems for assuring quality in their engineering programmes for post-school, adult learners?
- v. Is there any feasible alternative to the current policies and systems for assuring the quality of engineering programmes for post-school, adult learners at TVET providers in SA?

### **1.5 AIM AND OBJECTIVES OF THE RESEARCH**

I decided to embark on this study to investigate public and private tuition providers' actions, experiences and perceptions of quality assurance in post-school engineering training programmes for adult learners, to obtain and provide a greater level of understanding of the issues that confront them, and the benefits they experience in this regard, as well as the

contributions that they make to the educational environment. This research also focused on specifically understanding the experiences of these public and private providers and seeking for a possible new quality assurance framework for enhancing the quality of these engineering programmes. This would have to be achieved to find an answer to the research question (cf. 1.4).

### 1.5.1 Research aim

The study, therefore, was aimed at determining how effective the quality assurance (QA) systems for engineering training programmes for post-school, adult learners at public TVET providers are in comparison with QA systems used for this purpose by private TVET providers who offer similar programmes; and how these QA systems might be enhanced in future.

This study critically examined the nature of quality assurance in education. The examination paid attention to quality assurance frameworks, policies and practices in both the international and national arenas and how this played out in practice. Through a close examination of these frameworks, policies and actual practices, the investigation sought to explore the impact of the current quality assurance system on public and private providers in engineering training programmes for post-school, adult learners.

### 1.5.2 Research objectives

To attain the aim of the study, the **objectives** set for the research were:

- i. To investigate what the current local and global perspectives, needs and directives are pertaining to the quality assurance of engineering training programmes for post-school, adult learners in TVET.
- ii. To investigate the implications of existing legislation, policies and systems on/for quality assurance for engineering training programmes for post-school, adult learners in TVET in South Africa.
- iii. To investigate how **public** TVET providers interpret and implement the policies and systems for assuring quality in engineering programmes for post-school, adult learners.
- iv. To investigate how **private** TVET providers interpret and implement relevant policies and systems for assuring quality in their engineering programmes for post-school adult learners.
- v. To compile (based on data collected in this study) and validate a preliminary QA

framework that may be used by public and private TVET providers in SA to assure the quality of the engineering training programmes that they offer for post-school, adult learners.

## **1.6 RESEARCH APPROACH, DESIGN AND METHODOLOGY**

The research was of a descriptive and explorative nature (cf. Borkan 2004:n.p.) since the researcher needed to explore all possible sources to obtain a comprehensive understanding of the relevant programmes, policies, systems and contexts. A multiple case study design was employed, involving mixed-methods research (Borkan 2004:n.p.).

According to Brannen (2005:4), mixed-methods research involves adopting a research strategy that employs more than a single type of research method – a mix of qualitative and quantitative methods may be employed. The research methods used included a literature review, statistical interpretation of existing descriptive data, document analyses and questionnaire surveys (quantitative & qualitative).

Research methodology refers to the philosophy and theoretical perspectives that undergird an approach (Leedy & Ormrod 2005:12); while a research design is more specific, as it refers to the actual approach or strategy employed by a researcher in a particular study, in other words, it is the ‘blueprint’ of the study.

According to Leedy and Ormrod (2005:94) “quantitative research is used to answer questions about relationships amongst measured variables to explain, predict and controlling phenomena” in terms of numbers, while information is considered qualitative in nature if it cannot be analysed using statistical techniques (Coldwell & Herbst 2004:13).

The qualitative method supports more ‘subjective’ research which seeks to understand and interpret social issues. Collis and Hussey (2003:53) emphasise that the focus of qualitative research is on the subjective elements of human activity by seeking to understand the meaning of what is being ‘seen’.

### **1.6.1 Research approach**

Research approach refers to the researcher’s orientation towards research, or the way he/she goes about finding new insights through a study. The two main approaches to research are the qualitative and quantitative approaches. The challenge would be to be fully informed of what the approaches entail, and then decide which would be the better choice

for one's project, or whether a mixed quantitative and qualitative approach would be most appropriate. Deciding which method to use does not mean one method is better for resolving the problem than another, but rather which method would deliver appropriate findings for solving the problem at hand, at the lowest cost and in the time available. The suitability and appropriateness of the method are important considerations (Leedy & Ormond 2005:12-13).

### **1.6.1.1 *Mixed-methods approach***

For this study, a mixed-methods approach was selected. Mixed-methods research refers to those studies or lines of inquiry that integrated two or more qualitative and quantitative techniques to collect and/or analyse data. According to (Borkan 2004:n.p.) "qualitative data collection methods, such as interviews, focus groups discussions, or participant observation, are now almost routinely used as exploratory phases of subsequent, more quantitative surveys" (which include hypothesis formation). According to Brannen (2005:4), in mixed-methods research, the strategy is to employ more than one research method; the multiple methods used are a mix of qualitative and quantitative methods. Mixed methods research also means working with different types of data. The aim is to provide an integrated analysis (Bazeley 2010:1) of quantitative and qualitative data to present a fully rounded picture of the problem under consideration.

### **1.6.1.2 *Research questions in a mixed-methods approach***

Teddlie and Tashakkori (2009:129) define mixed-methods research questions as questions

*"concerned with the unknown aspects of a phenomenon and are answered with information that is presented in both narrative and numerical forms".*

These authors recommend developing one mixed-methods question that serves as an overarching question, and which can be expanded into qualitative and quantitative sub-questions. Furthermore, Teddlie and Tashakkori (2009:112) developed a typology that involves the following three general categories for identifying the reasons for conducting mixed-methods research:

- Personal reasons for conducting the study – mixed-methods research presented an opportunity for me to enhance my personal research skills, as I had not previously undertaken any quantitative research;
- Reasons related to advancing knowledge – using a mixed-methods approach enables researchers, who generally tend to use more traditional paradigms, to collaborate,

thereby broadening the perspectives of both and enhancing the level of thinking around the research problem. In other words, it helps researchers to think about an issue from different perspectives and, by doing so, to achieve better, more creative solutions (Brannen 2005:5); and

- Societal reasons related to improving or empowering society, institutions, and oppressed groups – the current study intended to empower institutions, such as quality assurance bodies and public and private providers (Teddlie & Tashakkori 2009:93). Because a mixed-method strategy involves practical enquiry, the results are likely to be more acceptable to policymakers and would help to bring about change in policy and practice (Brannen 2005:6).

Adhering to this three-component process helped me to develop the research question, and to set out the objectives of the study.

### **1.6.2 Research design in a mixed-methods approach**

Mixed-methods research refers to those studies or lines of inquiry that integrate two or more qualitative and quantitative techniques for data collection and/or analysis (Creswell 2009:211).

The following data collection techniques were applied in this study:

- A review of relevant local and international literature (qualitative).
- An analysis of relevant legislation, policies, and QA systems, as well as the relevant institutional programmes, teaching and assessment documents used at each of the selected public and private TVET providers in their engineering programmes (qualitative).
- Collecting statistical data regarding the enrolments of TVET engineering students. For this, a quantitative, self-constructed survey questionnaire for students enrolled in the relevant engineering programmes at the four providers at the time of the study was used (quantitative).
- Conducting qualitative, semi-structured interviews with programme heads and lecturers/instructors at the four providers (TVET institutions) that were involved in offering the relevant engineering training programmes. The above-mentioned interviews were conducted separately with programme heads and instructors (qualitative).

The feasibility of particular methods was an important consideration for this study. One

feasibility issue concerns the nature of the research population; the difficulty of accessing the population could affect the choice of method. In this instance, it was fairly easy to access the research population; furthermore, contact information is in the public domain on SETA websites. Therefore, the researcher concluded that a survey was appropriate.

### **1.6.3 Data collection techniques**

Research on quality assurance can amount to a very detailed exercise as one seeks to gain a better understanding of the nature of the problem. Data interpretation, reflection and analysis of substantial sources of data occurred throughout this research process, using various methods. The researcher used a mixed-methods approach relative to the secondary research questions and objectives.

Table 1.4 summarises the techniques that were used for the collection of data under the following headings:

- Relevant action;
- Target population;
- Sample; and
- Source from which the data were obtained.

**Table 1.1: Data collection: Actions, target population, sample, and source**

Relevant action	Target population	Sample	Source
A review of relevant local and international literature	Random samples of literature (online and libraries)	Literature review	Various online websites, e.g. - <a href="http://www.skillsportal.co.za">www.skillsportal.co.za</a> - <a href="http://www.google.com">www.google.com</a>  University libraries - University of Stellenbosch - University of the Free State
Collecting statistical data relating to enrolments of TVET engineering students	Two public TVET Colleges and two private TVET Colleges In each case one functional and one dysfunctional for private and public colleges	Four TVET Colleges  Students who were enrolled for engineering programmes – an average of 300 per college campus of which approximately 100-150 were engineering students	Students who were enrolled in relevant engineering training programmes. The four sample colleges' statistics of student enrolments on their system database
An analysis of relevant legislation, policies, QA systems, and the relevant National Institutional programme, teaching and assessment documents	Five distinctive documents: <ul style="list-style-type: none"> <li>• Legislation</li> <li>• Policies</li> <li>• QA System</li> <li>• Programme teaching documents</li> <li>• Assessment documents</li> </ul>	Five relevant listed documents per institution	Documents used at each of the four selected TVET providers offering engineering programmes
A quantitative, self-constructed survey questionnaire for engineering students enrolled at the particular TVET College	Four TVET Colleges A total of approximately 300 students at the four sample selected college campuses of which approximately 100 - 150 engineering (campus) students in total for all departments.	Engineering departments with enrolled students at the distinctive colleges – 253 students participated in total at all four colleges.	Enrolled students in the relevant engineering programmes at the four providers
Qualitative, semi-structured interviews with programme heads and instructors at TVET institutions  Interviews will be conducted separately with lecturers/ instructors and managerial staff at the college	Two instructors/lecturers per TVET institution Two heads/programme heads of division/institution. Then separate interviews using the same interview schedule with the head of division or headmaster and head of department and or QC manager per TVET College	Four per TVET institution: Two lecturers/instructors and Two management staff members took part	Selected four providers who were involved in offering engineering training programmes

#### **1.6.4 Sampling**

As a field of applied statistics in human research surveys, survey methodology studies the sampling of individual units from a population and the associated survey data collection techniques, such as questionnaire construction and methods for improving the number and accuracy of responses to surveys. Survey methodology includes instruments or procedures that ask one or more questions that may, or may not, be answered (Bizup, 2008).

Coldwell and Herbst (2004:74) define sampling as “the act, process or techniques of selecting a representative part of a population to determine parameters or characteristics of the whole population”. My decision regarding an appropriate sample for addressing this problem, was lead by the need to ensure that the sample was representative of the target population.

The researcher made use of the volunteer sampling method for the questionnaire to current students. Students answered a questionnaire after agreed voluntarily if they wanted to take part in the research. At each distinctive college, the research was conducted by the researcher and facilitated by a member of staff at each participating TVET College.

For the interview schedules with the lecturers/ instructors and the Heads / QA managers where the same interview schedule was used for both of the two groups per TVET Colleges, the researcher used the opportunity sampling method. Respondents were approached by TVET College management to take part voluntarily. College Heads were approached by the researcher and all of them took part in the research accompanied by a member of their management team. The lecturers/instructors also took part on a voluntary basis, after been approached by their distinctive Divisional Heads per participating TVET College. Each interview was conducted by the researcher.

On the document analysis which was conducted for each of the four sample selection TVET Colleges, the researcher made use of the purposive sampling. The person at each TVET College, responsible for QA took part in the document analysis conducted by the researcher.

#### **1.6.5 Population and sample**

The sampling techniques will be discussed in detail in Chapter 4, the chapter on the research methodology. Table 1.1 provided a summary of the target population and the samples used in this research.

For the literature review local, national and international articles, books and on-line sources were selected by using several keywords. The main topics covered were quality assurance and engineering training. Various on-line sites were scrutinised, inter alia those of colleges offering engineering programmes.

For an analysis of relevant legislation, policies, QA systems, and the relevant National Institutional programme, teaching and assessment documents were collected from the institutions involved. Each of the four TVET Colleges thus was requested to issue the researcher with five distinctive relevant documents, namely on legislation, their policies, their QA systems, programme teaching documents, and assessment documents. Among these documents, the syllabus and/or curriculum were regarded as extremely important for the study.

Four TVET Colleges were selected for participation using purposive sampling. The criteria for the purposive sampling were that only South African TVET Colleges were selected – private and public institutions were included - they had to offer the same engineering programme, and one of the institutions had to be functional and one dysfunctional. Another criterion was the success rates of the placements of students who had graduated from the institutions. The selection process is discussed in detail in Chapter 4.

A quantitative, self-constructed survey questionnaire was used to collect statistical data from engineering students enrolled at the particular TVET College. The population was the students at the four TVET Colleges involved. These colleges had an average of 150 - 300 students per campus, of which approximately 100 were engineering students in total for all engineering study departments. Volunteer sampling was used to select participants from the engineering students in the four TVET Colleges. Two-hundred and fifty-three (253) students in total agreed on the four sample selected colleges who agreed to take part in this research. At the one private TVET Colleges, fewer students took part, because a large number of students were placed at their distinctive employers for practical training. Interviews were conducted with the students currently at the college who took part involuntarily.

Qualitative, semi-structured interviews were conducted with programme heads and instructors at the participating TVET institutions. These interviews were conducted separately with two lecturers/instructors involved in engineering programmes per TVET provider. This gives a total of eight interviews at the four TVET providers. Separate interviews using the same interview schedule were conducted with managerial staff at each college, namely with the head of the division or headmaster, and the head of the department

and/or the QC manager per TVET College. This gave a total of two interviews per TVET College. No individual interviews took place.

### **1.6.6 Data analysis, interpretation and reporting**

The researcher classifies as a novice researcher with some expertise in qualitative data analysis, but little expertise in quantitative analysis and little knowledge of statistics. With these limitations in mind, the researcher offer the following explanation of how the data analysis was carried out.

#### **1.6.6.1 *Qualitative analysis***

Tere (2006:n.p.) states that qualitative analysis can be regarded as taking place on a continuum, with highly qualitative, reflective types of analysis at one end and, at the other end, analysis that analyses data in a quantitative way, by counting and coding data.

Many methods of data analysis are described in the literature, but for my purposes, the following three were used.

#### Thematic analysis

Thematic analysis is the form of analysis most often used in qualitative research. It involves the identification and recording of patterns or "themes" within the data. Thematic analysis (Tere 2006:n.p.) is highly inductive, that is, the themes emerge from the data and the way coding is done avoids trying to fit the data into an existing model or frame. In this type of analysis, data collection and analysis take place simultaneously. Even background reading and the literature review can form part of the analysis process, especially if it can help to explain an emerging theme. Themes represent patterns found in the data that are important to describe the phenomenon and are linked to a research question. The themes become the categories for analysis.

Looking for themes involves coding. The code is the label that is given to particular pieces of the data that contribute to a theme. Coding is not separate from the analysis, but a (crucial) part of the process. Almost all qualitative researchers do some coding so that they can locate bits of data. This is the identification of parts of the collected data or texts (or other meaningful phenomena) and applying labels to them that indicate they are examples of some thematic idea (Rubin & Babbie 2009:483). This labelling or coding process enables researchers to quickly retrieve and collect parts of texts and other data that they have

associated with some thematic idea so that they can be examined together. Different cases thus can be compared.

Coding can take many forms. In this thesis, the coding was open coding in which “codes are suggested by the researcher’s examination and questioning of the data” (Rubin & Babbie 2009:497).

### Comparative analysis

Closely connected to thematic analysis is comparative analysis (Tere 2006:n.p.; Gibbs 2010:n.p.) where data from different settings or groups at the same point in time or the same settings or groups over some time are analysed to identify similarities and differences. Comparisons may be presented in tables, matrices or text format. The data from different people are compared and contrasted, and the process continues until the researcher is satisfied that no new issues are emerging. This method was used to compare the experiences of the private tuition providers with those of public TVET providers, teaching practitioners in the field of post-school engineering education and training, regulatory authorities, accrediting bodies, as well as information reported in the literature.

Comparative and thematic analyses are often used in the same project. In this case, the researcher moves backwards and forwards between transcripts, memos, notes and the research literature.

### Quantitative analysis

According to the University of West of England (2010:n.p.), quantitative data analysis, in contrast, uses descriptive statistics, such as measures of central tendency (mean, median & mode) and measures of variability about the average (range & standard deviation), which give the reader a 'picture' of the data. In this study measures of central tendency were used, while measures of dispersion were not used, as I did not consider them relevant to the study. My reasons for not using measures of dispersion were the following (the University of West of England 2010:n.p.):

- These statistics describe how the data vary or are dispersed (spread out).
- The two most commonly used measures of dispersion are the range and the standard deviation. Rather than showing how data are similar, they show how data differ (variation, spread, or dispersion).

Measures of central tendency were used because:

- These are statistics that attempt to describe typical scores that reflect how the data are similar.
- The average is a commonly used term; in statistics, this includes three different expressions: the mean, median and mode.
- The appropriateness of which measure to use depends on the data type.

### **1.6.7 Trustworthiness of the research**

Trustworthiness is how qualitative researchers ensure that transferability, credibility, dependability, and confirmability are evident in their studies. Truth value in this study was acquired from the discovery of the participants' experiences as they were perceived by the participants.

Lincoln and Guba (1985) called trustworthiness credibility in qualitative research. *Credibility* means internal consistency, where the core issue is how the researcher ensures rigour in the research process and in the way the research process is communicated to other people. Credibility was accomplished by prolonged engagement with people working in the field and is increased by a thorough description of the data sources.

Applicability is defined as the degree to which the findings can be applied in other contexts and settings, that is, the capacity to generalise the findings to other populations. Transferability thus is the level of applicability of the findings to another context, but as this rests more with the investigator wishing to apply the findings, the researcher must give adequate information about the research context, processes, participants and researcher-participant connections to make it possible for others to decide how the findings may be transferred.

To analyse, interpret and report the qualitative data and findings, content analysis and constant comparison of the data were applied. This involved coding, comparing and categorising the qualitative data, literature and document analysis findings into appropriate themes and sub-themes (Tight 2012:183).

The quantitative data were analysed, interpreted and reported using descriptive statistical methods, measures, tables and graphical presentations. However, the quantitative data eventually also were compared and integrated with all other data by comparing and relating results with the results of the qualitative analysis and the literature and document analysis

and findings to compile the envisaged preliminary QA framework (Tere 2006:n.p.).

Every step of the analysis, interpretation and reporting requires validation of trustworthiness. Validation ensures that the research findings are true (Walliman 2006:34). Leedy and Ormrod (2005:97) state that this contributes to the “accuracy, meaningfulness, and credibility of the research project as a whole”. The researcher thus ensured that all aspects of the research were focused on the research problem, and specifically and accurately described.

### **1.6.8 Ethical considerations**

Participants have the right to privacy and should know that they will not be exploited, as this will build trust (McMillan & Schumacher, 2006; McMillan & Schumacher, 2010). No harm (physical and psychological) was inflicted upon any participant (Whitehead & McNiff, 2016). To ensure this reason the following was done:

- Participants and the institutions where the research was done will remain anonymous in all reports.
- Written informed permission was obtained from all the relevant establishments.
- Written informed consent was obtained from all participants.
- Participation of all institutions and participants was voluntary at all stages.
- Confidentiality of information, as agreed with stakeholders, was and will be maintained.
- Data were kept safe in a locked cabinet and through password protection.
- Ethical clearance was obtained from the UFS and presented to the TVET providers, the DHET and other relevant stakeholders.

Participant review was sought.

## **1.7 STATUS AND ROLE OF THE RESEARCHER IN THE INVESTIGATION**

My role as a researcher was to conduct the research where the questionnaires, interviews as well as document analysis were done accompanied by a member of staff assigned to me who facilitated the process in each component of the research. The role of the student participants in the questionnaire as if they voluntary participate by completing the questionnaire. An observer from the TVET College facilitated the process in conducting the research.

The role of the interview participants was to answer the questions while the interview was conducted by the researcher who made notes while conducting the interview.

The role of the researcher was to ask the questions in the document analysis and the role of the respondent was to respond to questions and produce evidence as we work through the document.

In the researcher's professional capacity as Senior Mechanical Engineering Training Specialist, and consultant for production, technical, engineering and logistics training, the researcher is involved in QA in training daily. The researcher also acts as the National Moderator for various private providers in SA in the above-mentioned fields.

The responsibility at the company where the researcher is employed is to authorise (according to a quality assurance template showing the requirements to perform a specific job or task) qualified, trained engineering artisans, technicians and engineers who wish to offer their services for the various tasks as contractors for plant maintenance and extensions at the Power Station. The researcher has noted a wide variance between artisans, technicians and engineers from different institutions, ranging from well-established, well-resourced, up-market institutions to small, medium and micro-enterprises (SMMEs), which generally are under-resourced. All of these, on paper, meet the minimum requirements for accreditation/authorisation to work in a highly technological environment.

It was clear to the researcher that, generally, most private institutions were preoccupied with developing quality assurance policies and systems to comply with the requirements of the various quality assurers listed above, namely the HEQC, Umalusi, the Departments of Education (the DHET & DoBE), and the newly established QCTO. The same applied to public providers, as indicated in Figure 1.2. However, this approach leads to policies and mechanisms being developed that are more concerned with the standardisation of procedures, because quality assurance bodies try to make all private tuition providers use a "one-size-fits-all" model in terms of compliance, instead of enhancing academic practice.

Many institutions and researchers support the above one-size-fits-all point of view of standardisation of procedures with quality assurance bodies. In their view, quality assurance is concerned with the consistency of standards (Dublin Institute of Technology 2010:12); and conforming with national quality assurance models (Ajayi & Ekundayo 2008:217) for certification of students (UNESCO 2007a:37), instead of excellence and competence of the learners (Sacht 2010:n.p.). This does not seem to be the real purpose for which quality assurance in education is intended.

This study contended that establishing quality assurance policies and the instituting structures and procedures for accreditation purposes do not necessarily have improved output of academic and training programmes as a consequence, that is, the required improved performance and competence of students. Looking at the issue from the perspective of the student, Haakstad (2010:2) agrees:

*“The attainment of learning aims, always the end orientation point of educational programmes, also becomes the all-important quality indicator”.*

He further continues to ask the following interesting question:

*“... how can educational quality fairly be assessed when this quality is as much dependent on the student’s ability and effort as on what the institution actually provides?”*

From the preceding elucidation, it must be clear that the researcher was involved in the field of quality assurance in engineering education; however, the researcher approached the study unbiased and had no direct involvement in any of the institutions or relationship with any of the participants. The researcher decided on a mainly qualitative study as he wished to learn from the ideas, opinions and perspectives of the participants – to see matters through their eyes.

## **1.8 DEFINITIONS OF TERMS USED IN THE STUDY**

Because a discussion on quality assurance in education necessarily refers to an inherently convoluted structure of factors, it is essential to define the terms that are used clearly. The following definitions are commonly accepted and provide a useful point of reference for this thesis:

### **1.8.1 Education and training providers**

In terms of the repealed SAQA Act, No 58 of 1995, a provider was defined as “a body which delivers learning programmes which culminate in specified National Qualification Framework (NQF) standards and/or qualifications and manages the assessment thereof” (SAQA, 1995). The SAQA Act is very specific as to what the role of the provider is. The Skills Development Act, No 97 of 1998 (South Africa Office of the President 1998:Section 1), defines an occupational qualification as “a qualification associated with a trade, occupation or profession resulting from work-based learning and consisting of knowledge unit standards, practical unit standards and work experience unit standards”.

### 1.8.2 Quality

Viăsceanu, Grünberg and Pârlea (2007:71) define quality as conformity to generally accepted standards, and fitness for purpose. These generally accepted standards could be those specified by an accreditation or quality assurance body, and which will ensure that the processes used in the institution or programme to fulfil the organisation's vision and mission are efficient. This definition is variously labelled the "value-added approach" or "quality as transformation" approach and is strongly student-centred. It considers quality to be a transformational process, in which a provider aims to achieve the goal of providing students with specific skills, knowledge, and attitudes that enable them to live and work effectively in modern society – this ability is certified on completion of the qualification.

Quality education should meet agreed standards, which are usually determined by regulatory authorities. This arises out of the term "fitness for purpose"; however, Harvey (2012) states:

*"In... education it is debatable whether quality evaluations assess fitness for purpose against institutional specifications of purpose (as is intended by the notion of fitness for purpose) or against trans-institutional norms (that allow a degree of comparison across the sector)".*

### 1.8.3 Quality assurance

Quality assurance refers to the way a provider persuades its various stakeholders that the standards and quality of its educational provision are being maintained and enhanced. According to SAQA (2001:6), this means "the sum of activities that assure the quality of products and services at the time of production or delivery". In business, quality assurance procedures are usually applied to the activities and products associated directly with the goods and services provided to external customers. In this case, the non-tangible "goods and services" refer to education.

### 1.8.4 Quality control

Quality control comprises both formal and informal procedures that institutions use to monitor quality and standards and ensure that they are one a satisfactory level. This is sometimes also referred to as verification. Quality control is undertaken for internal purposes by the person or persons who make the product (or deliver the service) (SAQA 2001a:6).

### **1.8.5 Quality enhancement**

Quality enhancement is the process of ensuring that the quality of the education and training that is provided, improves continuously. This could be called “kaizen” or the “constant search for improvement” (Sayer & Williams 2012:54). It is usually developmental, because it assumes that no organisation can ever achieve 100% perfection, thus always leaving room for improvement.

### **1.8.6 Quality assessment**

Quality assessment is closely linked to quality control. Some providers in the TVET sector have their internal quality control systems; however, actually, it is the process of external evaluation of the quality of educational provision undertaken by an external body (usually a regulatory body), and it focuses on the student experience in particular. Quality assessment, in this case (the context of this study), would be carried out by an education and training quality assurer (ETQA).

### **1.8.7 Quality audit**

SAQA (2001:6) defines a quality audit as “activities undertaken to measure the quality of products or services that have already been made or delivered”, but states that “in itself, a quality audit has no impact on quality”.

### **1.8.8 Internal audit: A function performed at specific times**

Many people involved in risk management use this simple formula to explain the difference between internal audit and internal control: Internal audit is a function, while internal control is a system. Internal audits are performed at specific points in time to assess if:

- the company has a good understanding of the risks that it faces; and
- the controls put in place to mitigate risks are effective.

There is one very important distinction to be made: It is not the job of internal auditors to identify risks, nor to specify the controls that are needed. Internal audit evaluates whether the process leading to the identification of risks is working well, checks whether controls already in place are working according to the way they are intended to, and evaluates an organisation’s governance system and process.

### **1.8.9 Internal control: An ongoing system**

Internal control entails procedures, policies and measures designed to make sure that an organisation meets its objectives, and that risks that can prevent an organisation from meeting its objectives are mitigated. While the internal audit function is performed by internal auditors, internal control is the responsibility of operational management functions. Another point of contrast is frequency. An internal audit is a check that is conducted at specific times, whereas internal control is responsible for checks that are on-going to make sure operational efficiency and effectiveness are achieved through the control of risks. Some risk experts even say that internal control forms part of a company's day-to-day management and administration.

### **1.8.10 Standards**

Standards refer to levels of attainment (or benchmarks) against which performance is measured. "Attainment of a standard usually implies a measure of fitness for a defined purpose" (Irish Universities Quality Board n.d.:n.p.)

### **1.8.11 Quality culture**

Quality culture is the "creation of a high level of internal institutional quality assessment mechanisms and the ongoing implementation of the results" (Dahlgard, Kristensen & Kanji 2002:235). Quality culture requires that every activity is aimed at excellence, and it should be a way of life in an institution.

### **1.8.12 Accreditation**

Accreditation is the result of a review of a provider in terms of certain pre-determined quality standards. It is the formal recognition by a regulatory body that the provider meets these standards, and is normally the result of an external audit of the institution.

### **1.8.13 Value for money**

This refers to quality judged against monetary cost; stakeholders measure value for money in terms of return on investment (Newton 2007:15).

### **1.8.14 Quality management systems**

A quality management system (QMS) is a system that is set up by a provider to ensure that

it (the provider) achieves the quality it claims to offer. A QMS describes the activities used by an organisation (institution) provide good service that meets and exceeds the needs and expectations of its stakeholders, for example, cost-effectiveness and cost-efficiency (SAQA 2001a:6). The QMS represents a combination of the provider's policies and accompanying procedures that describe how to comply with policies. The QMS includes the provider's information system, used particularly to verify student achievements.

#### **1.8.15 Level descriptors**

Level descriptors are broad qualitative statements against which specific learning outcomes can be developed, compared, and located, according to the Higher Education Qualifications Sub-Framework (CHE 2013a:18).

'Level descriptor' refers to a statement that describes a learning achievement at a particular level of the National Qualifications Framework, and which provides a broad indication of the types of learning outcomes and assessment criteria that are appropriate for a qualification at that level SAQA (2012:4).

### **1.9 SIGNIFICANCE OF THE RESEARCH**

Refer to the significance of the plan/model/framework that you will eventually compile. Also, indicate who will be the direct and indirect beneficiaries. What signification contribution will your study make to the knowledge base of Higher Education Studies?

The framework for QA that for use by the public and private TVET providers in SA to assure the quality of the engineering training programmes that they offer for post-school, adult learners may make a major contribution to the field of knowledge in higher education and more specifically to the field of engineering education and the quality of post-school engineering training in South Africa.

The value and significance of this research may be found in the endeavour that was made to enhance higher education studies in South Africa. The quality of education in SA is questioned all too often, and every effort to contribute to bringing about an upward curve in the quality of the output of higher education is worth the effort.

The researcher trusts that the following will be to the benefit of quality assurance in engineering studies in particular and in higher education in general:

- Specific findings of the study may be transferable (at least to similar contexts).
- The findings contain significant indicators for change which may serve role players well, such as policymakers in TVET (national and institutional), as well as QA and programme managers.
- The framework is aimed at ways and means to enhance the quality of engineering training programmes for post-school, adult learners at TVET providers.

It is hoped that the implementation of the envisaged framework will benefit the DHET concerning the TVET College sector, QA managers, lecturers/instructors in engineering and, most importantly, the students.

### 1.10 OUTLAY OF THE RESEARCH REPORT

The research report (thesis) is presented in the following chapters:

**Chapter 1: Introduction and orientation to the study**, contains an introduction to the study, the problem statement, the aim and objectives) of the study, a brief description of the research design and methodology, and the value of the investigation. An explanation of terms and definitions of key concepts in quality assurance management in education and the outlay of the remainder of the report are provided.

**Chapter 2: Quality assurance policy and legal context for TVET focusing on Quality assurance bodies: UMALUSI, QCTO, SETAs AND ECSA.** This chapter provides the theoretical frameworks and a conceptual framework for the investigation. The literature review takes an in-depth look at the policy frameworks, policies, processes and procedures that are in place in South Africa, to gain an understanding of the regulatory environment in TVET Colleges focusing on UMALUSI, QCTO, SETAs and the engineering professional council (ECSA), as well as the challenges that are facing providers in their endeavours to be accredited and to meet quality assurance requirements.

**Chapter 3: Programme development (curriculum development) with reference to best practice internationally**, is devoted to a discussion of the literature review and document analysis. Trends in private education taking place on a global scale, As well as programme development (curriculum development), will be discussed and examples of international best practice as described in the literature and elsewhere will be brought to the table.

In **Chapter 4: Research design and methodology**, the research design and methods employed for the investigation are explained in more detail. Special attention is paid to the mixed-method approach that was used.

**Chapter 5: Data analysis and findings of the study.** The discussions deal with the findings of the data collected on South African public and private providers (TVET Colleges), instructors' and learners' perceptions and interpretations, implementation of policies and guidelines, their experience and perceptions (as applicable) of legislation, policies, quality assurance systems, as well as the offering of engineering training programmes for post-school, adult learners.

In **Chapter 6, Conclusions and recommendations**, a synthesis of the results is given, as well as the conclusions reached concerning the problem statement and aims of the study.

### **1.11 SUMMARY AND CONCLUDING REMARKS**

This chapter provided a broad background to the problem of quality assurance for private and public providers in TVET post-school engineering education and training in South Africa, and also briefly outlines the research plan, the approach to the study, and succinctly describes the study design and methodology. QA in education in South Africa and the structures and legal and policy requirements have been elucidated, as well as the concept of mixed-methods inquiry, and the study demarcation and population. Attention was paid to trustworthiness of a study, ethical matters and information is provided on my background and motivation to conduct the study.

The next chapter explores various issues raised in Chapter 1 regarding the quality assurance policy and legal context for engineering training. Policy frameworks, policies, processes and procedures with a bearing on QA in TVET Colleges are discussed, with a focus on QA bodies such as UMALUSI, QCTO and the SETAs, and the professional council for engineers and technicians (ECSA).

## CHAPTER 2

### QUALITY ASSURANCE POLICY AND LEGAL CONTEXT FOR TVET FOCUSING ON QUALITY ASSURANCE BODIES

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#### 2.1 THE QUALITY ASSURANCE SYSTEM IN SOUTH AFRICA

This chapter is devoted to a discussion of quality assurance systems for engineering training in South African TVET Colleges. This is key to unlocking the research question: How effective are the quality assurance (QA) systems for the presentation of a specific engineering training programme for post-school, adult learners at public TVET providers, in comparison with QA systems used for this purpose by private TVET providers who offer the same programme; and how might these QA systems be enhanced in future? The research will endeavour to uncover the quality assurance challenges experienced by private and public TVET providers in post-school education and training (PSET) for engineering training programmes.

This chapter presents an overview of QA policy and legal context for TVET Colleges, focussing on QA bodies, like UMALUSI, QCTO, SETA's and ECSA. It is argued that QA in TVET can only be understood against the backdrop of the legal and policy context within which an institution must operate. By presenting the policy context, one of my secondary research questions, as a derivative from the primary research, will be addressed, *vis-à-vis*:

- i. What are the current local and global perspectives, needs and directives about quality assurance in engineering training programmes for post-school, adult learners in TVET?
- ii. What are the implications of existing legislation, policies and systems on/for quality assurance for engineering training programmes for post-school, adult learners in TVET in South Africa?

The researcher shall start by analysing the concept of quality assurance in education from a theoretical point of view as it reflects on the current state of affairs, but it also is geared to improve practices in this regard, as it re-examines how quality assurance is put to practice, eventually asking the question: Can we or must we do something differently?

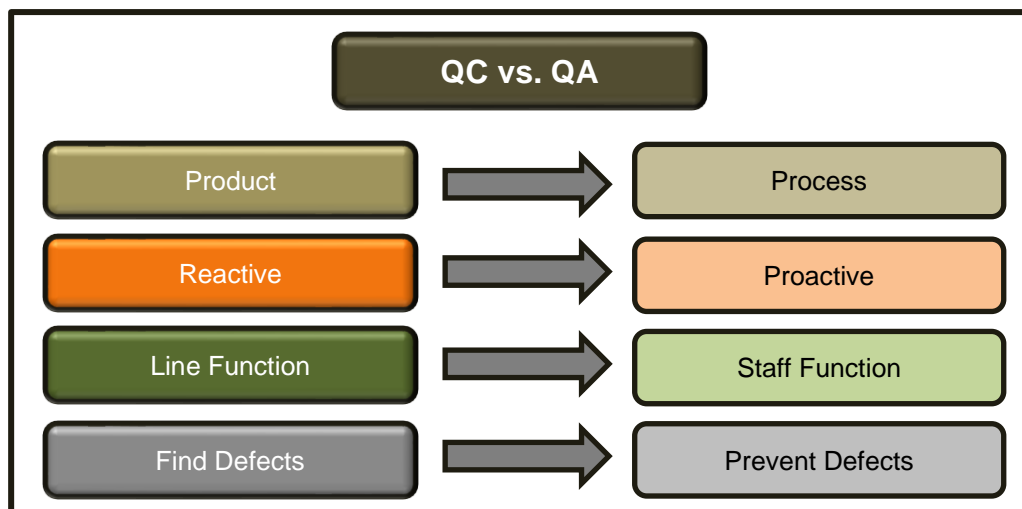
#### 2.2 CONCEPTUAL FRAMEWORK OF QUALITY ASSURANCE MANAGEMENT

Quality Assurance (QA) and Quality Control (QC) are closely related concepts of quality management, but fundamentally are different in their focus. QA is the process of managing

quality, while QC refers to the verification of the output of the process.

### 2.2.1 Understanding the difference between quality assurance and quality control

The literature agrees that quality is extremely hard to define, but it is generally regarded as related to the idea of: "Fit for use or purpose" (CHE, 2004; Guru99 & Harvey, 2012; Vlăsceanu, *et al.*, 2007). Quality implies meeting the needs and expectations of customers concerning functionality, design, reliability, durability, and price of the product (Guru99). Assurance is the process of certifying that something complies with the standards set. Quality assurance (QA) therefore is the process of assuring that something complies with the requirements of a quality product or service. This is different from Quality control as control focuses on the end product whereas quality assurance focuses on the process. This is graphically illustrated in Figure 2.1:



**Figure 2.1: Illustration of difference between QA and QC (Source: <https://www.guru99.com/all-about-quality-assurance.html>)**

Referring to Figure 2.1, Quality Control (QC) versus Quality Assurance (QA) the following points could be highlighted: QC can be executed on a tangible (manufacturing of a product) and non-tangible (a service rendered) which is reactive and a line function during execution in the manufacturing process (tangible) or delivery of a service (non-tangible) to find defects whether it meets minimum set standards. QA can be seen as a process (e.g. procedures) to follow to act proactively as a staff function to prevent possible errors to occur in the process (SAQA 2001:6). In conjunction with the abovementioned relating QA and QC, the researcher can refer to the following QA systems widely used internationally.

### **2.3 ISO 9000**

The ISO 9000 family of standards is a good point of reference. These standards have a bearing on quality management systems and are aimed at supporting organisations in meeting the needs of customers and other stakeholders. In terms of this standard, a quality management system comprises quality planning and quality improvement activities, and the institution of quality assurance policies and objectives to serve as guidelines for QA and QC in an organisation. In the ISO 9000 standard, clause 3.2.10 defines Quality Control as: “A part of quality management focussed on fulfilling quality requirements” (ISO 9000:3.2.10). In clause 3.2.11 QA is further defined as that part of quality management on the provision of confidence for quality requirements to be fulfilled. There is a wide range of e.g. industry-related ISO systems.

### **2.4 Total quality management**

A core definition of total quality management (TQM) describes a management approach to long-term success through customer satisfaction (Kumar, 2014). In a TQM effort, all members of an organization participate in improving processes, products, services, and the culture in which they work (Kumar, 2014). TQM can be seen as a management system where an organisation is customer-focused. This is an organization which involves all employees in continual improvement, by using strategy, data, and effective communications to integrate the quality discipline into the culture and activities of the organization. For an organisation to be a successor to TQM, many of these concepts are present in modern, quality management systems which includes the principles of being customer focussed, total employee involvement, integrated system, process-centred, strategic and systematic approach, continual improvement, fact-based decision making and communication (Van Vliet, 2014).

According to literature Total Quality Management is an extensive and structured organization management approach. For the entire history of manufacturing, there has always been a need to establish and maintain some kind of quality standard for the results of production. Here we can refer to the Plan-Do-Check-Action cycle that is often used by both manufacturers' suppliers of services as a matter of continuous improvement in the application of for example the Six Sigma program (CDI, 2006). Where Plan consists of the activities:

- Description of the results to be achieved;
- Clarification of standards in terms of time, quality and cost;

- List of activities to achieve results;
- Determination of timing and duration of each activity;
- Preparation of visual network to illustrate activity sequence; and
- Allocation of people and resources.

Following the planning are several follow-up steps of required action. Ongoing check-ups are the step of evaluation and measurement (results of the previous steps are checked). Progress is compared against set targets. Action to follow-up is the next step which involves standardisation or further improvement. If the results are as planned and required, the current method can be captured in a Standard Operation Procedure (SOP) to ensure future success. When the results are not met as planned, the PDCA cycle can be repeated (CDI, 2006). This cycle of TQM can be used for tangible products (goods) or non-tangible (services).

TQM focuses on continuous quality improvement of products and services by using continuous feedback. Joseph Juran was one of the founders of total quality management just like William Deming (Van Vliet, 2014).

Total quality management originated in the industrial sector of Japan (1954). Since that time the concept has been developed and can be used for almost all types of organizations such as schools, motorway maintenance, hotel management and churches. Nowadays, Total Quality Management is also used within the e-business sector and it perceives quality management entirely from the point of view of the customer. The objective of TQM is doing things right the first time over and over again. This saves the organization the time that is needed to correct poor work and failed product and service implementations (such as warranty repairs).

Total Quality Management can be set up separately for an organization as well as for a set of standards that must be followed - for instance the International Organization for Standardization (ISO) in the ISO 9000 series. Total Quality Management uses strategy, data and communication channels to integrate the required quality principles into the organization's activities and culture (Van Vliet, 2014; CDI, 2006).

## **2.5 Conclusion in difference between quality assurance and quality control**

Although quality assurance (QA) and quality control (QC) are intimately connected, they do have different definitions and different foci that are useful to understand. QA is a process management activity that focuses on ensuring that the processes used to create product

produce as few defects as possible. QA activities are conducted to ensure that processes are consistent and effective at producing their desired outcome. On the other hand quality control deals with the finished product and is a set of processes for ensuring that defective products do not reach the customer. Inspecting and sampling the products that come out of the manufacturing process are core aspects of quality control (Fenton, 2019).

QA is a strategy of prevention, focused on planning, documenting, and approving a set of guidelines required to achieve quality. QC is a strategy of detection, a reactive way to measure and monitor quality, including operational strategies and activities employed to comply with quality requirements. Quality Control, thus includes all the activities designed to establish the level of quality of the delivered service, for example, does the training material deliver the desired outcomes of the learning objectives?

## 2.6 QUALITY IN EDUCATION

During the latter part of the previous century, governments around the world signed the international pledge of Education for All (EFA), first in 1990 at Jomtein, and re-affirmed with the Millennium Development Goals (MDGs) in 2000 in Dakar. The EFA Declaration of Education for All declared that **access to quality education** as the right of every child, and that it should be '*at the heart of education*' (EFA Global Monitoring Report 2005:29). Too often we simply ignore the "quality" part when we lay claim to education for all. Yet, the quality element is the most important element. Where quality does not exist, education becomes a dead end and we see it in the escalation of unemployment among the youth. In the writer's opinion, this is the current situation in South Africa where the educational system appears to be a politically driven system which does not keep up with the current global trends/needs.

However, quality discourse cannot be separated from concerns about equity. The conceptualisation of equity and quality largely demands going further than a semantic analysis to contextualise the concepts in a framework of social justice. Utilising these notions has developed in different ways over time, based on the uniqueness of social and political contexts (Sayed, 1997; UNESCO, 2008). The Dakar Framework for Action identified equity as a requisite for attaining the basic goal of quality. Based on this declaration, the goal of achieving universal access with equity and quality of education for all children has become an increasingly important imperative for every country because of the urgent need to fast-track economic development and increase the employability of people after completing their education (Krätli & Dyer, 2009; UNESCO, 2009).

Emphasising the importance of quality does not address the fundamental question of what it is. There are, however, four major challenges to defining quality:

- First, quality is an elusive term and four stakeholder groups must be considered when defining quality: the providers (e.g., funding bodies and the community, taxpayers); users of products (e.g., students); users of outputs (e.g., employers); and employers in the sector (e.g. higher education or the world of work). Each group may have a different perspective on quality.
- A second challenge is that quality is a multidimensional concept and is often linked to a specific education sector/phase (primary school, general education and training, TVET, higher education). Thus, defining the concept in one sentence is problematic.
- A third challenge refers to quality not being static but a dynamic, ever-changing pursuit of excellence that must be considered in the context of the larger educational, economic, political, and social landscape.
- Finally, quality is context-specific and may differ in developed and developing countries. In this regard UNESCO (2008:3) claims that:

Definitions of quality education should not be viewed as either prescriptive or static. As societies evolve, so do notions of how education can best adapt to unprecedented new challenges and needs. International dialogue on quality education has led to general agreement that the concept will continue to evolve as education systems transform in response to these needs and to their commitment to fulfil the right of quality education to all.

In conclusion to the above, it is clear that in SA, there is not only discourse on a national level in education and training QA, but also internationally (Nieuwenhuis. 2017). Therefore an effective QA system for the institution must be addressed via organisational theory underlying its operations.

Although there is no universally accepted meaning of the concept, the culture of an organisation can be normally associated with shared values, beliefs, norms, assumptions, and meanings of individuals participating in the organisation (Tierney, 1998; Barnett, 1992). Furthermore, Harvey and Knight (1996) characterised the governing in higher education as collegial, based on shared decision-making, integrity and commitment to knowledge. This is further a fact, based on the aforementioned, that quality culture is the enabling environment in which a higher education institute implements its quality assurance practices.

There are four ideal-types for categorising quality inspired by (Douglas, 1992; Thompson *et al.*, 1990; Hood, 2000) which are responsive, reactive, regenerative and reproductive. This was used by Harvey and Stensaker (2008) in a cultural theory framework. Firstly, a responsive quality culture is led by external demand (e.g. industry for TVET College students) which create opportunities. The responsive mode will have an improved quality agenda while addressing accountability issues. Secondly, a reactive quality culture rather reacts with external demand than engages with it. In the third place, a regenerative quality culture, the focus is on internal improvement while being fully aware of external requirements. This is a dynamic mode which has a coordinated plan for improvement and also recapitalises its practices. The researcher presumed that its continuous improvement agenda represents a form of accountability. Lastly, a reproductive quality culture reproduces the existing situation to minimise the impact of external factors. This quality culture lacks transparency and accommodates taken-for-granted practices.

The abovementioned four types of quality culture can be found in any higher education institute setting which can be served as a starting point for specific implications for each institution's quality assurance mechanism, with regards to interaction between structure and culture.

Quality culture is one of the necessary conditions for a higher education institute to handle external demands, but also improve internal quality and governance. Furthermore, the possibility of using current practices as a tool to identify possible challenges and conceptualise future goals (Harvey & Stensaker, 2008).

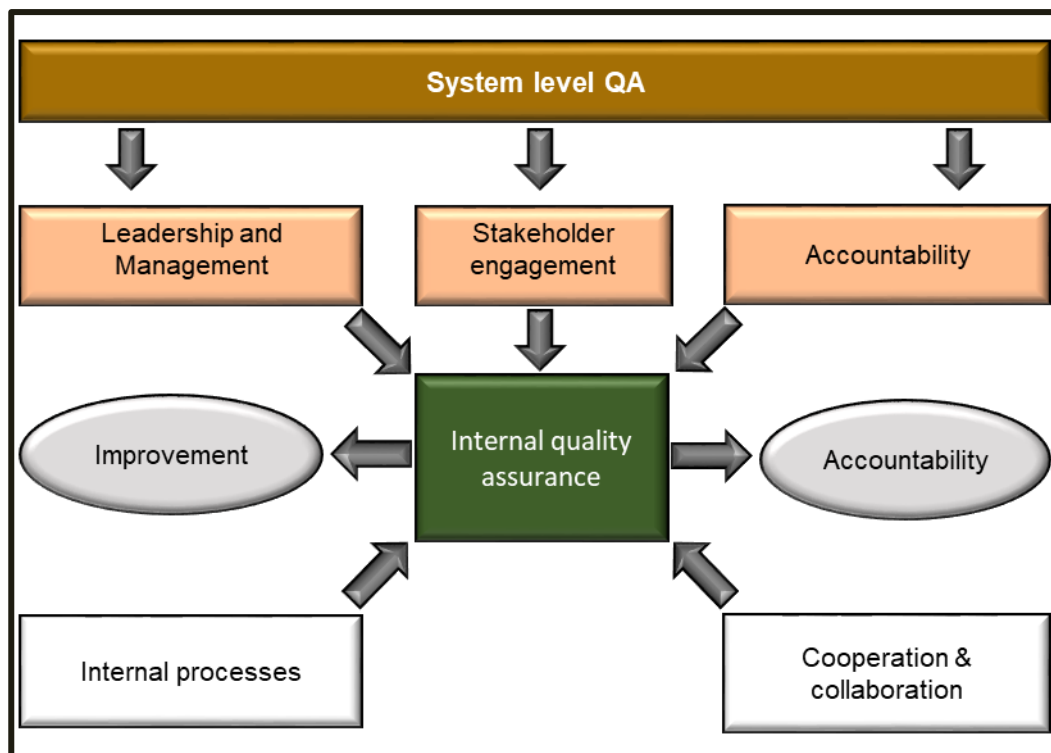
## **2.7 THEORETICAL FRAMEWORK**

The theoretical framework for this discussion is based on the work of Ngunyen Thu Le Hang (2018:72) quality assurance practices in higher education. The focus, and interpretation here, is to have a viable QA system in place, the TVET institution, in the first place needs to address the system-level QA considerations as well as have an understanding of the organisational theory underlying its operations. An institution needs to develop its internal QA system, the following five dimensions that can contribute to its operation as displayed in Figure 2.1:

- i. Leadership and management must include the role of the institutions' vision, values, goals and leadership;
- ii. Culture of continuous quality improvement or a quality culture;
- iii. Stakeholder engagement in various aspects of the institutions' operation;

- iv. Internal processes whereby the institution monitors and improves its performance; and
- v. Cooperation and collaboration among the units of the organisational structure which links the broader dimension of the academic learning organisation (Dill, 1999) and collaborative learning (Kezar, 2005)

The contribution of the five dimensions of internal quality assurance to the institution it will be able to achieve accountability in responding to external quality insurance with the result inevitable of improvement (sustaining internal quality assurance and staying competitive in the higher education environment) (Dill, 1999; Harvey & Knight, 1996).



**Figure 2.2: Diagram of theoretical framework (Source: Adapted from Nguyen Thu Le Hang (2018:72))**

### 2.7.1 System-level quality assurance

Action within an organisation is guided by policies. Policies, however, need to be effective to achieve their purpose. Developing policies often seem to be an obstacle for providers, especially micro-providers, in their efforts to achieve accreditation, which is the strived for the outcome of QA (Ellis & Stein, 2017; Stander & Herman, 2017). Policies that do exist, often merely are words on paper aimed at compliance, but whether they are implemented remains debatable. Policies also often are developed externally, such as policies drafted for quality assurance or accreditation by regulatory authorities without input from providers. Bcorporation.net (n.d.:3) maintains that institutional policies that are the most effective take the form of written, official documents. Policies may differ in form depending on the

institution's size, industry, and a number of years in business. Policy documents generally comprise certain standard elements, such as a statement of the goal, definitions of key terms, the background to and the reasons for the policy, start, end and review dates, and guidelines for processes and procedures related to implementing the policy. Meador (2012:n.p.) and Kayser *et al.* (2013:205) proclaim that to be effective, a policy should be easy to understand, informative, direct, clear, concise and current.

Institutional policies usually are included in accreditation portfolios, and during institutional audits, the auditors will need to see evidence of the implementation of these policies. If a provider maintains that the institution has a policy for the review of lecturer effectiveness, student feedback forms and performance appraisals might serve as proof of having implemented the policy. The auditor also might need to see evidence of processes that arose from the provider's internal review of such feedback, have actually improved. The aim is to enhance quality through continuous improvement.

The South African Qualifications Authority's (SAQA 2000:8) QA Policy forms the basis of the QA policies of all the regulatory authorities responsible for QA of education providers. The principles of accountability, relevance and credibility of role-players, namely the regulatory authorities, Education and Training Quality Assurers (ETQAs) and providers form the backbone of the policy. SAQA (2001:18) advocates a "holistic, integrated, democratic, process-oriented and flexible approach" to QA.

The QA policy of SAQA (2000:9) has formulated a set of criteria for providers of educational programmes. In terms of the policy a provider must,

- be accredited by an ETQA with which it has a shared primary focus;
- use a quality management system;
- be able to develop, deliver and evaluate specified learning programmes;
- offer standards or qualifications;
- have required finances, administrative systems and physical resources;
- apply formulated policies and practices for staffing;
- have access to student support services;
- employ proven assessment management;
- be able and willing to provide regular reporting; and
- be able to attain desired outcomes using available resources and must abide by ETQA procedures (SAQA does not carry out QA on providers).

Private education providers were not required to register with regulatory bodies before 1998, and two voluntary bodies, namely the Association of Private Colleges of SA (APCSA) and the Association of Distance Education Colleges (ADEC) regulated the sector. After the passing of the TVET (formerly the Further Education & Training [FET]) Act, however, private providers had to register with the then Department of Education (DoE) as a precondition for offering TVET (formerly FET) education and training, as well as with either a SETA (which fell under the oversight of the Department of Labour), Umalusi or the Council on Higher Education (CHE) (the latter two are overseen by the DoE). Under the National Qualifications Framework (NQF) Act, passed in 2008, three quality councils were established, namely Umalusi, CHE and QCTO. All are assigned to the oversight of the Department of Higher Education and Training (DHET), formed in 2009. The DHET also took over the responsibility for the SETAs from the Department of Labour (DoL). It seemed likely, at the time, that SETAs would be disbanded; however, they were restructured instead. At the time of writing, the situation was unchanged, and clarity about the role and function of the SETAs in the future, given that their mandate as quality assurers no longer applies, was lacking.

The Draft Learning Programme Regulations (DHET, 2012c) state that a key role of the SETAs would be the registration of learning programme agreements; it was expected that this would entail monitoring the agreements and progress regarding completion of qualifications. This currently is a grey area in the quality assurance mix, and, likely, it will merely add to the confusion in the short term.

ETQAs make available quality assurance policies to providers for implementation. The providers are evaluated against criteria contained in these policies. The ETQAs, however, interpret the policies on their own and thus lay down procedures based on their understanding. This results in the provider having to undergo at least two audits from different bodies to be registered and accredited. Added to this are all the follow-up processes related to the assessment of students, which involve complex assessment, moderation, and verification and reporting procedures, essential to maintain the institution's accreditation status.

### **2.7.1.1 *Internationally***

In this discussion of role players or stakeholders in education, the researcher wants to refer the reader to Figure 1.2 (Diagram of the theoretical framework), which explains the relationships amongst the role players in quality assurance in education. QA does not exist in a vacuum – it is located within a particular framework and/or context. In addition, it must be viewed within its regional or international context. This is illustrated in the QA systems

of OECD or EU countries where QA is greatly controlled through legislation or cooperation with other or regional organisation (e.g. European Union).

The ISO 9000 is an independent, non-governmental international organisation with a membership of 164 national standards bodies. Through this large membership, experts have the opportunity to share knowledge and develop voluntary, consensus-based, market-relevant international standards, thereby fostering innovation. ISO thus forms a family of quality management systems aimed at designing standards to support organisations in meeting the needs of customers and other stakeholders, while complying with statutory and regulatory requirements related to specific products (ISO n.d.).

When discussing quality in education, one cannot but also mention UNESCO as an international body that plays a major role in the setting of standards. The United Nations Educational, Scientific and Cultural Organisation is a specialized agency of the United Nations based in Paris, holds the belief that education transforms lives, and is at the heart of its mission to build peace, eradicate poverty and drive sustainable development (UNESCO, n.d.). UNESCO believes that education is a human right throughout life and that access must be matched by quality. UNESCO provides global and regional leadership in education, endeavours to strengthen education systems worldwide and responds to contemporary global educational challenges. Its work encompasses educational development from pre-school to higher education and beyond. Themes UNESCO addresses include global citizenship and sustainable development, human rights and gender equality, health and technical and vocational skills development (UNESCO, n.d.).

#### **2.7.1.2 *Legal and policy context for quality assurance in South Africa***

Having explained the role of international role players in quality assurance in education, the researcher shall return to the various TVET institutions in South Africa. To compare the various providers and role players in the QA process in South Africa, concerning Table 2.1, QMS requirements mapped against the micro-elements of quality assurance.

In each case, the topic was examined in a generic sense and, to provide the necessary context, the discussion provided examples from the South African education arena (both public and private). The discussion was characterised by a degree of difficulty, because, in some cases, the available examples related to private further education, and in others, private higher education. Not much material that provides an examination of both TVET (former FET) and HET bands simultaneously, is available, mainly due to the rather narrow focus of the regulatory bodies. For example, research from the Council on Higher Education

(CHE) focuses on higher education, while research from Umalusi focuses on general and further education and training. The Department of Higher Education and Training (DHET) also tends to commission research that focuses either on higher education or on further education, instead of dealing with these aspects as on a continuum. This then also complicates the detection of general trends and principles in public and private provision of education for TVET.

Figure 2.3 provides a clarification of the higher education QA system in South Africa and the role of the various educational stakeholders. The discussion that follows is based on this elucidation.

The vision of the former Department of Education (DOE, 2003:5) is

*“a South Africa in which all our people have access to lifelong education and training opportunities, which will, in turn, contribute towards improving quality of life and building a peaceful, prosperous and democratic society”.*

This is confirmed by the National Planning Commission on their website, “A vision for 2030” (2014). In fulfilling this vision, the Department’s mission is

*“to provide leadership in the construction of a South African education and training system for the 21st century”.*

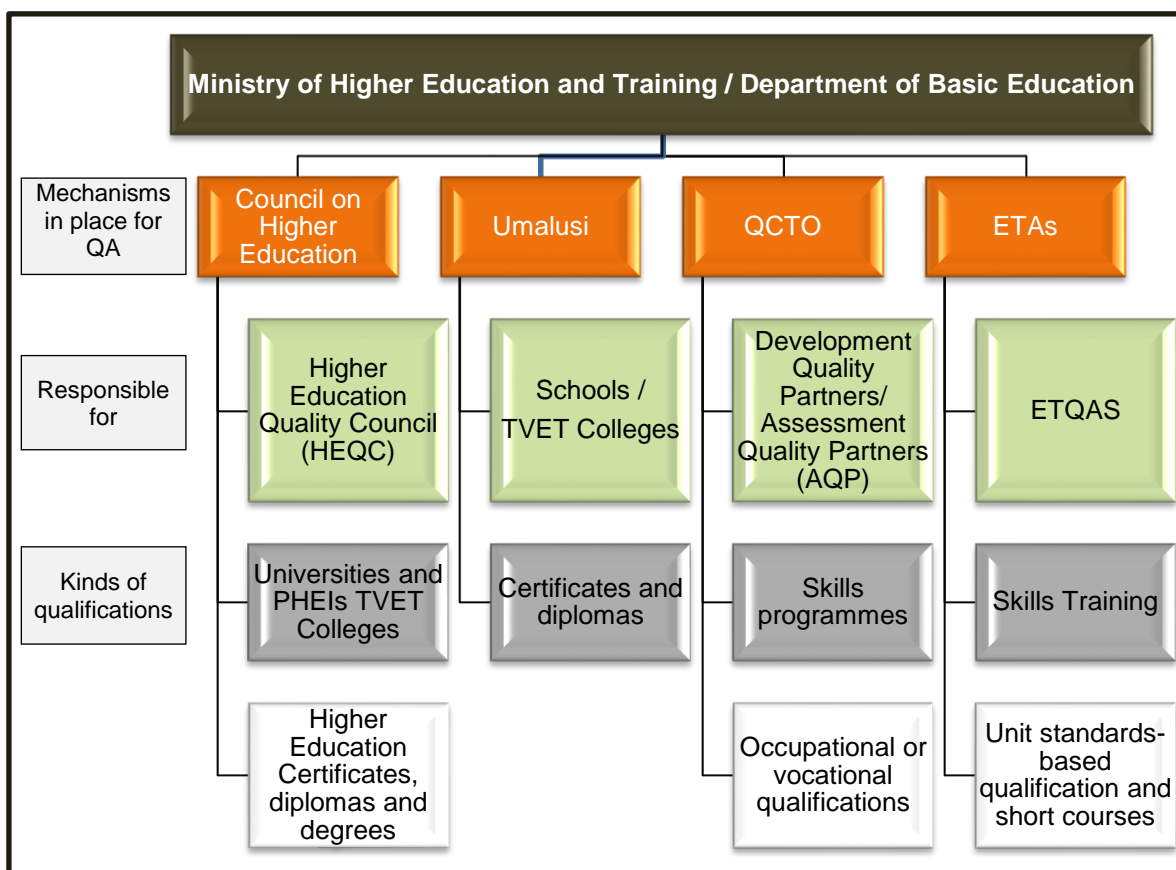
Its mandate in ensuring that its vision and mission is achieved, was

*“the building of a rational, seamless higher education system that grasps the intellectual and professional challenges facing South Africans in the 21st century, and meets the learning needs of individuals and the development needs of our society and economy”.*

This necessitates, among other things,

*“the promotion of quality teaching and research, not only in public universities and universities of technology as well as TVET Colleges but also in privately established institutions of learning” (DHET, 2012: xi).*

Therefore, quality assurance structures were established, namely CHE, Umalusi and QCTO to implement the mandate and ensure quality provision of education to implement the mandate and ensure quality provision of education.



**Figure 2.3: Hierarchy of quality assurance in South Africa (Source: National Planning Commission, 2014)**

However, currently shortcomings exist in the full application of these ideals in practice. The educational environment is characterised by inefficiency, low pass rates, lack of articulation between post-school institutions, particularly at tertiary level, and problems relating to access to public higher education institutions due to increasing demand and a lack of capacity on the side of the state to meet that demand. These problems are acknowledged by the Department of Higher Education and Training (2012:xi).

Technical vocational education and training (TVET) discourse in South Africa is inseparably intertwined within the distinctive set of major policies issued by the post-apartheid government since the start of democracy in 1994, which envisages the future size and shape of the education system. There is a common thread, that revolves centrally around the notion of the developmental state, running through these major policy outlines such as the Reconstruction and Development Plan, ANC (1994), Growth, Employment and Redistribution, Department of Finance (1996), National Development Plan, National Planning Commission (NPC) (2012), New Growth Path, South African Government (2011), Industrial Policy Action Plan 2, Department of Trade and Industry (2011), Human Resource Development Strategy for South Africa 2010-2030, Development South Africa (HRDSA) (2009), Assessment of the state of Human Resource Management in the Public Service -

Human Resource, Skills Accord (2010), Economic Development Department RSA and National Skills Development Strategy III (2010), Department of Higher Education and Training (DHET). Furthermore, public TVET Colleges are under the control of the DHET and they have limited autonomy. From an organizational perspective, they form part of a large bureaucratic system. This system is typified by managerialism and control systems. These systems are often in the form of policy directives.

These policies together with the Green Paper on Post-School Education and Training (2012) outline the government's current social and economic policy trajectory. Reference is made explicitly of the catalyst role to be played by the TVET College sector within the post-school education and training (PSET) system towards addressing the challenges in the developmental state. Discussions about the purpose of the TVET College sector in South Africa must therefore be firmly rooted within the paradigm of a developmental state. Akoojee (2010:261) captures this premise, stating that "success in skills development is intricately linked to the success of the developmental state". There are several African National Congress (ANC) policy documents, plans and strategies which make a constant reference to South Africa as a "developmental state" with the solutions to the country's structural problems lying within that dynamic (ANC 2007; 2010; 2012).

### **2.7.1.3 Critique on SETA's and establishment of QCTO and their legal mandate in terms of quality assurance**

Over the past decade (2008-2018), developments in the education arena have been characterised by constant bureaucratic change and ever-growing complexity. This puts both private and public providers in a very difficult situation. Umalusi (2008:26) reports that private providers have pleaded "for clarification and simplification of the processes that providers need to undertake to be NQF-compliant", and concludes (Umalusi 2008:28) that "the QA terrain in which private TVET (formerly FET) providers currently operate is over-complex, with duplication of activity in some areas and neglect in others". In the view of Fielden and La Rocque (2008:1) regulation of this nature may motivate private providers to operate outside the law, as unaccredited or 'clandestine' providers. This situation would leave the government with less authority to protect students and families, particularly those with low incomes. The phenomenon of avoiding accreditation has been mentioned. Public providers may simply refuse to offer a specific course. In other words, they would merely tell clients that they do not make provision for a specific course in their offerings if it is not a generic course.

Furthermore, the current policy and the regulatory environment at present lack sufficient stability for anyone to make any final decisions on an approach to quality assurance for the sector. Umalusi (2008:30) strikes a positive note in recommending that,

*“in the interest of simplification, research should be done on the identification of minimum institutional criteria. In addition, there needs to be a clearer picture of what institutional information has already been gathered through other means so that there is not so much duplication of effort from the regulatory authorities”.*

Blom (2011:14) emphasises that the information available on private providers is fragmented and incomplete, which seems to confirm that this is a serious problem that should be addressed. Fielden and LaRocque (2008:11) maintain that a regulatory framework that both supports the private provider, and provides for QA of these providers, is essential for ensuring a sustainable private education sector in developing countries over the longer term. This is true because the public providers cannot always be responsive to the needs of the client. It is common cause that it “does not make any difference” to public providers because they are government-funded.

The latest update on the regulation of private providers can be found in “Register of Private Higher Education Institutions on Department of Higher Education and Training (DHET) website. It was last updated on 13 December 2017 (DHET, 2017). A further update was done on 11 March 2020 (DHET, 2020). This register of private higher education institutions (hereafter referred to as the Register) is published per section 54(2)(a)(i) of the Higher Education Act, 1997 (Act No. 101 of 1997) done (RSA 1997), hereafter referred to as the Act). In terms of section 56(1) (a), any member of the public has the right to inspect the register (DHET, 2017). The Legal Framework, in terms of the National Qualifications Framework Act (RSA 2008:6-8) (“the NQF Act”), is the system into which South African qualifications and part qualifications are organized and recorded and is divided into three (3) sub-frameworks. The three sub-frameworks are The Higher Education and Training Sub-Framework (HEQSF), the General and Further Education and Training Sub-Framework (GENFETQSF) and the Occupational Qualifications Sub-Framework (OQSF). Each sub-framework is the responsibility of a Quality Council. The three Quality Councils (QCs) are the Council on Higher Education (CHE), responsible for higher education qualifications (Levels 5–10), Umalusi, responsible for general and further education and training qualifications (Levels 1–4) and the Quality Council for Trades and Occupations (QCTO), responsible for trades and occupations qualifications (Levels 1-8). Among others, these QCs are responsible for the accreditation of qualifications falling within their sub-frameworks as well as accrediting private institutions that wish to offer their qualifications. To enable the Registrar to register private institutions in compliance of section 29 of the

Constitution of the Republic of South Africa (RSA, 1996) the South African Qualifications Authority (SAQA) makes decisions as to the qualifications sub-framework to which a qualification belongs to avoid a situation where private institutions may offer qualifications or part qualifications without registration of such qualifications on the NQF (DHET, 2017). The QCTO may delegate its accreditation functions to a “delegated accrediting authority”, such as a Sector Education and Training Authority (SETA), a professional body or another entity, but the final endorsement and certification will be issued by the QCTO as the responsible QC (DHET, 2017).

The Continuing Education and Training Act (RSA, 2006), also called “the CET Act”, requires that private institutions be registered with the DHET to operate legally, over and above being accredited by the HEQC (CHE) and Umalusi respectively. Therefore, accreditation of qualifications and the ability of the institution to deliver the qualifications on behalf of private higher institutions (PHEIs) and private colleges is a means towards registration and it does not represent or replace their registration. Meanwhile, private institutions that offer qualifications that fall under the sub-framework of the QCTO, which is on the OQSF, that is the sub-framework for trades and occupations, are not required to register with the DHET, and according to the Skills Development Act, 1998 (Act No. 97 of 1998 [RSA, 1998]) (hereafter referred to as “the SD Act”), under which they are regulated, they must be accredited by the QCTO as an accredited provider only (DHET, 2017).

If a private institution offers qualifications registered on the three sub-frameworks, that institution has to satisfy requirements in respect of a specific qualification, the requirements of that QC that relates to any one of the three Acts, namely the HE Act, the CET Act and the SD Act (DHET, 2017).

Looking at the media in SA in general, one cannot but conclude that the SA education system is dysfunctional when taking note of the output in general (cf. 1.1.1). Add to this the high dropout rate from Grades 1 to 11 in our school system, and the high unemployment rate in SA, something must be wrong in the school system.

#### **2.7.1.4 Conclusion on system-level quality assurance**

The legal context leaves little room for individual organisations to function outside the legal and policy framework. Aristotle claimed that “Quality is not an act, it is a habit” ([https://www.brainyquote.com/quotes/aristotle\\_379604](https://www.brainyquote.com/quotes/aristotle_379604)), and the Japanese took Aristotle’s idea further with the philosophy of “kaizen”, literally meaning ‘improvement’ (<https://www.lexico.com/en>), which boils down to doing things right the first time and

improving on it every time one does it. Unfortunately, this view of quality does not seem to apply to the South African education system. In education, however, it is not easy to define quality, as education often is seen subjectively and the views of quality are dependent on individual perspectives. That brings one to the conclusion that quality is not a once-off act, but should be part of our lives (cf. 2.2.3).

Within the TVET College sector in South Africa, there is very little room for functioning outside the legal and policy framework of the DHET, more specific for private providers (DHET, 2017). It is increasingly clear that quality assurance and qualifications systems can tend towards bureaucratic implementation which eliminates professional judgement, while professional judgement, learning and continuous improvement are essential. We need to strengthen the professional capacity of all organisations involved in these areas, building on existing strengths, and not underestimating the time it takes to build up capacity. Staff who work in quality assurance need extensive experience in and knowledge of the specialised areas which they must implement QA (DHET Green Paper, 2012:77). Badroodien and Kraak (2006:181) also cite that curriculum development for vocational education is a national competency, allowing minimal room for institutional innovation and curriculum customisation.

## **2.7.2 Improvement**

Referring back to 2.3, it is evident that the improvement of the South African TVET system is needed. There are three key challenges currently faced by TVET Colleges in South Africa. These challenges are a lack of coherence and articulation of qualifications; inadequate quality, quantity and diversity of programmes and leadership capacity; and capabilities to lead curriculum change. (DHET 2012:13-14).

### **2.7.2.1 *Purpose of quality assurance is to improve the quality of the education and training offered***

By referring back to 2.3 the statements around improving QA, can further be substantiated by referring to the following where Middleton *et al.* (1991:25,27,50) maintain that centrally determined and rigidly administered curricula prevent institutions from responding to locally identified training needs and from reducing the length of training to lower costs. Responsiveness and efficiency have been hampered by rigid planning and management, weak linkages to employers, inappropriate objectives, and inadequate financing (Terblanche, 2017).

### **2.7.2.2 How is improvement achieved?**

Improvement could be achieved through processes established for QA of institutions in SA by SETAS, UMALUSI, CHE and QCTO. Responsiveness and efficiency have been hampered by rigid planning and management, weak linkages to employers, inappropriate objectives, and inadequate financing. Responsiveness improves when training institutions develop specialised expertise for institutional links with different skills markets. If skills are not developed, productivity will not increase and the benefits to society and individuals will not accrue. Professional instructors with good technical and pedagogical skills are central to quality, while adequate maintenance of facilities and equipment is essential for good training (Middleton *et al.*, 1991; Ziderman, 1997; Descy & Tessaring, 2001; Papier, 2010; RSA, 2013a). In tandem, Siriwardene and Qureshi (2009) cite that by positioning TVET to the needs of the world of work is essential for economic, social and sustainable development. TVET has great potential to generate growth by empowering and enhancing the capacities of individuals to be employed.

### **2.7.2.3 Critique**

One of the challenges faced in South Africa is that stakeholders work against each other, perform overlapping functions, and operate in a climate of uncertainty. It is fairly straightforward to register colleges, as a way of recording their existence, and to track matters such as company registration compliance and financial viability (cf. Table 2.1). However, the situation tends to become more complex when the more qualitative procedures linked to quality assurance and accreditation have to be considered, due to various reasons.

First, it is possible that the legislation governing quality assurance responsibility is confusing. There are at least three Acts that govern various aspects of quality assurance, and each has its own requirements. Secondly, many providers find themselves in the position of offering programmes and qualifications that fall under the authority of Umalusi, SETAs (sometimes more than one), CHE and QCTO – they are so-called multi-purpose providers. This inevitably ensues in the overlapping of jurisdiction and confusion as to which QA body should take priority or be considered more important. The registration requirements also demand that all TVET (formerly FET) private providers that offer qualifications must be accredited by Umalusi to be registered by the DoE and or DBE (without clarity on precedence), while private providers that offer higher education qualifications must be registered with the Registrar of Private Higher Education Institutions (under the jurisdiction of DHET). For public TVET providers, the above mentioned is a given.

Thirdly, because officials in the accrediting bodies have considerable leeway and discretion in assessing applications for institutional registration, they apply the rules inconsistently; this situation also provides significant opportunity for arbitrary (and possibly corrupt) decision-making (Fielden & La Rocque 2008:13).

This situation has had various unintended consequences. Technically, the ETQA regulation that stipulates that a provider cannot be accredited by more than one ETQA (SAQA, 2000:9), contradicts the requirements of other legislation: for example, where the provider must be accredited by the DHET and Umalusi, or the DHET and a SETA – this has caused some confusion in the field. Nevertheless, many providers (sometimes under pressure from clients, or because of funding opportunities, such as tenders for grant funding) have applied for, and been given, accreditation with various SETAs. More recent studies indicate similar findings but added the complexity of the QA legislative framework and its processes (Altbach, 2012; DHET, 2013b; Ellis & Steyn, 2014; Essack, 2015). The Department of Higher Education and Training (DHET) also is aware of this. In the White Paper for Post School Education and Training (DHET, 2013b) the DHET states the following:

*A further challenge within the quality assurance system relates to the complexity of the existing registration and quality assurance system for private providers, and the sequencing and timing of various processes across the quality assurance bodies. The DHET must develop better communication between itself, the CHE, SAQA, Umalusi and the SETAs, as well as clearer processes for private provider regulation and accreditation. Ultimately, we develop a plan to expand and improve capacity for quality assurance for private providers ... (DHET, 2013b:43).*

The DHET, thus, finds itself in the position of having to meet a variety of accreditation requirements, and to institute costly and sometimes confusing procedures for different programmes. Umalusi (2008:6) reports that the mechanism of memoranda of understanding, which was intended to facilitate the relationships between different ETQAs and support effective delivery, is proving almost impossible to implement. By way of explanation, a memorandum of understanding (MoU) is an agreement signed between two ETQAs to establish a working relationship setting out the roles and responsibilities of the two parties for relevant and common issues of concern. Usually an MoU between two ETQAs provides for coordinated roles and responsibilities for activities of providers, in case of overlap. The processes, procedures and different roles are defined: a constituent provider, operating predominantly in the sector of ETQA “A”, might offer a training programme, unit standard, skills programme, or qualifications belonging to the scope of ETQA “B” (CATHSSETA 2012:n.p.). It is obvious that providers face problems in this kind of environment.

Finally, upon exiting private and public TVET (formerly FET) providers, many learners

experience progression issues, in spite of earning NQF-registered qualifications. These problems include uncertainty about the status of some of the qualifications that are offered, which may lead learners to experience problems accessing further opportunities in the higher education sector.

#### **2.7.2.4 Conclusion**

Although improvement is stated as important in TVET (Green Paper) research shows little improvement (DHET Green Paper, 2012; Terblanche, 2017).

#### **2.7.2.5 External accountability**

Despite findings that show that strong external accountability improves performance, there is also some evidence that suggests these systems can have little effect (Elmore & Furhman, 2004; Poole, 2011).

Policymakers assume external forces can play a determining role in education reform and seek to influence from the outside what goes on inside schools/colleges (Darling-Hammond *et al.*, 2020). Their strong accountability model would predict that schools/colleges in high-stakes accountability policy environments are more motivated to establish internal systems to meet state expectations (and avoid negative consequences). However, there is substantial evidence in the literature that suggests otherwise. That is, strong accountability policy weakens internal accountability because instead of developing teacher/lecturer capacity for improving instructional practice and student learning, high stakes external policy can have a perverse effect on teachers/lecturers, decreasing motivation and learning (Darling-Hammond & Wise, 1985). It was hypothesized that external accountability is negatively associated with internal accountability. As expected, schools/colleges located in strong external accountability states do not demonstrate a high degree of internal accountability (Poole, 2011).

#### **2.7.2.6 International discourse on accountability**

The international lending agencies, multilateral organizations, and other global actors seeking to tackle this learning crisis have been adapting and incorporating into their discourse the need to implement, among other measures, policies for participation and accountability to understand the magnitude of the problem, as well as to seek and develop joint solutions. As has occurred with other social policies, such as health and poverty reduction, international agencies propose strengthening “social accountability,” that is,

citizen participation in overseeing and monitoring the delivery of public services as an effective way to improve the governance of those policies, while also improving access and quality (UNESCO, 2016; World Bank, 2018).

#### **2.7.2.7 Importance of accountability in South Africa**

The umbrella of social responsibility concerning educational outcomes is often used as an argument to promote greater competition within the education system, and for private operators to have greater participation in the provision of educational services, understood from the perspective of markets (Ball, 2013). Similarly, neoliberal policies are accompanied by a structure of economic interests linked to developing and providing advisory services on evaluation systems, on different scales, which become important interest groups for whom producing evaluations and holding the teachers and the schools accountable for the outcomes is an important part of their strategy for expanding (Mullen, 2017). So there must be a corporate sector with growing interest and power to guide privatizing educational reforms, whose arguments regularly feature the outcomes of standardized tests and the need for pro-market educational reforms (Fontdevila, Verger & Avelar, 2019; Verger, Altinyelken & Novelli, 2018). In addition, social accountability contributes to improving the delivery of services, the use of the budget, government accountability, capacity building and building citizen spaces, and local empowerment (McGee & Gaventa 2011:16-18).

#### **2.7.2.8 Conclusion**

In any policy to establish social accountability mechanisms, the criteria for success/failure of the policy need to be identified, and monitoring indicators need to be constructed. In the field of education, the traditional criteria for the success of education policy were based on three main pillars: coverage, equity, and quality (Hevia, 2014; UNESCO, 2000). In effect, in the early 21<sup>st</sup> century there was a clear turn to “quality” as the leading measure of the success of education systems: it was not enough to send the kids to schools, we had to be sure they were learning. Hence systems for evaluating educational achievement began to take on fundamental importance, particularly large scale testing, to measure the success of the education systems (IAIES, 2003; Lietz & Tobin, 2016; Lockheed & Wagemaker, 2013; Martinez-Rizo & Silva-Guerrero, 2016).

#### **2.7.3 Stakeholder engagement**

In SA and many other countries, one of the most significant trends affecting further- and higher education institutions is the changing needs of society and the expectations of

employers (Conway *et al.*, 1994; Birnbaum, 2000; Vidovich, 2002). The increased awareness is reflected in enhanced stakeholder involvement in the decision-making and quality assurance processes in higher education institutions in many countries. There are four major groups of stakeholders (Srikanthan & Dalrymple, 2003): providers (funding bodies and community); users of products or courseware (current and prospective students); users of outputs-graduates (employers); and the employees of the sector (academic staff and administrators). Although there are different categories of stakeholders, each one of them has a direct or indirect influence on the development of a further/higher education institution.

The role of stakeholders in further and higher education management is necessary because any model of management in any organisation could only succeed if it represents the shared values of the stakeholders (Srikanthan & Dalrymple, 2007). Stakeholders can be involved in the stages of the education process as well as activities that contribute to quality in higher education. Conway *et al.* (1994), emphasised that stakeholders play an important role in the strategies and planning process of an institution. This can contribute to the survival of the institution. According to Westerheijden and his team (2013), stakeholders can be involved in several activities such as decision making, and the professional influence stakeholders have on curriculum review and quality assurance

### **2.7.3.1 Stakeholders**

An analysis of stakeholders in higher education is a useful aid in managing stakeholders and to identify opportunities to mobilise support for a particular goal, as key persons, groups, or institutions can be identified, and the importance of key persons may be assessed (Varvaskovszky & Brugha 2000:338). According to Gross and Godwin (2005:n.p.), stakeholder analysis provides a framework for identifying, evaluating, and incorporating the various stakeholders' interests into processes for organisational decision-making, which they regard as crucial to organisational success. In South Africa, the following stakeholder groupings exist.

#### Sectoral Education and Training Authorities (SETAs)

SETAs were established in terms of the Skills Development Act, 1998 (SDA), and they manage the numerous skills development needs of the country. 21 SETAs are covering both the public and private sectors (SAQA 2011a:n.p.). Initially, there were 26 SETAs. Each SETA has the role to coordinate the skills development in its particular sector, constituting economic activities that are linked and related, for example, the banking sector, the

information technology sector, the manufacturing sector, the education sector and the agricultural sector, to name but a few. Until 2008, the SETAs were responsible for QA, and despite the NQF Act of 2008 releasing them from this duty, to date, no arrangements (2018/2019) have been implemented to take over the QA role, particularly because the QCTO is still finding its feet. Although SETAs are no longer mandated to carry out QA, they nevertheless still play an important role in the delivery of education and training.

Since April 2011 all SETAs have a standard constitution (Nzimande 2011:n.p.) with a ministerial appointed Chair, as well as two other ministerial appointees on the Board. In terms of the SDA, Section 11, a SETA may consist of only members representing organised labour, organised employers, professional bodies and government departments. In 2011, Nzimande (2011:n.p.) stated that “in the 11 years of their existence the SETAs have become known among the general public more for the problems in their governance and management than for what they were established for, which is skills development”. He continued that, although South Africa had 21 skills development systems, every SETA operated as an independent entity, with its systems, policies, constitution, a model of skills development and training delivery, and each utilised funding as it saw fit – sometimes even failing to comply with guidelines for spending public money. These remarks by the minister are indicative of the complexity and confusion that exist within the quality assurance regime in South African education and training systems.

Although the SETAs are supposed not to be responsible for quality assurance any longer, consideration of their role is vital to the success of this research, since most of the private providers are registered with the SETAs, and it is presumed that they (the private providers) will have to register with one of three quality councils in due time. Some providers that offer whole qualifications already are registered with the Council for Higher Education (CHE) and Umalusi as required. This is not a requirement if the providers offer part qualifications or unit standards training. In such instances, the quality of their programmes only needs to be assured by a SETA. The Draft Learning Programme Regulations (DHET 2012c:4) propose that these providers be called “skills development providers” and the quality of their programmes have to be assured by the QCTO. At present, the QCTO has devolved quality assurance back to the SETAs, since it does not have the capacity or resources to carry this out.

### Umalusi

Umalusi means “shepherd”. The acronym GENFETQA, meaning General and Further Education and Training Quality Assurance, is seldom used when referring to this regulatory

body. In 2001, Umalusi, the Council for Quality Assurance in General and Further Education and Training (GENFETQA) was founded by Parliament in the General and Further Education and Training Quality Assurance Act, 2001 (Act 58 of 2001). It was thereby mandated as the QA body for Levels 1 to 4 of the National Qualifications Framework (Umalusi 2008:23). Level 1 refers to compulsory schooling and Adult Basic Education and Training (ABET), while Levels 2–4 fall into the category of further education and training (more traditionally called secondary education). Umalusi's responsibility is to assure the quality of programmes, assessments and provision in schools, TVET Colleges and ABET centres, as provided for in terms of:

- The South African Schools Act, 1996 (Act 84 of 1996);
- Further Education and Training Colleges Act, 2006 (Act 16 of 2006 as amended 2010). The TVET Colleges replaced the FET colleges and now fall under DHET;
- Adult Basic Education and Training Act, 2000 (Act 52 of 2000 as amended 2010).

Umalusi is required to collaborate with SAQA and the other Quality Councils (QCs), subject to the National Education Policy Act (No. 27 of 1996), the NQF Act, and its founding Act, namely the GENFETQA Act (No. 58 of 2001). In 2001, the former DoE instituted a pre-registration process for private providers, which required them to register in terms of the Regulations for the Registration of Private TVET, formerly known as FET, institutions (Department of Education 2003:6). This meant registering with Umalusi. Subsequently, the Further Education and Training Colleges Act (No. 16 of 2006) requires private colleges to comply with Umalusi's requirements. Criteria for the registration of providers by Umalusi include financial capacity, maintenance of acceptable minimum standards (that is, comparable to those of public TVET (formerly FET) Colleges, and compliance with quality assurance procedures as defined by SAQA. Government Notice No. 518 of June 2006, also, specified that, with effect from 1 January 2008, no private providers would be allowed to offer further education and training qualifications that were "not aligned with or registered on the NQF" (Department of Higher Education and Training (DHET) (2012:2-3). Before 2012, the exception to this requirement was that providers that exclusively offered short skills programmes were not required to register; however, the promulgation of the Draft Learning Programme Regulations (DHET, 2012c) appears to have caused changes.

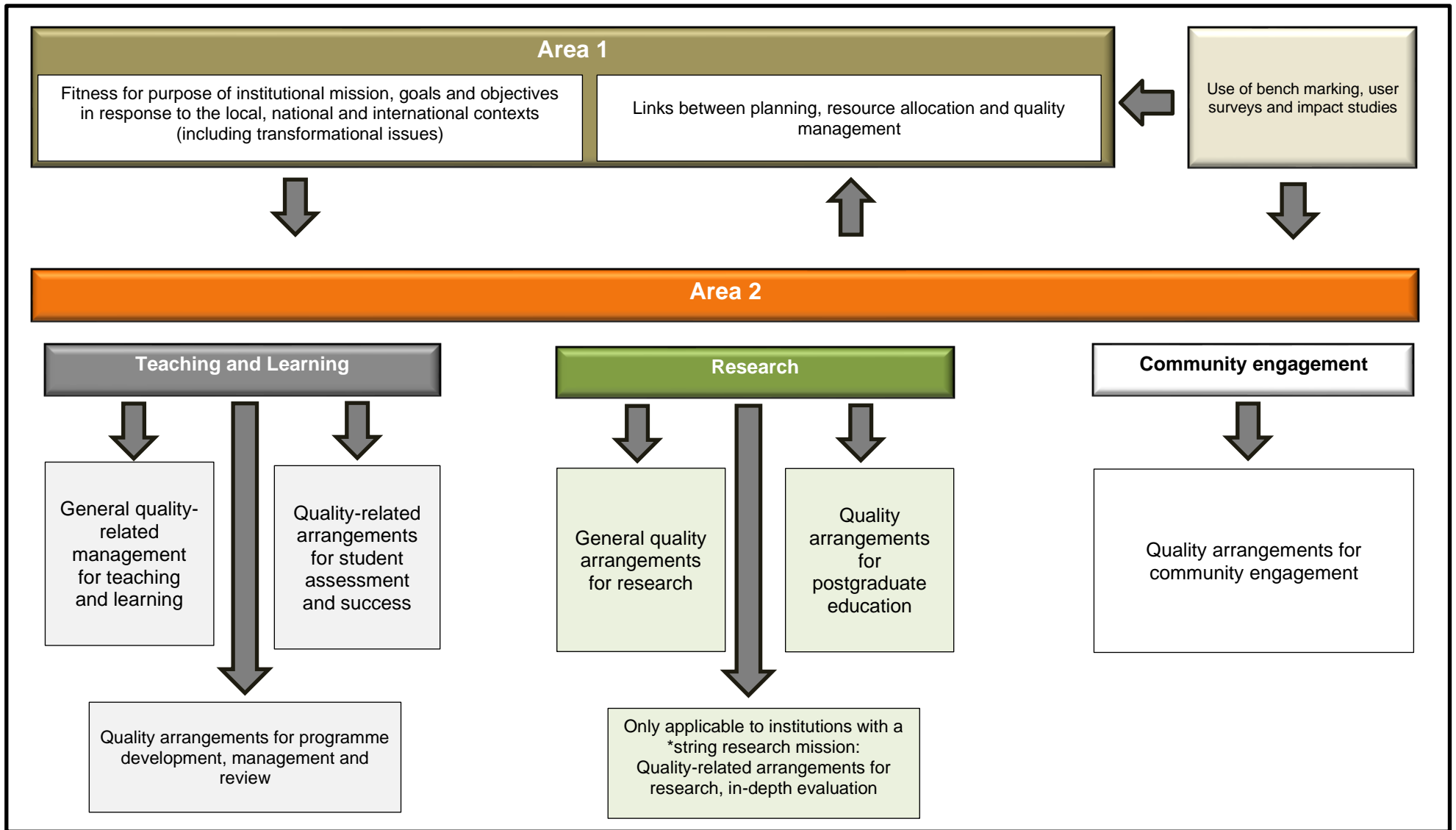
Umalusi (2012:n.p.) states that the GENFETQA Act, 2001, makes provision for Umalusi to "assume its functions progressively depending on capacity". Because it has limited capacity and a large number of providers, Umalusi is prioritising and phasing in its institutional accreditation initiatives. Under the first phase of this initiative, private provider institutions

receive provisional accreditation status. It should be noted that, since February 2013 (some 12 years after the promulgation of the Act), Umalusi has been authorised to grant full accreditation to private TVET (formerly FET) providers. It is not clear why this authorisation had been withheld for so long. As of December 2012, only 378 private FET providers out of 974 had been given “confirmed candidate” status for one year, which means that they had to comply with the accreditation requirements and undergo annual monitoring. Presumably, “confirmed candidate” means provisionally accredited. Some providers take this to mean full accreditation (MSC College 2012:n.p.), which is unlikely, and demonstrates the obscurity of the terminology. None of the other QCs uses such a term – a provider is not accredited, provisionally accredited, or fully accredited (or possibly even de-accredited or deregistered). Umalusi’s main focus is programmes and curricula, external assessment, and sustainability as quality assurance measures.

### The Council on Higher Education

In analysing how a private provision in South Africa evolved, Mabizela (2002:4) reports that, consistent with international trends, rapid and marked growth in private providers of higher education during the period 1948–1990, could be attributed to neglect of private post-secondary education institutions by government. When the state ultimately realised that this neglect was a growing and uncontrolled phenomenon, the Higher Education Act, No. 101 of 1997, was promulgated to provide the legal framework for the registration of private HEIs; the act imposed various obligations on HEIs. The South African Council on Higher Education, commonly known as the CHE, was the body established by the Act to manage all higher education issues; the CHE is responsible for QA and promotion through the Higher Education Quality Committee (HEQC) (CHE, 2004a, 2004b). The HEQC is the one permanent committee of the CHE that has executive responsibility for promotion of quality and QA in higher education, which it does through the mechanisms of institutional audits, national reviews, programme accreditation, quality promotion and capacity development. According to CHE (2004a:4), quality management includes a range of elements of institutional planning and action, more specifically the policies, systems, strategies and resources used by the provider to address issues of quality.

The criteria used by CHE in QA are shown in Figure 2.4.



\*String untangles these problems in a flexible and consultative way by drawing from experience in traditional research and creative problem solving (String Research Consulting).

Figure 2.4: Scope of HEQC's quality auditing system (Source: CHE 2004a:12)

### Quality Council for Trades and Occupations

The Quality Council for Trades and Occupations (QCTO) has been established in 2010 in terms of the Skills Development Act. Its role is to oversee the design, implementation, assessment and certification of occupational qualifications on the Occupational Qualifications Sub-Framework (OQSF).

The QCTO is one of three quality councils (QCs) responsible for a part of the National Qualifications Framework (NQF). Collectively, the quality councils and the South African Qualifications Authority (SAQA), whose role is to advance the objectives of the NQF and oversee its development and implementation, all have been established for the benefit of both learners and employers. An important role of the QCTO is to offer guidance to service providers whose programmes must be accredited by the QCTO to offer occupational qualifications. Following the format of the organizing framework for occupations (QFO), occupational qualifications are categorised into the eight major employment groups:

- Managers;
- Professionals;
- Technicians and associate professionals;
- Clerical support workers;
- Service and sales workers;
- Skilled workers in agriculture, forestry, fisheries, craft and related trades;
- Plant and machine operators and assemblers; and
- Elementary occupations.

The vision of the QCTO is to qualify a skilled and capable workforce. Its mission is to effectively and efficiently manage the occupational qualifications sub-framework to set standards, develop and ensure the quality of national occupational qualifications for all who want to work in a trade or occupation and, where appropriate, in a profession.

At this stage, it needs to be explained that the extreme complexity in the current system that creates confusion – again submitted to change, despite the radical changes that already have taken place. The QCTO was established by the promulgation of the NQF Act, 2008, and has the mandate is to ensure that “learning programmes can be developed to address specific scarce and critical skills needs” and it “manages and coordinates the qualifications in the occupational qualifications framework in terms of their development, provision, assessment and impact” (FASSET 2009:2). The QCTO has introduced a revised

approach to designing occupational qualifications on the NQF. Instead of introducing a less complicated and more easily accessible system for implementing and monitoring skills development and occupational awards (which was the intention), a more complex and confusing system was introduced. The intention of the NQF Act, 2008, in establishing this third quality council, was to find new ways of approaching the QA of the provision of skills training. The model, therefore, has several implications for private providers who deliver part or whole NQF-registered occupational qualifications.

To make the debate even more confusing, the DHET (2012:76) mooted possibly disbanding QCTO even before it had been fully established. Furthermore, the Minister issued a Government Gazette in December 2012, temporarily halting further development of qualifications above NQF Level 6 by the QCTO. The gazette required an in-depth investigation by SAQA into this matter, and it appeared that the status quo in post-school education and training might be changing yet again. The mechanisms that the QCTO is in the process of establishing, are the Development Quality Partners (DQP) and Assessment Quality Partners (AQP) (QCTO 2011a:1).

Development Quality Partner is a body appointed by the QCTO to manage the process of developing occupational qualifications, curricula and assessment specifications before the registration of qualifications on the National Qualifications Framework. Assessment Quality Partner refers to a body appointed by the QCTO to develop assessment instruments and manage external summative assessments of occupational qualifications. At the time of writing, the process has not been fully mapped out yet, so it is not possible to evaluate the time or cost. However, the whole issue of appointment as an AQP is fraught with conflict due to the current existence of a variety of assessment bodies that all assess similar qualifications.

A case in point is the professional bodies relating to Financial and Accounting Services SETA (FASSET) that assess professional qualifications in the accounting field, such as chartered accountants, professional accountants, accounting officers, cost and management accountants, accounting technicians and general accountants. All these qualifications fall under the occupation of “accountant” as listed on the Organising Framework for Occupations (OFO). The OFO is a coded occupational classification system based on the occupation framework of the International Labour Organisation (ILO). Hence, it is problematic to determine which professional body becomes the AQP if QCTO requires only one AQP per occupation. A proposal to resolve this conundrum was sent to the QCTO by FASSET after it had consulted with the professional bodies involved (Faustino, email communication, 31 January 2012). This email proposed that multiple qualifications should

be recognised for a single occupational award such as “Accountant”. Implementing this model would require the resolution of some unworkable and unintended consequences. The same problem as per the example above relates to engineering training. The AQP, once appointed, then would accredit providers to offer the qualifications. Initially, the extraordinary high costs of the QCTO’s proposed accreditation process elicited strong resistance from providers, and the idea of costs was shelved temporarily, and other funding methods investigated (FASSET 2011:4).

This model also makes no provision for small private providers conducting summative assessments – each one would have to be registered as an AQP, which then has to assess all other providers offering the qualification nationally. The argument is that very few, if any, small providers will have the financial or human resources to follow this route, and will be forced to link to an AQP for the purpose (probably at considerable cost to students).

#### Engineering Council of South Africa

The regulating body called the Engineering Council of South Africa (ECSA) is a statutory body that was established in terms of the Engineering Professions Act (EPA), 46 of 2000. The ECSA's primary role is regulating the engineering profession in terms of this Act, and its core functions are accreditation of engineering programmes, registration of persons as professionals in specified categories, and regulating the practice of registered persons. Consequently, the ECSA is the only body in South Africa that is authorised to register engineering professionals and bestow the use of engineering titles, such as Pr Eng, Pr Tech Eng, Pr Cert Eng, on persons who have met the requisite professional registration criteria (ECSA, 2018).

#### **2.7.3.2 Conclusions**

To conclude this sub-section on quality assurance bodies, the question that needs to be asked is: Do institutions have to have their programmes/qualifications accredited? SAQA (2004:7) answers this question:

*“The most important implication is that small, micro and medium enterprises (SMME) for education, training and development (ETD)”*,

That is, the providers may choose not to seek accreditation.

*“This will have an impact on the right of such providers to offer education and training programmes and, just as importantly, leave them outside of the quality assurance spiral”*.

In other words, it would be very difficult for the SMME provider to survive if it was not accredited, and additionally, any provider not accredited risks being prosecuted (cf. Chapter 1). Compliance, therefore, is a necessity. For public providers, it is a given to get accreditation from a relevant SETA to offer a particular course or programme.

According to Nitschke (2000:4), the most visible external pressures often are related to “staying in business” by meeting the compliance requirements established by other agencies or organisations. Providers, therefore, react to the performance standards that have been established, with the motivation for change, if required, if it means continued accreditation and completion of the accountability paperwork in good time for the regulatory authority, in order to pass the accountability audits – thus making their business easier by

*“simply meeting the compliance requirements these entities set forth”.*

According to Nitschke, this reality must not be minimised, since it is understandable and necessary, and ignoring the compliance requirements of regulatory authorities and their accreditation criteria would mean jeopardising their survival.

At the same time, Nitschke (2000:4) reports that providers’ problems start when they see their purpose and value as simply meeting compliance requirements, which means they risk ignoring other important stakeholders, such as investors or customers. Nitschke (2004:4) believes the challenge is creating a new “balancing act” that meets both (individual) customer requirements, and the externally established compliance requirements.

The Task Force on Higher Education and Society (2000: 61) notes that “accountability does not imply uncontrolled interference, but it does require to periodically explain actions and have successes and failures examined transparently”. Furthermore, compliance is not necessarily equal to quality and, indeed, may have unintended negative consequences for quality and academic freedom (Brown 2004:86). External QA exists to support and guide the institutions (Henard & Mitterle, 2010). Most literature concurs that the purpose of QA in higher education includes improvement (or enhancement) and accountability (Lucket, 2006; Selesho, 2010) to ensure the aims of higher education are achieved (CHE, 2013d).

#### **2.7.4 Leadership and management**

By using Meddlehurst’s (1997) framework, the role of leadership in the institution’s quality assurance practice can be identified. According to Middlehurst (1997), leadership in an institution has got three dimensions: conceptual and analytical (capacity to think new ways,

generate new ideas and perspectives as well as a vision), structural and systemic level and systemic and motivational and behavioural. According to Middlehurst and Elton (1992) leadership role needs to remain constant in all scenarios and provide vision, insight and strategies that can unify forces in the institution.

In post-school education, there must be a capacity (first dimension) to think new ways, generate new ideas, and perspectives and to create a vision. If leaders in an institution can articulate the performance gap between the current achievements and the expected achievement/outcomes of the institution, it is their 'vantage point' (Wick & Leon 1995:301). Referring to the analytical perspective of leadership, it relates to the need to collect, analyse and interpret data. Furthermore, in the process of QA, leaders need to make decisions to change, improve, sustain and even withdraw activities Middlehurst (1997:193). This is based on the interpretation of useful data from reviews, surveys or benchmarking activities.

Referring to the second dimension of leadership which is structural and systemic, where structural refers create structures e.g. to enable staff improving their performance. On the other hand, the systemic part of this dimension involves the capacity to attend to constitutive elements which impact on the performance of the institution. According to Middlehurst (1997), fundamental changes cannot happen without systemic leadership. Practising QA in higher education, it involves identification of stakeholders and their interests, searches for partnerships and collaborative opportunities (with industry referring to TVET Colleges) as well as the performance at all levels from institutional performance to individual. The above mentioned are examples adoption of how structural and systemic perspective by Middlehurst's framework can be adopted and implemented.

The third leadership dimension according to Middlehurst (1997) framework is motivational and behavioural. The author recognised appeals to academics that practices based on economic- and efficiency grounds are unlikely to inspire commitment beyond what can be achieved through compliance measures. Adoption of this perspective requires leaders of an institution to engage staff motivational and behavioural levels. This is to facilitate sustainable change over time (Middlehurst, 1997). Nevertheless, implementation of quality assurance systems requires continuous leadership as noted by O'Mahony and Garvan (2012). For continuous improvement, the role of leaders is vital, specifically academic leaders in TVET (referred to in this thesis). Leaders must be involved in the enhancement of curriculum design and renovation, improving students' learning experience and very important, the monitoring of course quality and staff performance.

In conclusion, as well as referring to the dimensions of leadership, the following sections

will indicate the lack of leadership and management in the TVET College sector in South Africa.

#### **2.7.4.1 Defining leadership in the TVET landscape**

In defining leadership, according to Collinson (2005), the concept of leadership suggests a complex multi-directional mix which is often described as dialectical. The terms leadership and leadership effectiveness have also meant different meanings to different people (Yukl 1998:2,5). Maxwell (2003:143) suggests that one widespread misunderstanding is that the functions of leading and managing are the same. The main difference between the two is that leadership is about influencing people to follow, while management focuses on maintaining systems and processes. To move people in a new direction, influence is needed (Dimmock 2003:7). This corresponds with Lussier's (2000:452) view which defines leadership as the process of influencing employees to work toward the achievement of organisational objectives. Robbins (1998:347) also held this view earlier by stating that

*"...leadership is the ability to influence a group toward the achievement of goals".*

Similarly, Baron (1993:444) views leadership as the process through which an individual influences individual and group members in relation to goal setting and goal achievement, without applying force or coercion (Hammersley-Fletcher & Kirkham, 2007; Lussier, 2000; Robbins, 1998; Baron, 1993). Also, Binney, Wilke and Williams (2005:66-71) indicate that the hardest part of leadership is tolerating uncertainty, which is partially driven by external expectations of predictability and partially by the need for internal performance. Along the same vein, Kouzes and Posner (2007:18) assert that leaders are pioneers. They are willing to step out into the unknown and search for opportunities to innovate, grow and improve.

In education institutions (in this instance TVET institutions) this is no different. Kruger (2003:206) describes instructional leadership as

*"...responsibility to ensure that effective teaching and learning takes place" (Stronge, Xu & Leeper 2013; Jackson, 2013).*

Similarly, Leithwood and Louis (2011:6,29) focus on classroom practices where the instructional leader is expected to possess adequate curriculum knowledge to ensure that relevant curriculum content is delivered to students. Leadership in an educational context firstly comprises the ability to understand emerging trends in education, secondly to guide an institution through various challenges by achieving a vision based on shared values, and thirdly to promote best practices to improve student opportunities and achievement (Mestry,

2013; Cotton, 2003; Naidu *et al.*, 2008). Similarly, Leithwood *et al.* (1999:8) cite that educational leadership typically assumes that the critical focus for attention by leaders is the behaviour and development of teachers as they engage in activities directly affecting the growth of students (Fullan, 2014; Leithwood, Louis, Walhlstrom & Anderson, 2010; Kruger, 2003; Naidu *et al.*, 2008).

Raelin (2003:5) proposes that twenty-first-century organisations establish communities in which everyone shares the experience of serving as a leader, not serially, but concurrently and collectively. Binney *et al.* (2005:6-13) echo this view and articulate that living leadership implies that people who are more able to lead at the moment can have formal power over those who are in positions of authority. Other authors (Quigley 1993; Bennis & Nanus, 1985) suggest that a leader's power is the capacity to translate a vision and supporting values into reality and sustain them. In tandem, Jaworski (1996:182) states that

*"... leadership is about creating, day by day, a domain in which we and those around us continually deepen our understanding of reality and can participate in shaping the future".*

The leader's vision is regarded as the blueprint for institutional direction and strategy, it is about persuading most of the people most of the time and getting others to articulate their goals and direction clearly (Quigley, 1993; Bennis & Nanus, 1985; Jaworski, 1996).

Kotter (1992:18) argues that to produce change, the setting of the direction of that change is fundamental to leadership. Setting direction is not the same as planning; it is more an inductive process that looks for patterns, relationships and linkages that help explain things. To quote Kotter: "The direction-setting aspects of leadership does not produce plans; it creates vision and strategies" (Kotter, 1992:18). Bush (2003:5-6) identifies three dimensions of leadership, namely the ability to influence the actions of individuals or groups, the personal and professional values based on the character of an individual, and the vision and ability to articulate this vision throughout an organisation. Along the same line, Yudelowitz, Koch and Field (2002:2) associate leadership with the ability to direct change and with being future-orientated.

#### **2.7.4.2 The management dilemma with state control and TVET**

With regards to skills planning in DHET, there is inadequate Skills Planning Focus, Capability and Capacity. Stakeholders have attributed the improvement in the Department's capacity and ability to undertake skills planning and respond to the skills needs of South Africa to the Labour Intelligence Market Project (LIMP, 2017). Whilst there has been an improvement in the capacity of the Department to undertake skills planning, it was

commented that the DHET did not have the internal capacity and expertise to absorb certain outputs produced and translate this into usable information for decision making. This is further confirmed by the following statement: “We asked...provide us with a plan/architecture of what a skills planning mechanism is...did not have the technical expertise to engage with this project (DHET, LIMP Interview 2017:51).

#### **2.7.4.3 *The poor management of colleges***

A Distributed Instructional Leadership Approach has been forwarded as a possible solution to the poor performance at TVET Colleges (Badenhorst & Radalie, 2018; Blom, 2017). In South Africa the challenges facing the post-school vocational education system are daunting. There is a lack of coherence, resulting in fragmentation of the system. A Training Needs Assessment Study commissioned in 2014 (Badenhorst & Radalie, 2018; Blom, 2017) revealed several major academic challenges facing college leadership. The most pressing issues were poor leadership and management skills and challenges facing lecturers in various aspects of teaching and learning, amongst which were blatant shortcomings in their capabilities to meet the competencies required for effective lecturing (Badenhorst & Radalie, 2018). This realisation led the researchers to hypothesise that ineffective and fragmented leadership and management practices may be to blame for this state of affairs. The researchers wondered whether an integrated and focused leadership model aimed at distributing ownership for student achievement should be implemented to produce better results. The overarching research question was: What are the main stumbling blocks in improving National Certificate: Vocational (NCV) students' performance at technical and vocational education and training (TVET) colleges; and how can a distributed instructional leadership approach be conceptualised to address the problems at an institutional level? A qualitative research approach was used, which was mainly inductive, providing a clear understanding of the participants' views and capturing their perceptions in their own words. A phenomenological design was used as a strategy of inquiry. The findings created awareness for considering collaboration and the distribution of powers and capabilities to bring about a shared leadership vision in the quest for challenging poor performance at the institutional level in a sector that is in dire need of positive outcomes (Badenhorst & Radalie, 2018).

#### **2.7.5 *Cooperation and collaboration***

There is a link between the leadership dimension with the cooperation and collaboration dimension. This is reflected in the collaborative development and implementation of an

institutional strategic plan which should clearly define goals in the core areas of research, teaching and learning at the institution. To a considerable extent, the institution's performance depends on its internal structure and functioning where cooperation amongst units is very important. According to Yorke (2000), organisational units in the TVET institution will increasingly be required to demonstrate how their activities support institutional plans and policies.

Globalisation brings increased competitiveness to the higher education sector and educational institutions (TVET Colleges in this thesis) moving towards a more market-orientated and entrepreneurial model. There must be a power balance between leadership and administration which can only be achieved through professional management which can be achieved where groups are accountable, based on mutually agreed indicators and measures (Spoon, 2007; Amey *et al.*, 2007). This is a very important dimension in any post-school education institution. Cooperation is a must amongst organisational units which contributes towards improvement in the performance of the whole institution. Collaboration is a key requirement for the improvement of educational delivery (Srikanthan & Dalrymple, 2002).

#### **2.7.5.1 *Importance of working with industry and community***

There are arguments for the reconceptualization of the role or purpose of TVET in South Africa. Conceptualising the role or purpose of TVET requires an understanding of TVET history and its theoretical underpinnings. Historically, formal TVET has been closely tied to the process of industrialization and economic development, and therefore TVET policies have often been dominated by economic and equity perspectives (UNESCO, 2012). The evolution of TVET systems and transformation over the years has been based on the perceived role of TVET concerning economic and or human development (Tikly, 2013). Theoretical contestations on the role of TVET ranges from the productivity or economic approach, which is based on neoliberal assumptions that training leads to productivity which, in turn, leads to economic growth (the axiom: training for growth). The other assumption is that skills lead to employability, which in turn, leads to jobs (skills for jobs). On the other hand, the human development theory asserts that TVET provisioning should be aimed at sustainable development or livelihoods. Furthermore, recent theories like the capabilities approach see the TVET as a means for supporting the development of a range of capabilities that are conceived as opportunities to develop functioning that individuals, their communities and society at large have reason to value.

On the back of these broad theoretical contestations, a review was done on the empirical

literature on how other developmental states have used the theoretical underpinnings to develop their TVET policies. Countries with well-functioning TVET systems and similar middle-income countries were reviewed, namely: Korea, Singapore, Germany and India (Mc Garth, 2012). The analysis revealed that in countries like Korea and Singapore, the success of the TVET system is based on the involvement of the government in ensuring that the purpose of the TVET systems is reformed in line with the phases of the country's economic development. Based on Asian experience (Korea, Singapore & Taiwan), it can be concluded that success with vocational education is built on the understanding that each stage of development in South Africa requires a TVET approach that prepares the country for the next stage of its developmental path. Furthermore, to increase returns on investment, demand-driven approaches to vocationalisation need to be developed relevant to the stage of economic development, the type of the economy and regional specifics. A review of the current policy pronouncements by the government revealed a disjuncture between the Green Paper (2012) which asserts that TVET Colleges should not be 'all things to all possible learners' and other government policy documents which would want the purpose of TVET sector to be broadened. The thrust is for the sector to include national, social and economic goals such as economic growth and development, poverty reduction, employment creation, unequal income distribution, sustainable livelihoods, youth development, innovation and industrial advancement by providing high-quality education and training programmes in the democratic developmental state. Given South Africa is currently faced with challenges such as chronic unemployment, inequality, and poverty; the paper argues that the South African TVET system needs to be strengthened in order provide access to high quality technical vocational education for all (youth and adults), without losing sight of the TVET's special relationship with the world-of-work (McGrath 2012:627). To achieve this, the theoretical grounding of the SA TVET policy needs to shift from the human capital approach and broadened to include the human capital approach, human capability and sustainable development approaches.

On an operational level, SA needs to customise the best practices from the Singapore, Korea and Germany models into a new SA TVET model. This model should take into account the South African economic development phases, social-economic development challenges, and learner and community expectations. Thus, the paper calls for a TVET system located in a developmental state, aimed at helping learners secure sustainable livelihoods. In the medium to long-term, South Africa's developmental needs include economic growth, equity and transformation. The system should link education provisioning to the developmental needs of the country. It will be a TVET system located in the democratic developmental state. The purpose of such a TVET system is to create opportunities for youth and adults to acquire skills, knowledge and values for lifelong

learning. The curriculum, therefore, needs to address the needs of the learners, industry, and community or society. The development of job-related skills is, therefore, not only part of the TVET College sector's purpose but also employment creation, poverty reduction, socio-economic equality and inclusive economic growth as part of a multi-pronged strategy. The idea is not to underplay FET Colleges Purpose in SA the economic rationale of TVET provision, but rather to highlight the need for colleges to subscribe to a broader developmental agenda beyond the rigidly narrow economic development approach (Mc Garth, 2012).

### **2.7.5.2 Limited opportunities for collaboration in South Africa**

Given the central control over TVET Colleges in SA by DHET, it is the responsibility of all TVET Colleges to actively advocate the Department of Higher Education and Training's mission to develop capable, well-educated and skilled citizens who can compete in a sustainable, diversified and knowledge-intensive international economy, which meets the development goals of our country (Skills Portal, 2016). However, there seems to be a disjoint between the message being communicated and received by the greater communities of South Africa. Colleges are still being viewed as secondary alternatives, and not being embraced for their unique positioning and mandate. A possible solution is found in the collaboration of the Western Cape TVET Colleges with the structured Marketing and Advocacy Forum, under the chairpersonship of Ms Rhazia Hamza. The latter asserts that:

*TVET Colleges are living organisations, adapting and evolving to the economy and markets they operate within. Due to socioeconomic factors, young adults don't always have the luxury of studying full time, years at a time. Talented individuals become statistics and proceed to seek employment in jobs which offer no job satisfaction, limiting their quality of life. TVET curriculums are designed to empower individuals to be sustainable; offering highly employable skills options with further growth potential either through employment or further education (Hamza, 2016).*

TVET Colleges are not swimming in the same oceans of traditional tertiary institutions, but rather creating new blue oceans by being responsive to the changing economic needs of the country. TVET Colleges equip individuals with skills to empower them to graduate from the poverty line. This is key to TVET Colleges' unique positioning, and this is the message all TVET Colleges should be communicating holistically. A collective voice to drive home that while occupational courses are available, they offer solutions in terms of NATED and NCV curriculums to suit young adult's field of interest and aptitudes (Skills Portal, 2016).

TVET Colleges cannot be compared alongside Ivy League institutions but should rather be noted and celebrated for their valuable contributions. Our facilitators and facilities are indeed on par with leading institutions, but the mandate of TVET is geared to provide a

solution to an economy in the need of skilled artisans.

*“While making huge strides in the Higher Education and Training sector, we should not leave the sole responsibility of building the TVET brands to the ministers” (Skills Portal, 2016).*

Each TVET College mandate is aligned to that of the DHET and its deliverables common. This is the mandate of the Marketing and Advocacy Forum, to collaborate and share resources in the end result of strengthening TVET College’s market share. The collaboration will eradicate the confusion which places a dampener on the strides being made due to misinterpretations. A message of solidarity and honesty will go a long way with the key target audiences, and build a loyal, credible legacy amongst future generations.

It is good that such forum meets regularly, but as such, the forum meets quarterly for a full day of strategy, unpacking agenda items from Western Cape Education Department and Department of Higher Education. The mission: to create a conducive environment for collaboration, networking and sharing of best practises enhancing higher level TVET College performance. Each member still responsible to and for its organisational targets, each institution has its unique offering, which truly makes the collaboration of the TVET Colleges a notable contender when up against longer standing organisations with advertising budgets quadrupling those of public institutions. More districts in South Africa must take this initiative.

Collaborations do offer great value as it acts as an incubator for new ideas and resources are shared, to help activate these ideas which are not always possible with limited budgets. (Skills Portal, 2016).

### **2.7.6 Internal quality assurance processes**

SAQA’s policy, as outlined above, assumes providers will develop, for accreditation purposes, a policy manual to define what the provider strives to achieve. This manual, which is an integral part of the quality management system (QMS), guides administrative and academic staff in following the institution’s strategic objectives and operational plans, and policy statements on key operational processes. In a large institution, the policy manual usually is separate, but in a smaller institution, it may form part of the QMS Manual. According to Jacobz (2005:54), a large number of private providers’ quality management systems and policies are exceptional compared to those of public providers. The reason speaks for itself – a private provider needs to have a good quality management system to stay in business. In the case of public TVET providers, they have one uniform national system in place. For this thesis, the question can be asked: How effective is this quality

management system applied in practice?

The NQF Support Link (n.d.:n.p.) quotes the Manufacturing, Engineering and Related Services SETA (merSETA) document as a useful summary of the elements that should be contained in a policy manual of a provider to warrant QA and management. This summary is given in Table 2.1 and is also useful when one wants to compile a QA checklist for a public or private training provider. It also may be meaningful for doing a document analysis when doing a QA audit.

After the discussion of what makes good policies, and which features of those policies the ETQAs regard as essential, it is important to realise that no policy, however good it may look on paper, can render positive results if is not implemented thoughtfully. Confining it to being a paper-based exercise geared at complying with accreditation criteria is a pointless exercise. A provider that is concerned about continuous improvement and enhancement of good quality delivery of its services will ensure implementation of its policies, will conduct regular reviews, and will make adjustments when the need arises.

#### **2.7.6.1 *What are the internal processes needed?***

There is a demand for TVET Colleges to respond to the needs of the labour market and win the confidence of industry is also a strong motivator for partnerships. Technological advancements in the modern workplace require technically skilled workers at entry and middle occupational levels. Globalisation is eroding the powers of national governments. It is compelling them to promote sustainable partnerships between TVET Colleges and stakeholders as a means of expanding access, generating additional revenue, and upgrading infrastructure, increasing enrolments, creating responsive colleges and improving labour market outcomes (Mitchell & Young, 2001).

**Table 2.1: QMS requirements mapped against the micro-elements of quality assurance**

QMS Requirements (SAQA)	Micro-element (Zaki)	Component (NQF)	Description (NQF)	Quality Check (NQF, SAQA)
Baseline criteria	International design	Vision	This is a motivating statement stating where the organisation wishes to be at some point in future, usually in about five years	<ul style="list-style-type: none"> <li>• Their aims are clear</li> </ul>
Baseline criteria	International design	Mission statements	This describes in broad terms the purpose of the organisation	<ul style="list-style-type: none"> <li>• This must be current</li> </ul>
Outputs, inputs and processes	Policies and practices	Quality policy statement	<p>This specifies the degree of excellence the organisation wishes to achieve. It will normally serve several purposes.</p> <p>First, it will provide a commitment from senior management regarding the level of quality and service it promises to deliver.</p> <p>Secondly, It will commit the staff to the same level of quality and service. In support of the above, it may include the organisation's quality and business objectives.</p>	<ul style="list-style-type: none"> <li>• Visible to both the public and staff in prominent positions;</li> <li>• Institutionalised through effective and dynamic policies and procedures;</li> <li>• The objectives must be specific, measurable achievable, realistic and time-based (SMART);</li> <li>• Processes are identified;</li> <li>• Procedures for quality management policies are in place;</li> <li>• They have clear learner-centred policies and ways of dealing with learning programmes;</li> <li>• They can conduct off-site or work-site activities;</li> <li>• They have clear policies for assessment and its management;</li> <li>• They have policies for programme development in terms of content, people procedures, practices and resources;</li> <li>• Sustainability of quality management strategies is in place.</li> </ul>
A quality management continuum	Resources	Business Plan	A business plan is necessary to guide decision-makers in financial issues. Projected cash flows are a useful tool in this regard.	<ul style="list-style-type: none"> <li>• They have the necessary financial, administrative and physical resources to deliver their programmes;</li> <li>• They can develop, deliver and evaluate learning programmes;</li> <li>• The business plan should be written annually and reviewed every six months.</li> </ul>
Outputs, inputs and processes	Resources	Budgets	A budget is often part of a business plan but can be a separate document. Cash flows would apply here as well.	<ul style="list-style-type: none"> <li>• It must contain expected income and expenditure.</li> </ul>
Ongoing improvement,	Open systems	Marketing Strategy/Plans	All training providers should have a marketing plan or strategy,	<ul style="list-style-type: none"> <li>• The writing of policy statements for marketing, customer service and any other processes as determined by the provider is optional,</li> </ul>

QMS Requirements (SAQA)	Micro-element (Zaki)	Component (NQF)	Description (NQF)	Quality Check (NQF, SAQA)
accountability and transparency	thinking		whether it is an internal provider or a public provider.	but recommended.
Democratic organisation and practice	Institutional Design	Company organogram	A company organogram should be included, which includes the positions and names of staff filling each position.	<ul style="list-style-type: none"> <li>• They have democratic modes of organisation and practice;</li> <li>• Defined in the quality management system, and signed by respective personnel;</li> <li>• The organogram should indicate who is responsible for controlling the QMS and all its associated documentation?</li> <li>• What are the responsibilities of others in the management of the QMS?</li> </ul>
Ongoing improvement, accountability & transparency	Faculty key skills and abilities	Defined responsibilities	All staff members must be fully aware of their responsibilities	
A quality management continuum	Policies and practices	Policy statements on Key Business Practices	Policy statements must be written for all the following Key Business Procedures	<ul style="list-style-type: none"> <li>• Physical resources</li> <li>• Human resource processes</li> <li>• Staff recruitment selection</li> <li>• Appraisal</li> <li>• Training and development</li> <li>• Learning programme development and provisioning</li> <li>• Learner entry guidance and support</li> <li>• Financial and administrative processes</li> <li>• Management of assessment processes</li> <li>• Management of on-job training (learnerships)</li> <li>• Management review process</li> <li>• Management of documentation and records</li> <li>• Internal auditing processes</li> </ul>

(Source: Zaki, 2008: 486; SAQA 2001:18)

In South Africa, there is a tacit acknowledgement that an effective TVET College sector in the post-school education and training system is a critical pillar of any successful economy. It can serve to alleviate poverty, build sustainable livelihoods, reduce inequalities and boost GDP growth (DHET, 2012; DHET, 2013b; NPC, 2012). TVET College partnerships, especially but not exclusively with industry, are mentioned in major policy positions of government. The National Development Plan (2012:321) refers to building a strong relationship between the college sector and industry to ensure quick absorption of college graduates into jobs. The New Growth Path (2012:20) gives attention to TVET Colleges playing a central role in developing middle-level skills of the youth. The problem is changing the internal processes in a TVET College, more specific DHET funded, is that you cannot meet some of the above mentioned, because of central DHET control.

#### **2.7.6.2 *What is the prescribed process for quality assurance in SA?***

The Continuing Education and Training Act (Act 16 of 2006), (DHET, 2016) requires colleges to implement a quality management system, which is the combination of processes used to ensure that the degree of excellence specified is achieved. The system outlines the three areas of concentration which include: Management function, core function and support function. These activities are being unpacked into process flows and a detailed process description the college uses to enable it to better and more consistently deliver products and services that meet the needs of its clients and beneficiaries effectively.

Quality Assurance (QA) is a process-driven approach, it is a process to monitor and improve existing quality processes. It is a process of verifying whether the process product or services meets or exceeds customer expectations. It ensures that the product or services are developed or implemented on agreed standards.

#### **2.7.6.3 *Is it working?***

As for infrastructure, it is difficult to give credit because the country is facing a serious challenge in the TVET sector. Many students may not be able to access TVET campuses. Perhaps there should be regional campuses established across provinces to benefit the people who remained marginalised. It is important to realise that infrastructure does not relate only to buildings, but also to computers and internet connection. This was something that was prioritised in infrastructure development but not sufficiently included in the infrastructure budget allocation (DHET, 2019)

The Committee had merely been told where the curriculum stands at the moment. Members had made it clear that they wanted to hear about the plans to address curriculum challenges in the TVET Colleges, as well as the employability of students and how those absorbed in the workplace were coping. The curriculum must respond to the needs of the country and the workplace. What courses were provided at TVET Colleges? On the exam issue, there was a norm in the TVET Colleges that exam papers were always leaked. This in itself impacted on the credibility of the qualifications that students obtained (DHET, 2019).

The New Growth Path (2012:20) gives attention to TVET Colleges playing a central role in developing middle-level skills of the youth. The Green Paper for Post-School Education and Training (2012:26) was very supportive of fostering TVET College-industry partnerships and acknowledges “the relationship between colleges and industries are, with some exceptions, weak. The White Paper (DHET, 2014) also recognises the importance of partnerships between educational institutions and employers. In conclusion, since 1994, the questions raised by DHET (2019) are no different from those raised 26 years earlier and is a clear indication that the TVET College system is not working.

### **2.7.7 Internal quality assurance**

Colleges are currently micro-managed by the DHET and have very little or no autonomy about issues such as the type of programmes on offer, funding, student fees, and the development or reviewing of curricula as well as the quality insurance of courses offered. This is confirmed by the White Paper for Post School Education and Training which states the intention to review and rationalise vocational programmes and qualifications and is proposed to be led by both the DHET and the Department of Basic Education (DHET 2013b:xii).

#### **2.7.7.1 Importance of internal quality assurance and how**

Quality in Vocational Education and Training (VET) refers to three aspects: VET qualifications, courses, and providers. Educational quality is to be consistent with the vision and mission of national education initiatives (UNESCO 2011).

QA for education is the process of monitoring and assessment in line with defined requirements. The quality assurance system helps an institution gain confidence in its quality and gain an increase in public trust. QA may be undertaken by an external agency or through a TVET institution’s own internal quality management system (QMS). QA – whether external or internal and irrespective of how quality is defined – requires established

benchmarks against which qualifications, courses and providers can be assessed. Quality control means the systems and mechanisms for quality education that are in place and are following designed indicators. The quality standard for TVET institutions may be developed and assessed through:

- Internal QA processes;
- An external TVET QA agency;
- International standard-setting of international generic applications (for example, ISO 9000 provisions).

Quality auditing is the process of internal monitoring of TVET institutions to ensure the presence of quality control mechanisms. The administrator of the TVET institution should develop a positive environment for his/her staff, conducive to quality work. TVET institutions should develop their sustainable approaches to quality monitoring to suit their needs (UNESCO, 2011).

Through the passing of multiple pieces of legislation, some changes were implemented, while others failed to be implemented. Change in the TVET College sector in South Africa has thus been marked with an accelerated pace of change, which has typically been impermanent, uncertain and unpredictable for the past decade (Binney, Wilke & Williams, 2005; Kotter, 1992; Middlehurst 1993). Badroodien and Kraak (2006:181) cite that curriculum development for vocational education is a national competency. Therefore, there is minimal room for institutional innovation and curriculum customisation. Likewise, Litledyke (1997:259) is of the view that an over-prescriptive curriculum and an instrumental, directive management style can inhibit the process of development, while collaborative, democratic approaches to curriculum development encourage ownership of the changes, which makes effective translation of policy into practice more likely. Therefore in the light of the above, it is clear that legislation under control of DHET handicap internal QA to a large extent.

#### **2.7.7.2 Evidence from research in South Africa**

Referring to curriculum change, there is a caution that “concerns over the new educational policy are not just about curriculum change, but also institutional change” (Vally & Spreen 1998:14). Furthermore, there are also indications that TVET Colleges are functioning in an environment filled with both institutional and curricular changes and challenges in support of this view from other sources (DoE, 2001; Gewer, 2002). The motivation for change in TVET Colleges is mainly external and is driven by factors such as changing demographics, financial constraints, and economic and political interests. The main drive for change in

TVET Colleges comes from the government through new and amended policies.

In South Africa, there is a tacit acknowledgement that an effective TVET College sector in the post-school education and training system is a critical pillar of any successful economy. It can serve to alleviate poverty, build sustainable livelihoods, reduce inequalities and boost GDP growth (DHET, 2012; DHET, 2013; NPC, 2012). The discourse of HRD-SA is reflective of the literature on TVET partnerships in South Africa. The overriding focus tends to be on the breadth or number of partnerships from a statistical perspective, however, defined, rather than the qualitative dimensions, modalities and outcomes of partnerships. For instance, the Department of Education's Linkages and Partnerships: audit 2003 is essentially a quantitative description of the relationships developed by TVET Colleges with industry, non-government organisations, communities and government (DHET, 2014). Furthermore, TVET College partnerships, especially but not exclusively with industry, are mentioned in major policy positions of government. The National Development Plan (RSA, 2013b) refers to building a strong relationship between the college sector and industry to ensure quick absorption of college graduates into jobs.

## **2.8 THE MICRO-ELEMENTS OF QUALITY ASSURANCE**

In this section, elements were examined defined as the "micro-elements" of quality assurance, but for this thesis curriculum (programme) development in the environment in which TVET providers operate - QA systems for programme planning, implementation and review in TVET providers by way of the literature review (cf. 2.2) and document analysis.

This was done to understand what is meant by quality in Education. Farrington (2005:53) states that "we are not sure of what we mean by quality in ... education". Oduro, Dachi, and Fertig (2008:3) add that the very concept of quality is elusive. QA and quality management are usually used in manufacturing industries, and are invoked to ensure that the products being manufactured are up to standard. In education, by comparison, quality assurance is generally concerned with the achievements of learners at exit or qualification points – that is, when their studies have been completed. This is, however, a somewhat simplistic explanation.

In SAQA's implementation of a total quality system for the NQF, quality assurance, quality management and accreditation are not things or products; instead, they involve a continuous process (SAQA 2000:10). In quality terms, the quality process should include all of the following critical aspects:

- The outcomes: these could be awards, the achievement of standards or qualifications and accreditation. Initially, the quality of the product or outcome was the primary responsibility of National Standard Bodies (NSBs) and their Standards Generating Bodies (SGBs) when SAQA was first established, but these no longer exist, after being disbanded in 2005 and replaced by consultative panels (FASSET 2010:23), which now operate under the auspices of the three quality councils established in terms of the NQF Act, 2008.
- The inputs: what the provider supplies in terms of programmes, learning and learner resources. The quality of inputs and processes is the primary responsibility of Education and Training Quality Assurance bodies (ETQAs) and providers of learning.
- The process: the quality of the learning and assessment interactions; and the quality of the monitoring and auditing interactions.

## 2.9 CONFUSION OF QUALITY ASSURANCE BODIES

Umalusi's model of quality assurance is substantially different from the overall model adopted by the SETAs, which comprise six statutory functions for activities that include the accreditation of providers, the evaluation of learning programmes, the quality assurance of learner achievements (including the award of credits and qualifications), and the registration of constituent assessors. "All the cattle in the kraal" (Umalusi 2013a). The SETAs operate on a decentralised model, while Umalusi has a centralised model, as mandated by SAQA. The decentralised model includes individual programme approval, the verification of internal quality management systems of assessment and the use of registered assessors and moderators. This, to a large extent, led to a lack of uniformity in how different SETAs apply the quality assurance model originally devised by SAQA (2017). Recent developments have obscured the issue even further; a call for comments on the draft qualifications frameworks states that "Umalusi's document anticipates that certain Level 5 qualifications will fall within its sub-framework, although Umalusi's scope is currently restricted to Levels 1-4 on the NQF. Also, the scope of CHE's revised HEQF proposals seems to be confined to higher education institutions, whereas certain higher education programmes may be offered inappropriately equipped and staffed TVET (formerly FET) colleges" (DHET 2011:4).

The boundaries thus are blurred, and it is clear that this has given rise to a problem of overlapping jurisdiction and duplication of effort for providers and the regulatory authorities alike. Umalusi (2008:6) states that "most of the occupational and sector-specific qualifications with which SETAs are concerned fall in the TVET (formerly FET) band, and therefore form part of the provision by TVET (formerly FET) private- and public colleges". However, the QCTO, which was formed to assure the quality of occupational qualifications,

has jurisdiction over all the bands of the NQF from Levels 1-10, although the DHET (2012e:6) has disputed that it should ensure the quality of qualifications higher than NQF 6. The QCTO takes a quite different approach, which has given rise to processes that are fraught with contention and opacity. Their model is centralised, and QA is delegated to assessment quality partners (QCTO, 2013a). There is no guarantee that this will result in the uniform application of the standards, and as a consequence, QCTO will inevitably experience problems similar to those of the SETAs.

These differences are inevitable, and reflect the nature of the various providers, learning systems and learning programmes with which the regulatory bodies have been involved primarily. The unfolding of the NQF and its related QA models and agencies has caused the regulatory terrain to become very complex, not only for private providers but also for public providers, with an “incoherent duplication of accreditation” (Umalusi 2008:6) that is expensive and time-consuming to both providers and QA bodies. As Akoojee (2005:4) points out, “regulation has a dual purpose – to ensure consumer protection as well as to create an enabling environment for the sector to exist”. This statement may be true, as the regulatory environment in South Africa seems to have become unacceptably top-heavy. In December 2012, the Minister acknowledged that more stable and foreseeable policies in the HE environment were needed urgently” (DHET 2012e:2).

## **2.10 CONCLUSION**

The focus of this chapter was on investigating the QA system in South Africa, referring to Figure 1.2 diagram of theoretical framework (Nguyen Thu Le Hang 2018:72; Zaki 2008:486, SAQA 2001:18). This is the key to unlocking the research question: What are the challenges experienced by private and public TVET providers in post-school education and training for engineering training programmes in terms of QA? The QA policy and legal contexts for TVET institutions were discussed in terms of the QA bodies Umalusi, QCTO, SETAs and ECSA.

The question that arises is: How effective are the QA systems for the presentation of a specific engineering training programme for post-school, adult learners at public TVET providers, in comparison with QA systems used for this purpose by private TVET providers that offer the same programme; and how might these QA systems be enhanced in future?

In a broader context, attention also is drawn to the micro-elements (Zaki 2008:486) of QA in education, namely, curriculum (programme) development, that will form the basis of the discussion in Chapter 3. Against the backdrop of what was presented in Chapter 2, the need

for social change and transformation and stakeholder engagement with regulatory authorities became evident. The micro-elements (cf. Table 2.1) include the regulatory authorities, leadership and governance, institutional design, human and financial resources, policies and practices, learner and staff profiles, and curriculum offerings. These micro-elements, with more specific reference to curriculum (programme) development, will form the foundation of the data analysis and findings that will be presented in Chapter 6 (Findings of the mixed-methods surveys).

The next chapter, Chapter 3, examines quality assurance in programme development (curriculum development) as one of the microelements of quality assurance concerning best practice internationally in TVET providers (a literature review & document analysis).

## CHAPTER 3

### PROGRAMME DEVELOPMENT IN TECHNICAL AND VOCATION COLLEGES

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#### 3.1 INTRODUCTION

Chapter 2 dealt with the quality assurance (QA) policies and the legal context of TVETs, focusing on UMALUSI, QCTO and the SETAs and the engineering professional council (ECSA). It is widely accepted and expressed that the fast and sometimes fundamental changes taking place in post-school education and training in South Africa, but also globally, require urgent curricular changes to enable institutions to satisfy current requirements. Training and education constitute a prime ingredient, not only in the process of creating jobs and generating growth but in improving the capacity of economies to satisfy the market demands which emerge from the interface between rapid globalization and technological change (Usman, Kalbe & Amara, 2005).

Globalization has become one of the crucial topics of discussion and also a concern in recent times since it has a decisive impact on our lives as a whole. Therefore, if we are to compete on the global stage and meet the globalization challenges successfully we need to make significant improvements in terms of maximizing the effectiveness of the vocational education and training instruction based on the specific design of curricula (Mouzakitis, 2010). It is widely accepted that we live in a world where knowledge and technologies renew at an accelerating pace. To respond to the resulting updated requirements of economic trends and goals, our educational planning has to be shifted to new forms of instructional content and delivery.

Consequently, globalization and the new emerging economic and social order demand new policies and strategies in educational processes. To this effect, the educational and training reforms have to be based on the market needs assessment identified by appropriate market research. Technical and Vocational Education and Training (TVET) programmes are considered to be the most effective instruments to meet globalization demands. The purpose of this study is to investigate whether QA in TVET engineering programmes is effective and the findings of the research will be analysed to proceed to recommend specific curriculum design changes to enhance the effectiveness of TVET.

In this study, contemporary perspectives on graduate attributes of engineering students in TVET Colleges needed for the world of work were investigated. In Chapter 1, the researcher discussed terminology and concepts, and the application of QA in engineering training for

artisans, technicians, and certificated engineers. Note was taken of topical research findings, and the changing world of work and how these changes impact post-school were deliberated. The alleged void that exists between post-school outcomes and what the world of work needs was explored, and it was clear that the development of appropriate curricula was urgently required - both in international TVET and in national post-school, especially in engineering education and training for artisans, technicians, and certificated engineers.

Curricula are an essential element of the QA activities of providers. The Department of Basic Education (2011:1) states that a curriculum is fundamental to the education process and plays an essential role in transforming education and training. Providers are obliged to compile their programmes according to the requirements of NQF-registered qualifications if they want their programmes to be accredited and be recognised in the market place.

### 3.2 EVALUATION OF TECHNICAL AND VOCATIONAL EDUCATION CURRICULA

Referring to Figure 3.1 below, our point of departure is that if there is no programme, there is no quality assurance. An institution can have the best system and processes in place to assure quality, but if there is no programme of quality the whole system fails. One, therefore, cannot look at QA without attending to programmes and the processes that were followed in creating the programme – and that, in turn, talks to the curriculum or programme development. The rationale for this chapter is to report on the investigation of programme development and what industry needs.

Figure 3.1 below (Finch & Crunkilton, 1999) depicts a framework for curriculum design containing the aspects of curriculum planning and development, as well as curriculum operation and refinement to suit the needs of the industry. It comprises four processes which must be completed successfully for the process to function properly.

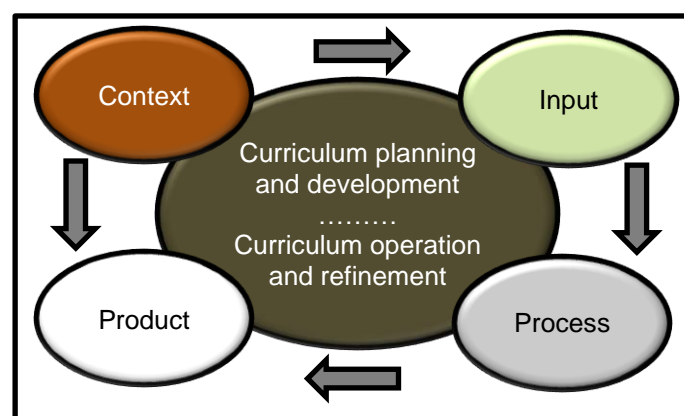


Figure 3.1: A framework for curriculum evaluation (Source: Finch & Crunkilton (1999))

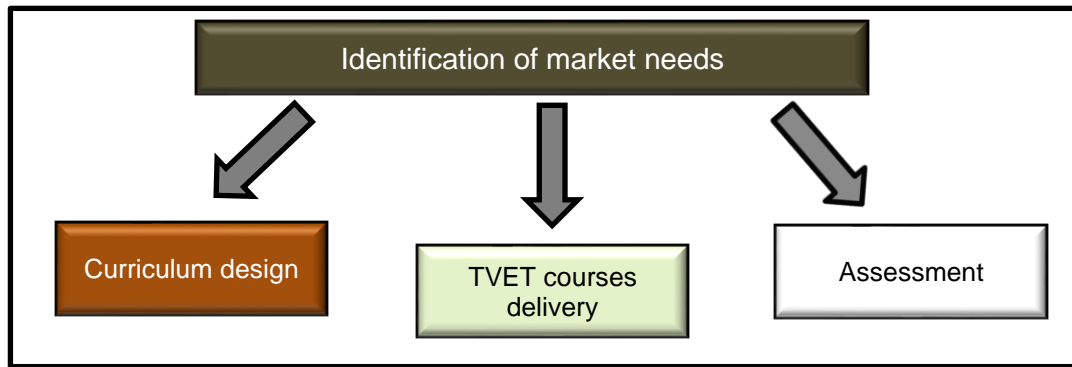
The evaluation of a curriculum can help to ensure that the curriculum is of high quality and deficiencies are identified before they cause major problems. Since the contemporary curriculum is quite comprehensive, an evaluation must also be comprehensive, taking into account the various aspects of curriculum planning, development, operation, and refinement (ibid:273). The diagram presented in Figure 3.1 portrays an evaluation scheme that is both comprehensive and systematic. The four elements of evaluation include:

- *Context*, which deals with whether or not to offer a curriculum and, if so, what its parameters will be including focus, goals, and objectives.
- *Input*, which relates to deciding what resources and strategies will be used to achieve curriculum goals and objectives.
- *Process*, which focuses on determining what effect the curriculum has on students.
- *Product*, which deals with examining the curriculum's effects on former students.

Context, input, process, and product (CIPP) have been espoused by Stufflebeam and Zhang (2017). CIPP was further confirmed by Stufflebeam *et al.* (1971), Webster (1981), Armstrong, (1989, cited in Stufflebeam & Coryn 2014:179), Stufflebeam *et al.* (2006) and Podems (2019) as the key elements of a comprehensive evaluation, particularly when information is gathered and used for decision making. Context and input evaluation focus on gathering information and making decisions relative to curriculum planning, curriculum development, and curriculum material development. Process and product evaluation relate to curriculum operation and refinement.

The competency test conducted in this research project is an evaluation that is partly context evaluation and partly process evaluation. The following example is applicable: In context evaluation, information was gathered on current knowledge and skills requirements of jobs in this area, since the curriculum for Diploma in Engineering (Electronics Technology) is already offered. In process evaluation the information was examined, among others, to determine the extent to which students have achieved certain curriculum objectives.

To substantiate context and process evaluation, Mouzakitis (2010) recommends an evaluation to determine the degree to which goals are met by existing programmes, which boils down to product evaluation. To this end, a four-stage process has to be followed in curriculum implementation in TVET, as indicated in Figure 3.2:



**Figure 3.2: The stages of TVET (Source: Mouzakitus, 2010)**

Regarding the role of vocational education and training curricula in economic development, the following caution from Mouzakitus (2010) further substantiates the importance of appropriate curriculum development:

*Globalization has become one of the crucial topics of discussion and concern in recent times since it has a decisive impact on our lives. Therefore, if we are to compete on the global stage and meet the globalization challenges successfully, we need to make significant improvements in terms of maximizing the effectiveness of the vocational education and training instruction based on the specific design of curricula.*

It is widely accepted that we live in a world where knowledge and technologies are renewed at an accelerating pace. To respond to the resulting updated requirements of economic trends and goals, our educational planning has to be shifted to new forms of instructional content and delivery. Consequently, globalization and the new emerging economic and social order demand new policies and strategies to educational processes. To this effect, the educational and training reforms have to be based on market needs as identified by appropriate market research. This report deals with the findings of the research conducted to specify the needs that will have to be satisfied through the implementation of Technical and Vocational Education and Training (TVET) programmes which are considered to be the most effective instruments of meeting globalization demands (cf. Mouzakitus: 2010).

The curriculum must ensure that at the end of the instruction period students will be able to (a) use technology, (b) think creatively and independently, (c) develop and communicate their own beliefs and view of the world, (d) achieve success in different areas of activity, (e) develop knowledge and understanding, (f) make informed choices and decisions, (g) communicate in different ways and different settings, and (h) work in partnership and teams (Mouzakitus 2010:3916).

South Africa urgently needs to develop the pool of skilled workers to enhance social and economic development, but also to address the skills gap. Graduate attributes going further

than technical or professional expertise, thus are urgently required, and to succeed in bringing about a profound improvement in students' education and the attributes of being graduated, in TVET curricula **need to be reviewed and adapted** to satisfy contemporary conditions (LMIP, 2015).

Skills planning is important for governments so that they can make more informed decisions about:

- i. where and how to invest its education and training resources;
- ii. how to allocate work visas;
- iii. enrolment planning, the development of new qualifications and programmes and the infrastructure investment needed to make this possible; and
- iv. career guidance programmes (LMIP, 2015).

A better understanding of what types of key occupations and accompanying skills are required to support economic growth, trade and investment are expected to allow the government, with partners, to ensure alignment between industrial strategies and strategies for skills development (LMIP, 2015). The importance of developing appropriate curricula, together with other micro-level aspects according to (Zaki 2008:486) during post-school, this chapter aims to establish how curriculum design and careful planning may enhance the entrenchment of relevant attributes in undergraduate curricula. This chapter, therefore, is aimed at addressing the primary research question, namely:

How effective are the quality assurance (QA) systems for engineering training programmes for post-school, adult learners at public TVET providers, in comparison with QA systems used for this purpose by private TVET providers who offer the same programmes; and how might these QA systems be adapted and/or enhanced in future?

This chapter has a twofold purpose: First, to take into consideration the factors that impact the development of appropriate education and training curricula. Therefore, it commences with an explanation of applicable concepts and exploring significant ideas on and specific challenges regarding curricula and curriculum design (cf. 3.4 & 3.5). In the second instance, the focus is on embedding relevance through applicable graduate attributes in curricula to satisfy the needs of the industry. Finally, the chapter concludes the themes addressed, including the challenges concerning entrenching graduate attributes in students through the curriculum and to include sources of information and support in the curriculum and programme design process (cf. 3.5).

A closer look is taken into the following aspects:

- The concepts and terminology relevant to and the perspectives on the curriculum and curriculum design.
- Aligning graduate attributes with industry needs to prepare students for the world of work.

### **3.3 CONCEPT CLARIFICATION**

To thoroughly study different perceptions of curriculum design, it is necessary to first explain what the concepts related to the curriculum involve.

#### **3.3.1 The term curriculum**

There is no singular, accepted definition for a curriculum. According to Botha (2009:159), the curriculum is a complicated, multi-faceted concept, and can only be considered within a specific context. This context may be that of a single module, a programme, an institution or a post-school curriculum. In the context of this study, the post-school curriculum can be described as the curricula of programmes provided by the TVET sector.

Ross (2005:8) maintains that curricula may contain prescribed activities that have been created and accepted by the people in a society, selected from the culture of that society, that result in the transformation of individuals. Jansen (2009) recaps this opinion when he maintains that the curriculum does not merely comprise the course content for a particular qualification, but also an understanding of the knowledge “encoded in the dominant beliefs, values and behaviours that are deeply embedded in institutional life” (Jansen 2009:126).

According to Du Toit (2011:59) and Latucca and Stark (2009:2-3), a common understanding of what the concept ‘curriculum’ entails is elusive. Academics at post-school institutions see, understand and implement curricula in different ways. Du Toit (2011:59) affirms that despite the vast number of views on what the concept of the curriculum involves, there is little difference between the various definitions. However, Latucca and Stark (2009:3) are of the opinion that it is essential to use a common framework or understanding of the term to ensure a meaningful exchange of ideas among staff members when discussing the aspects of curricula.

The word ‘curriculum’ originates from Latin and can be translated directly as ‘racetrack’, or ‘course to be run’ (Pinar 1975 cited in Lovat & Smith 2003:18). Curriculum, thus, describes

the course one has to take to reach one's goal (Ross 2005:8), implying hurdles to overcome in one's efforts to complete the 'race' successfully. This course will contain the WHAT, the HOW and the WHEN (curriculum) of what is to be mastered. Knowledge, skills, attitudes, and values are the WHAT that must be learned or discovered, which is the key ingredient of the curriculum. The HOW entails, among others, problem-solving, collaboration and critical thinking, while effective teaching and learning answer the HOW question (Du Toit 2011:62).

The above-mentioned elucidation agrees with the findings of the analysis of global and national views from the post-school arena and the world of work discussed in Chapter 2.

Posner (2004:6-12) recognises the problems involved in providing a clear and precise definition for a curriculum but mentions seven meaningful aspects of a curriculum.

The concept of 'curriculum' in this author's view can be explained as the:

- Scope and arrangement of intended outcomes, indicating the purpose of education, and managing instruction and assessment.
- Syllabus, that is, the plan for a course, including the purpose and way in which it is to be done.
- Content summary, namely that which is applicable in a context where the purpose of teaching and learning is to support the construction of knowledge based on information.
- Standards, which refer to the expected learning outcomes, and methods towards attaining learning outcomes at the expected levels.
- Textbooks and diverse materials to guide the purpose and the methods used to achieve it.
- The sequence of study, that is, the courses (modules) that the students must complete.
- Planned learning experiences, that is, the activities which students have to do or go through, both within the curriculum and extra-curricular.

Scott (2008:19), in concurrence with other curriculum experts, points out four aspects of a curriculum, namely the aims or objectives, content or subject matter, methods and procedures, and evaluation and assessment. This indicates that a curriculum should be a clear and comprehensive explanation of the '(race) course' the student has to complete successfully.

Latucca and Stark (2009:4-5) support this opinion. They believe that the curriculum must

be viewed as an academic plan or blueprint, weighing, or considering the major elements required to guide the students through the course of their studies, rather than merely attending to singular elements such as specific content or teaching strategies. In their view the following elements should be considered:

- *Purposes*: the knowledge, skills, and attitudes to be mastered.
- *Content*: the discipline-specific and generic matter chosen to convey the knowledge, skills, and attitudes.
- *Sequence*: the arrangement of the subject matter and experiences that must guide students in achieving specific outcomes.
- *Students*: how the plan should be used to satisfy the needs of specific students.
- *Instructional resources*: the materials and environment to be used for teaching and learning.
- *Evaluation and assessment of learning*: ways to determine whether the different aspects of the plan are successful.
- *Adjustments*: changes to improve the plan, based on experience and evaluation.

In the literature six types of curriculum often are discussed, namely:

- The *official* curriculum (planned part of the formal curriculum), which is a written document and comprises the scope and sequence, syllabi, guidelines, standards and objectives or outcomes (Carl 2012:37; Glatthorn, Boschee & Whitehead 2009:186; Posner 2004:12).
- The *operational* curriculum (part of the formal curriculum), comprising what should be taught, how it should be presented and the outcomes. The operational curriculum entails that which is taught and assessed, regardless of whether it is consistent with the official curriculum (Kelly 2009:12; Glatthorn *et al.*, 2009:186; Posner 2004:13).
- The *experiential* (received curriculum) is that which the students experience in reality (Kelly 2009:11).
- The *hidden (implicit)* curriculum refers to that which is purposefully or inadvertently passed on during teaching and learning, but has not been made explicit (e.g. beliefs, norms, perceptions, meanings and feelings) (Doll 1996:15; Lovat & Smith 2003:34-36; Posner 2004:13; Ross 2005:8).
- The *null* curriculum - that which is not taught, which has two major dimensions, namely the “intellectual process that is included or neglected”, and “content or subject areas” that are present (or absent) in curricula (Eisner 2002:97-98).
- The *extra-curriculum (informal curriculum)*, namely planned but voluntary activities

outside modules, which contribute to learning (Kelly 2009:12; Posner 2004:13-14).

In summary, a curriculum contains several aspects or components which are equally important to consider when compiling or redesigning a curriculum. In the light of the context of the study (Quality Assurance for engineering artisan, technician, and certificated engineering students at TVET Colleges and graduates entering the world of work: curriculum perspective) it is deemed necessary to understand what curriculum inquiry entails.

### **3.3.2 The curriculum as a field of study and inquiry**

Bitzer and Botha (2011:33) explain that curriculum inquiry is a particular kind of educational research endeavouring to find solutions to educational problems, to formulate policies, and to develop or upgrade programmes or courses. According to Kelly (2009:23) the curriculum as a field of the study refers the academic and intellectual investigation of the factors that should be considered to conceptualise and compile an educational curriculum, that is, a course of study.

Post-school curriculum research is not necessarily conducted by educational experts, but mostly is the work of educational practitioners, addressing curriculum matters in the modules and programmes for which they are responsible, or striving to solve institutional problems (Bitzer & Botha 2011:13). A variety of study methods and curriculum inquiry is used, such as action research, biographical studies, case studies, comparative case studies, critical theory research, documentary research, mixed- and multi-method research. Kelly (2009:24) argues that curriculum studies have emerged as a field of study in its own right and should no longer be viewed as a sub-branch of any other discipline such as psychology, philosophy and sociology.

Curriculum inquiry, *inter alia*, is aimed at serving student learning better. Post-school curriculum studies are concerned with practical and theoretical issues, such as the selection of knowledge to be represented in post-school, and how knowledge may be constructed, facilitated, mediated, and mastered (Bitzer & Botha 2011:36; Kelly 2009:24-25). Other matters that are addressed concern the rapid increase in knowledge production, with the ensuing necessity of lifelong learning and a holistic view of the elements impacting the learning paths of individuals (Bitzer & Botha 2011:39).

### **3.3.3 Curriculum development**

Curriculum development is an umbrella term for an ongoing process of systematic planning and designing a teaching and learning process from situation analysis to evaluation. Creating a curriculum comprises a variety of stages, namely curriculum design, curriculum dissemination, curriculum implementation and curriculum evaluation. Curriculum development is implicitly integrated (Carl 2012:38). In this study, the emphasis is on curriculum implementation as a vehicle to enhance graduate attributes and to promote the readiness of graduates for the world of work. Curriculum implementation and evaluation is the crux of this study of the QA process in education and training for engineering artisans, technicians, and certificated engineers in TVET Colleges in SA.

#### **3.3.3.1 Curriculum design**

Curriculum design is a component of curriculum development and can be defined as the dynamic interaction among the principles of design, that is, situation analysis, formulation of aims, goals and objectives/outcomes, selection of teaching-learning content, designing learning experiences, teaching opportunities and strategies, developing assessment (of student learning), and evaluation (of the curriculum). Curriculum design may refer to creating a new curriculum or amending (re-planning, re-designing) an existing curriculum after careful analysis (Carl 2012:66-67; Krüger 1989; Zaki 2008:486, cited in Geysers 2004:148).

A 'curriculum' manifests in three major representations (Goodlad, Klein & Tye, 1979): the planned/formal curriculum (the educational intentions as described in curricular documents such as programme/course descriptions), the enacted curriculum (i.e., the curriculum in action), and the attained curriculum (the resulting student learning).

The curriculum can also be referred to as a training design or plan (D'Hainaut *et al.*, 1981) that defines the aims, goals and objectives of educational activity; the ways, means and activities used to achieve the aims; and the methods and instruments needed to evaluate actions.

Wilson (1990) states that the word 'curriculum', as it is defined from its early Latin origins means "to run a course". She describes the curriculum as:

*“if one thinks of a marathon with mile and direction markers, signposts, water stations, and officials and coaches along the route, this beginning definition is a metaphor for what the curriculum has become in the education of our children”.*

She describes that a curriculum is:

*Anything and everything that teaches a lesson planned or otherwise. Humans are born learning; thus, the learned curriculum encompasses a combination of all of the below – the hidden, null, written, political and societal, etc. since students learn all the time through exposure and modelled behaviours. This means that they learn important social and emotional lessons from everyone who inhabits a school – from the janitorial staff, the secretary, the cafeteria workers, their peers, as well as from the deportment, conduct and attitudes expressed and modelled by their teachers. Many educators are unaware of the strong lessons imparted to youth by these everyday contacts.*

Atherton (2009) states that the term ‘curriculum’ is used in several related ways. First, it can refer to the overall content of what is to be taught. Secondly, it can refer to the underlying principles of the approach to teaching and learning, and thirdly, it can embrace both elements, and refer to the overall “what”, “how” and “why” of teaching.

Finch and Crunkilton (1999:11) define curriculum as “the sum of the learning activities and experiences that a student has under the auspices or direction of the school”. In this definition there are two supporting concepts: First, the central focus of the curriculum is the student. This means each student has his or her curriculum since students often select courses, experiences and non-credit activities that align with their unique personal needs and aspirations. The second is the breadth of learning experiences and activities associated with a curriculum. Formal courses are not the only items considered to be a part of the curriculum. Clubs, sports, and other extra-curricular activities are significant contributors to the overall development of an individual and curriculum effectiveness. Curriculum development can be defined as “the process of defining, organizing, combining, and co-ordinating content so that it leads learners to the acquisition of knowledge, skills, and attitudes (KSA)” (Dunbar 2002:31). It is “what” the student will learn, not “how” the learning will be accomplished. The latter refers to instructional design and delivery process (ibid.).

### **3.3.3.2 Curriculum dissemination**

Dissemination is the process of informing lecturers/instructors about new or revised curriculum ideas, documents or materials so that they understand and accept the innovation. (McBeath, 1993; 1995; 1997). It implies a two-way interactive communication process, rarely experienced in the entrepreneurial mood of current TVET reform in SA.

According to Carl (2012:42) curriculum dissemination is the period during which all those

involved in the curriculum are informed of the intended implementation of a new or adapted curriculum. This entails the distribution of information and the training of those involved in the implementation of the curriculum. Dissemination as the "process of informing lecturers/instructors about new or revised curriculum ideas, so that they understand and accept the innovation" implies that they are informed (by management), that they understand it in their terms (teacher meaning) and that they accept it as worthwhile to pass onto their students (students' needs). The definition also recognises that the question of how this is done, how new ideas and practices spread from their point of origin and gain widespread adoption, is central to all successful educational change (McBeath, 1997).

A number of the authors on the matter of dissemination conclude on a similar note of duality. Some specifically mention the importance of a process that consciously brings initiator and teachers together in joint development. The general conclusion is that any model of effective dissemination must recognise the potential of a two-way process of initiation, decision making and support from administrators, on the one hand, and awareness-raising, joint ownership, collaboration and involvement from the users, on the other.

### **3.3.3.3 *Curriculum delivery/implementation***

Curriculum implementation refers to the curriculum being applied in practice (Carl 2012:42). Lecturing/teaching/training/facilitating staff is responsible to ensure that the curriculum is implemented with integrity, and satisfies the needs of all students. The curriculum must be implemented in such a manner that sufficient learning opportunities are created for students. It is essential that lecturing/teaching/training/facilitating staff understand the curriculum they are required to implement, as well as the outcomes to be attained to reflect student learning.

### **3.3.3.4 *Curriculum evaluation***

During the evaluation phase of curriculum design, evaluation is not limited to the success and effectiveness of the curriculum, the impact of the curriculum on the students must also be evaluated. Curriculum evaluation is a continuous process that takes place during and after each phase of the development and implementation process (Carl 2012:42,142). The curriculum review and mapping processes discussed in this chapter form part of the curriculum evaluation process.

### **3.3.4 Embedding**

Oxford Dictionaries (2014:online) explains 'embed' as 'to fix (an object) firmly and deeply in a surrounding mass'. As the purpose here is to explore how a curriculum can be aligned to the needs of industry for engineering artisans, technicians, and certificated engineers, an essential step is to incorporate graduate attributes firmly within all the components of the undergraduate curricula for engineering artisans, technicians, and certificated engineers. Graduate attributes as an essential component of the curriculum, however, are not static but should be regarded as the 'living' outcomes of the curriculum.

### **3.3.5 Instructional design**

Gustafson and Branch (2002:17) define instructional design as a creative, iterative, and active process used for the development of education and training materials consistently and reliably. Instructional design, however, refers to the systematic process by which instructional materials are designed, developed, and delivered. The process thus entails establishing specifications for an effective, efficient, and relevant learner environment, developing all learner and management materials, and, finally, the evaluation of the results.

The terms instructional design, instructional technology, educational technology, and instructional systems design are often used interchangeably (Kurt, 2017). For this study, however, suffice to say that instructional design forms part of the bigger curriculum development process (Gustafson & Branch 2002:17), and refers to designing and developing material such as handbooks and instructional media, teaching and learning methods and techniques to be used, and the ordering or sequencing of topics to be discussed.

### **3.3.6 Curriculum mapping**

Curriculum mapping refers to the process of documenting/recording the content and skills that are taught, and comparing them with what is supposed to be, or perceived to be taught and assessed (Udelhofen 2005:xviii). Curriculum mapping thus involves the recording of decisions taken in the process of curriculum design and delivery, and monitoring and evaluating these decisions (Madiba 2011:376). Curriculum mapping also is seen as a tool for curriculum inquiry (Madiba 2011:383).

Udelhofen (2005:xviii-xix, 3-4) proclaims that curriculum mapping is a process or system applied to reflect on and continuously improve curricula. Curriculum mapping supports the

'collaborative inquiry process' by advancing informed conversations and encourage joint responsibility regarding the curriculum, teaching-learning, and assessment. This correlates with the process of curriculum review and design. This process influences the curriculum from the exit-level outcomes to content, teaching plans, assessment plans, and the resources utilised (Madiba 2011:375).

The possible value of curriculum mapping as a tool for the purposeful embedding of graduate attributes in undergraduate curricula will be explored within the context of QA in engineering training for artisans, technicians and certified engineers.

### **3.3.7 The term 'programme'**

The Council on Higher Education (CHE) describes a 'programme' as a selection of purposeful and structured learning experiences that leads to a qualification. Programmes are classified as discipline-based, professional, career-focused, trans-, inter-, or multi-disciplinary. All programmes have recognised entry and exit points (CHE 2013a:12). In an outcomes-based system, a programme is planned to empower students to achieve specific exit-level outcomes. Based on the purpose of the programme, learning outcomes and the structure of the programme are developed, and students gain knowledge which has to be integrated with skills (RSA DoE 2002:31). Undergraduate and post-graduate diploma and degree programmes usually have an interdisciplinary focus, are comprehensible, and purpose-driven, they make students ready for employment, make moving between programmes possible, and enable and consolidate adding-on of skills and values to the knowledge base (UFS n.d.01; RSA DoE, 2002).

### **3.3.8 Learning outcomes at different levels**

According to the South African Qualifications Authority (SAQA), outcomes are the "contextually demonstrated end-products of the learning process" (SAQA 2001:70). The section below distinguishes the terminologies related to learning outcomes.

#### **3.3.8.1 *Intended learning outcomes***

According to Biggs and Tang (2011:113-120), the term 'intended learning outcomes' refers to statements about what and how students should learn. The intended learning outcomes are descriptions of what students must know and be able to do on successful completion of a programme, course, or module, or even a class session. Usually, intended learning outcomes are formulated at three levels: institutional, programme, and module level.

Institutional outcomes, also known as graduate attributes or graduate outcomes, should be considered in the formulation of programme and module outcomes. The different levels of outcomes must be aligned.

Biggs and Tang (2011:113-120) explain that graduate attributes or outcomes are statements of what graduates of the university/TVET College are required to know and be able to do on graduation, while at programme level the intended outcomes refer to what students who have completed the particular programme successfully are expected to know and can do. Likewise, at the module level, that is, course outcomes, indicate what students should know and be able to do on completion of a particular module.

### **3.3.8.2 *Exit-level and critical cross-field outcomes***

The South African Qualifications Authority is the official body that oversees the development and implementation of the National Qualifications Framework (NQF) for all educational levels (and the applicable level descriptors – cf. Chapter 1 [1.8.15] for definition). SAQA further distinguishes two types of outcomes that apply at all educational levels, namely ‘exit-level’ and ‘critical cross-field’ outcomes (SAQA 2005).

Exit-level outcomes are those outcomes that indicate what the student will be able to do and will know on successful completion of a specific programme ensuing in obtaining a qualification (SAQA 2005:8). Exit-level outcomes, which correlate with the intended programme-level outcomes as described by Biggs and Tang (2011), therefore, refer to outcomes that have to be attained for a programme to be exited and qualification to be awarded.

Critical cross-field outcomes are the qualities identified in the National Qualifications Framework (SAQA 2000:18) for the general development of students in the education and training system, irrespective of the specific field of education, that is, generic outcomes regarded as crucial in the development of the capability for life-long learning, including problem-solving, teamwork, communication skills, collecting, analysing, organising and critically evaluating information, using science and technology effectively, demonstrating an understanding of the world as a set of related systems, and more.

## **3.4 CURRICULUM PERSPECTIVES**

Ornstein and Hunkins (2009:13) proclaim that “Curriculum knowledge is widely scattered and either unknown or unread by those who teach or practise the curriculum”. According to

these authors, curricula are based on philosophical, historical, psychological, and social points of departure. Cultural, political, and economic views may be integrated with the social foundations. This discussion will commence with an introduction to various views regarding curricula. Types of curriculum design, the design process, the role of constructive alignment, and technology are briefly discussed. Finally, curriculum challenges in South African training institutions as a whole, and not only for engineering training in TVET Colleges will be deliberated.

The following themes will be addressed in these discussions:

- Distinctive views about the curriculum;
- Curriculum design, process, constructive alignment, and the role of technology; and
- Curriculum challenges in South Africa.

### **3.4.1 Distinctive views on the curriculum**

According to Bitzer (in Bitzer & Botha 2011:50) the informed use of educational perspectives is useful in testing and challenging curriculum practices. In the discussion below some of these views highlighted.

#### **3.4.1.1 *Traditionalist and progressivist views***

Du Toit (2011:65) explains that educationists have two views of the curriculum, namely the traditionalist view and progressivist view. Traditionalists regard curricula as plans and emphasise the procedures followed for such plans. Here, rationality and logic are important in curriculum planning and development. Instead of considering educational practice to be an art, it is seen as a scientific approach, in which goals, content, and instructional experiences can be pre-planned and educators trained to present curricula efficiently (Ornstein & Hunkins 1998:184). Doll (1996:39) maintains that in traditionalists' view, subject matter is important in itself, and it is taught mainly for later use. People are seen as essentially the same and therefore should follow the same curriculum. The world must be accepted as it is, and people should conform to live in it.

On the other hand, progressivists emphasise how to think instead of what to think. The curriculum in their view is interdisciplinary and content should be part of the learning process and not sources of ultimate knowledge. The educator is a guide in the learning process (Ornstein & Hunkins 1998:44-45; 2009:46-47). Here, a subject matter merely is a medium for teaching skills, intellectual processes, attitudes, and appreciations. As individuals are

recognised as markedly different from each other, they require differentiated curricula. The world is viewed critically and is subject to change (Doll 1996:39).

#### **3.4.1.2    *The orientation toward product and process***

Kelly (2009) distinguishes between three broad perspectives of curriculum: (i) curriculum viewed as content; (ii) curriculum viewed as a product, and, (iii) curriculum as a process. From the first perspective education and training are seen mainly as the transferral of information - the content is fixed, and the educator transmits 'knowledge' to students, the passive receivers of information. The content is decided upon first, and then the teaching and learning are considered. This implies that the content (information) alone carries value and not how it is approached or viewed by the student (Kelly 2009:56-58).

When the curriculum is viewed as a product, education and training are geared to render a final product (communicated as intended standards, outcomes, aims and objectives) (Kelly 2009:64-65). Obtaining a qualification often is viewed as the final product of the curriculum (Geyser 2004:147). When the focus is mainly on the outcome and objectives, the teaching and learning process and the holistic development of the student do not receive adequate attention, resulting in 'surface learning'. In a surface approach to learning, students rely on memorising information in their working memory to pass the assessment. The information, however, has not been integrated into their understanding and long-term memory, which means that knowledge construction has not taken place, the information will be forgotten, and it was a worthless effort (Cullen *et al.*, 2012:47).

A curriculum viewed as content and product correlate with traditionalist views to a large extent. In the process view of curriculum, education is regarded as a process that promotes both the development of the individual and the evolution of knowledge and human society (Kelly 2009:93, 98).

The characteristics of the curriculum viewed as a process (and development) (Kelly 2009:99-113) have been interpreted and summarized by Geyser (2004:147) stating that the curriculum may be divided into an aim and objectives; the objectives, however, must be changed into practical principles during curriculum development. Students become actively involved in constructing knowledge; assessment becomes an integral part of learning. Individual autonomy in educational practice is promoted. Students develop skills and abilities that enable them to make crucial decisions and judgements required by self-directed living. Deep learning occurs enabling students to apply knowledge and skills in new and different contexts. Selected content must be presented in a way that promotes critical

thinking and reflection. Content must be dynamic, not static. Teachers need not follow step-by-step, predetermined directions to achieve results. Dynamic, intricate interaction between educator and students takes place, for which educators must have adequate competence. The curriculum is student-centred, meaning the focus is the students' needs, interests, and growth. The curriculum is dynamic and adaptable to changing conditions and needs. Such a process and development curriculum to a large extent correlates with progressivist views. It must be noted, however, that in practical terms these understandings of the curriculum are not inert or limited, but each may include valuable elements of content, product, and process perspectives.

Figure 3.3 depicts the different interpretations of the curriculum but emphasises that a clear-cut distinction between these views should not be made - both 'groups of viewpoints' hold potential worth in curriculum design.

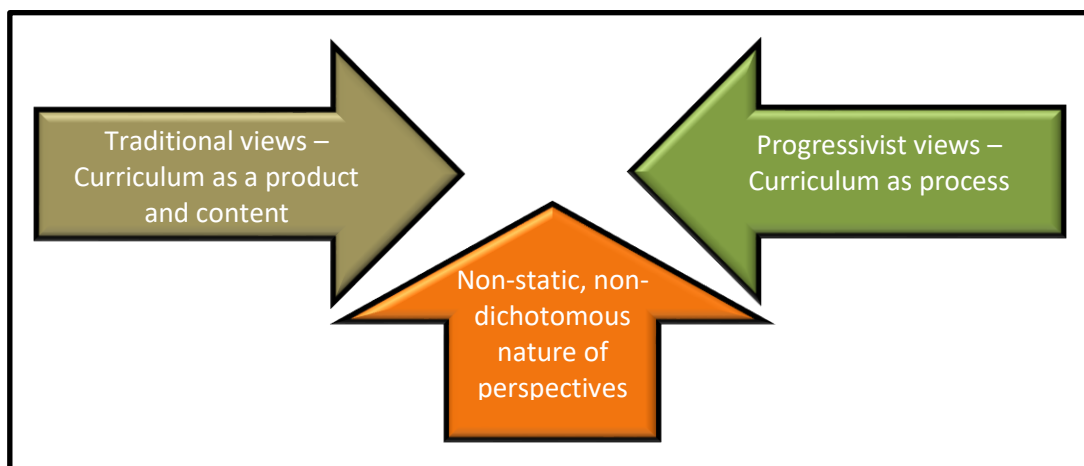


Figure 3.3: The dynamic nature of curriculum perspectives (Source: Geysers 2004:147)

### 3.4.2 Influential viewpoints of curriculum theorists

For a discussion of curriculum matters, it is deemed necessary to also take cognisance of significant opinions regarding curriculum and the views of dominant curriculum theorists.

#### 3.4.2.1 *Theoretical viewpoints on curriculum*

A variety of perspectives appears in literature on curricula, containing information on how learning occurs, which objectives must be achieved, what content needs to be explored and how it should be organised the evaluation of teaching-learning and the relationship between institutions and society.

Posner (2004:45-64) identifies five theoretical perspectives on curriculum, namely the traditional, experiential, the structure of disciplines, behavioural and constructivist perspectives:

- The traditional perspective involves a view that transmission of the cultural heritage of a dominant culture is the purpose of education, although the curriculum objectives may attempt to accommodate other cultures to achieve 'cultural literacy' for the modern world with curriculum viewed as the product. Questions may be raised about the experiences of the group of students not born in the dominant culture. Dewey (in Skilbeck, 1970) was critical of this viewpoint in the sense that he believed the first objective of education was the passive transmission of information from one generation to the next. Furthermore, critics acknowledge that although the concept of the core curriculum is a valuable component of this view, acknowledgement of the importance of skills development cannot be denied.
- Experientialism refers to the opinion that reality is viewed as a merging of an individual's internal and external reactions to reality. Dewey, regarded as the father of experientialism, advocated for curricula to contribute to individual growth and development, academically, intellectually, vocationally, and socially; it thus boils down to individual balanced development. Constant adjustment to promote such development of students' experiences is dependent on high quality, student-centred educational experiences. This will enhance skills development such as independence and problem-solving. Influential perspectives on experientialism include the work of Dewey, Parker, Herbart, Froebel and Rousseau (Kridel, 2010:Online; Posner 2004:48-53) amongst others.
- Structure of disciplines: This perspective turned the focus of the curriculum to the subject matter, the disciplines of knowledge and the discipline structure are understood. It aims to elucidate basic views of a specific subject or subjects in a discipline, with the focus on students' participation in scientific inquiry and the dominant, informative role of university scientists. According to this perspective, the purpose of education is to develop the human intellect and knowledge based on the central ideas which are related to a specific academic area. Influential perspectives of this perspective include, amongst others, Zacharias and Bruner (Posner 2004:53-58).
- Behavioural: Advocates for the behavioural perspective believe that the emphasis of the curriculum should not be on content, but on what students will be able to do on the conclusion of their learning where the behaviour they learn is a result of the instruction. Consideration of the conditions of learning as they plan for instruction is required from educators. Behaviourist views favour planned instructional steps, that is, an organised curriculum enabling students to master the subject matter, and reinforcing a desired

behaviour. Critics argue these perspectives are too rigid and rely too much on conditioned behaviour. Significant opinions on behaviourist views are found in the works of Skinner, Thorndike, Bobbitt, Charters, Tyler, Taba and Bloom (Posner 2004:58-60; Ornstein & Hunkins 2009:89-90,109). If applied strictly and unbendingly, the above-mentioned appears to be in correspondence with product-orientated perspectives on the curriculum.

- **Constructivist:** This view refers to thinking and reasoning as internal processes, requiring curricula to support students in constructing their knowledge based on the information and on what they already know. This is the foundation of the constructivist perspective. Students must be able to apply knowledge to meaningful activities in different contexts, using decision-making and problem-solving skills, clear judgments, and reflection. According to this perspective, the mind integrates new notions into existing structures and accommodates new ideas by reorganising the existing structures. The constructivist perspective differs from the behavioural perspective in the sense that the focus is not mainly on what the lecturer/instructor can do to elicit a response, but rather on the student becoming a key, active participant in generating meaning and understanding, resulting in metacognition (Lovat & Smith 2003:129; Posner 2004:61-63; Ornstein & Hunkins 2009:129).

Furthermore, a distinction is made between cognitive and social constructivism. Based directly on Piaget's work, cognitive constructivism is based on individual cognitive development. Through a personal process, ideas are constructed in individuals. Through the process of assimilation and accommodation of information, each individual learns at his or her own pace and schemas are constructed through the process. Teachers/lecturers should establish what students view as difficult, and then react accordingly (Powell & Kalina 2009:241-249). Lev Vygotsky founded the theory of social constructivism, and he proclaimed social interaction as a fundamental part of learning; thus, learning environments should be created to encourage interaction between the lecturer/teacher and students, as well as among students and their peers. Vygotsky also was an advocate for scaffolding students' learning, as more effective learning takes place amongst students when they have others to support them. Cooperative learning enhances a profound understanding. To promote dialogue about the content and advancement of critical thinking and internalisation of what has been learnt, lecturers/instructors must construct learning activities accordingly. Social constructivism emphasizes the acknowledgement and acceptance of student diversity. Language precedes the construction of knowledge or thinking (Powell & Kalina 2009:241-249). Amongst others, the work of Piaget, Ausubel, Anderson, Vygotsky and Dewey (Posner 2004:61-63; Ornstein & Hunkins 2009:129) is regarded as influential constructivist perspectives.

The constructivist perspectives are aligned with process-orientated views of the curriculum in which intrinsic processes and values are considered. In a flexible and adjustable way, the content is used to facilitate the accomplishment of outcomes. The opinions of curriculum theorists briefly discussed in 3.4.2.2 elucidate aspects of the perspectives described above

### **3.4.2.2 *Purpose and content as a curriculum perspective***

Several curriculum theorists were instrumental in designing models that cleared the way for curriculum practitioners and researchers (Du Toit 2011:65). These models or adapted versions thereof have been used by post-school institutions in their curriculum planning and design. The perspectives discussed are exemplary of the progress made from a traditionalist, that is, content-and product-orientated, to progressivist - mainly process-orientated - views of the curriculum. These curriculum perspectives are apparent in the curriculum design models discussed in 3.3.2.

A number of the views discussed do not directly discard objectives in curricula, but rather how they are put into practice and used. In many of the current models for curriculum design the components (objectives, learning experiences, and evaluation) are reflected, as well as the questions in Tyler's model. The elements of curriculum dissemination and implementation (described by Carl 2012), however, are not overtly included in Tyler's model although they do appear in adapted models (Van Tonder 2000:71).

The so-called objective-driven models have been criticised for being too linear, but objectives give guidance and provide a system for instruction. Kelly (2009:78, 80, 89-90) argues that although objective-driven models seem to be value-neutral, and, therefore, to some extent, are objective, they often ensue in practices that impart specific ideologies and practices, even though not directly stated. Objectives provide direction, but intrinsic values, learning pace and the process of student learning may differ, therefore, those responsible for implementing the curriculum must be prepared to adapt learning experiences and strategies as and when required.

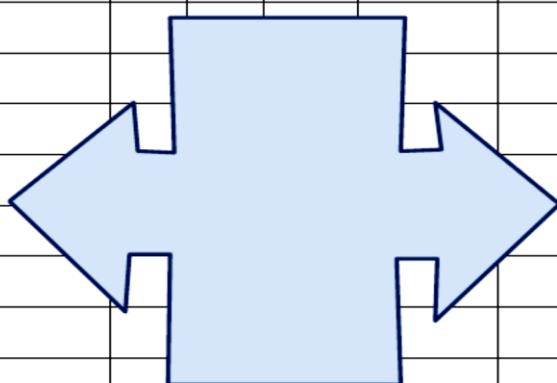
An advantage of objective-based approaches is that the intended objectives/outcomes can be made known through official channels such as policies and other official documentation. This may support and justify post-school funding. In South Africa, policy documents and guidelines (and even the White Paper on Post School Education & Training, 2014) contain learning outcomes, communicated through critical cross-field and developmental outcomes, as well as the level descriptors of the NQF. How these outcomes are contextualised, integrated into disciplinary content, developed, taught and assessed is cardinaly important

for the outcomes to be truly attained. The terms curriculum aims, goals, objectives and outcomes are used interchangeably in the literature and this may confuse.

Vygotsky, Dewey and Stenhouse's views find application in the teaching-learning practices promoted in South Africa and the international context, as is the case with many of the principles for good teaching and learning practice which are ascribed to the theories discussed above. For the holistic development of students progressive, process-orientated perspectives are required, but the lecturer/instructor also needs to be a skilled practitioner. Understanding social justice and democracy is important, therefore, the social and cultural development of the student is a priority (Kelly 2009:91,112-113). Ideological stances and awareness are made explicit, as process views are value-driven (Kelly 2009:90-91). A proactive search for solutions, as well as continuous reflection and evaluation, forms part of the basic principles of process-orientated perspectives.

In conclusion and the context of this study, it must be noted that good curriculum design assists students in understanding subject matter, constructing knowledge and maintaining interest in developing various skilful practices (Yorke & Knight 2006:6). Curriculum designs also should take cognisance of developing positive value beliefs, an awareness of one's thought processes, and other complicated accomplishments that employers value. Du Toit (2011:75) cautions against the risk of absolutism or totalitarianism of opinion that may result in indoctrination rather than education. Du Toit (2011:72) proposes a useful continuum that illustrates the core of the contributions of the curriculum theorists discussed. The continuum has to be seen in the context of the literature discussions, comments the researcher made, and applicable comments from the literature. This continuum is illustrated in Figure 3.4.

	Bobbitt	Tyler	Taba	Dewey	Stenhouse	Freire	
Top-down							Bottom-up
Functionalism							Progressivism
Teacher-centred							Learner-centred
Product							Process
Scientific							Emancipatory
Concrete							Abstract
Cognitive learning							Cognitive and social learning
Educate for the future							Educate for now



**Figure 3.4: Continuum of the range of contributions of curriculum theorists to curriculum design (Source: Du Toit 2011:70)**

The various curriculum perspectives discussed in this chapter have educational strengths and weaknesses; nevertheless, they all contribute value to this study. Kelly (2009:29) maintains that it is important to “sort through the ideas, theories and insights to identify, and, if possible, resolve logical and conceptual mismatches and the resultant practical incoherence and confusion”. There seems to be value in adopting holistic perspectives, according to which students are actively engaged in structured discipline-related content, build knowledge, and master skills that can be applied in various contexts, making a positive contribution to the social, economic and political environment.

### **3.4.3 The curriculum design process**

As asserted by Mouzakitis (2010), when a curriculum is aimed at preparing students for the world of work, curriculum planners and designers must investigate and understand the character and present the state of disciplinary knowledge and professional practice, philosophies of education, teaching and learning theories, and educational research findings within the context of globalisation. Furthermore, they must be well informed about the role and types of assessment and feedback, student characteristics and students’ learning needs, interests and abilities, and the practical, ideological and policy contexts of the relevant academic department, institution, and post-school system, as well as the profession.

Over a period of three decades, outcomes-based education and constructivism have come to be the major educational strategy used in the South African education system. The constructivist approach is founded on the basic principle that all knowledge is constructed on a base of prior knowledge and experience. Knowledge thus is constructed by students through a process of making meaning of newly received information in the context of their previous experience, as opposed to passively receiving information. This perspective is supported by influential theorists, for example, Dewey and Stenhouse (in Du Toit 2011:73). Four basic principles of outcomes-based education resemble the work of Spady (1994), namely:

- Education must have a clear focus for outcomes to be achieved by students and lecturers distinctly and in a systematic way.
- Start designing the curriculum with the end in mind, that is, start by formulating outcomes to be achieved. The significant learning that students must master to achieve the outcomes must be defined, and planning, teaching and learning, and assessment need to be aligned.

- Lecturers should have high expectations of all the students (and not only some) to achieve the outcomes.
- Lecturers must provide extended learning opportunities to students to give recognition to the general finding that all students do not learn in the same way and at the same pace. (Killen & Hattingh, 2004).

This last statement is particularly important for South African curriculum designers because many students are underprepared on leaving school to enter post-school. In the discussion below, several useful and systematic curriculum design models are explored. In these models, the responsibilities of staff members and stakeholders who have to design or redesign curricula are elucidated.

### **3.5 EMBEDDING GRADUATE ATTRIBUTES IN THE CURRICULUM**

Embedding graduate attributes in curricula is a complex process that poses various challenges to stakeholders at various levels. The review and mapping of curricula to promote the embedding, teaching and assessment of graduate attributes in conjunction with disciplinary knowledge and skills, need to be well planned and carefully executed and should consider various sources of information. The teaching of graduate attributes at module level needs particular attention as it points to the 'how to' after the conceptual mapping has been done.

#### **3.5.1 Challenges experienced concerning embedding graduate attributes in the curriculum**

Interestingly, the challenges experienced with embedding graduate attributes in the curriculum, echo many of the curriculum challenges experienced in South Africa, as well as their relation to and implications for embedding graduate attributes in undergraduate curricula (cf. 3.3.4). The challenges below are discussed in terms of the work of Jones (2009:188) that effectively summarises and categorises the challenges discussed embedding and teaching graduate attributes.

##### **3.5.1.1 *Epistemological***

First, generic attributes are not considered to be part of disciplinary knowledge (Jones 2009:188). This challenge becomes more complex when conceptualising the relationship between graduate attributes and each particular disciplinary body of knowledge. An

example of this would be the interpretation of 'critical thinking' that is often used interchangeably with problem-solving and decision-making. Problem-solving further is treated differently in different disciplines (Green, Hammer *et al.*, 2009:5). Similarly, whoever is responsible for the implementation is required to take into account that for graduate attributes to be truly 'embedded' in curricula, knowledge and literacy need to be seen as intricately linked, and the subject specialists than to a large extent take the responsibility to embed graduate attributes in each programme or module, with the advice and support of learning specialists/developers (Green *et al.*, 2009:6).

### **3.5.1.2 *Intrinsic and pedagogical***

Secondly, there is a lack of understanding regarding the nature of attributes, and a lack of experience in, or confidence in teaching these attributes. In addition, generic attributes are complex and difficult to define (Jones 2009:188). There should be a common understanding and interpretation of graduate attributes for curriculum review, and mapping or embedding processes to be successful.

### **3.5.1.3 *Cultural and structural***

Another challenge relates to large classes. The teaching of generic attributes is not actively supported by departments, as they rather favour top-down implementation, a lack of time and the emphasis being placed on research rather than teaching that present further challenges for academic (teaching) staff (Jones 2009:188). Large class sizes and time pressures on academic staff likewise cause a lack of attention to the teaching of attributes. In summary, it is important to understand the particular challenges that manifest at a particular institution, faculty or academic department before a curriculum review or mapping process can take place effectively. The curriculum review and mapping process for embedding graduate attributes therefore is discussed below.

## **3.5.2 Curriculum review and mapping**

According to Cleary *et al.* (2007:14) and Yorke and Knight (2006:9), curriculum mapping is one means to ensure that graduate attributes are given an appropriate focus, are discipline-related and aligned with course content. During an auditing and review process, the existing curriculum is analysed to identify where particular skills and attribute development are integrated/addressed in the curriculum and gaps are identified where attributes could be addressed better. Curriculum mapping provides unique opportunities to engage with conceptual tools for curriculum development such as constructive alignment, cognitive

demand, coherence, logical sequencing and credit allocations. The mapping process helps to approach the curriculum as a living system and create spaces and places for teaching staff (and other stakeholders) to deliver the curriculum in an inquiry-based manner and therefore making research, curriculum evaluation, and continuous improvement a reality (Madiba 2011:372).

### **3.5.2.1 Using technology for curriculum mapping**

Madiba (2011:371) surmises that using a web-based system for curriculum mapping can offer several features that enable curriculum analytics. The web-based system needs to be informed by institutional curriculum agendas that are well thought through, as well as underscored by internationally recognised curriculum principles. The technology-enabled process allows for the identification of and informed decision making about curriculum gaps and redundancies. An electronic trail of activities is maintained that provides the community with rich data sources from which further reflective practice may emanate.

Technology-enabled processes provide links to full data of the outcomes and the contents taught. Those looking at data (such as groups of academic staff) are collectively enabled to question and evaluate cognitive levels, curriculum load, gaps and redundancies in the curriculum and explore possible courses of action (Madiba 2011:378). It seems that the initial workload in terms of data input may be quite extensive; however, it may provide valuable results in the curriculum design and review process. The creation of infrastructure and the adoption of technology to support curriculum design and mapping should be both technical and conceptual. Those involved should be trained and should understand the outcomes and their use to ensure that the system will serve its purpose and result in reflection upon and improvement of teaching and learning outcomes (Madiba 2011:378-379).

### **3.5.2.2 Curriculum mapping across different levels**

Highly structured approaches should be used in mapping graduate attributes across the curriculum to ensure that these attributes can be observed readily across an entire programme or qualification (Cleary *et al.*, 2007:14; Yorke & Knight 2006:9). Curriculum mapping of graduate attributes should ultimately ensure that students have acquired an informed picture of the skills and knowledge that are expected of their profession and the capacity to demonstrate those skills in the workplace (Cleary *et al.*, 2007:15-16). Madiba (2011:380) argues that programme description documents need to receive more attention at a higher level; this level is the graduate attribute level at institutional, national and

international levels. A good curriculum mapping system additionally may allow for much-needed links to be made among graduate attribute statements, programme descriptions, and standards of professional bodies, and where they are present, in modules.

Chapman (2004:8) explains that academic staff members may have the misconception that all attributes need to be dealt with in the course of their own (one) module. Module coordinators or lecturers must rather first determine independently which learning outcomes, skills, understandings and values apply to their students within the context of their study aims. Therefore, according to Yorke and Knight (2006:9), it is essential that the module is viewed from the larger perspective of the programme and that the place and role of each module be determined in the context of the full picture of the programme.

Curriculum mapping also fosters curriculum design and delivery as it leads to lecturers, in their module and programme teams, being reminded constantly to reflect on all practices and components related to the curriculum (Madiba 2011:387).

### **3.6 CURRICULUM DESIGN AND TECHNOLOGY**

Keeping the current educational climate in mind, the exploration of curriculum design would be incomplete without taking into consideration the embedding and possible value of e-learning technology in the student learning experience. Lecturers/instructors in general and students must learn to use technology effectively to equip students to live, learn and work in the current increasingly complex, information-driven and knowledge-based society (UNESCO 2008:1).

According to Hannum (2008:222), the research suggests that 'how' technology is used to deliver instruction (a systematic design process) matters much more than 'what' technology is used. Reeves and Reeves (2013:113) argue that the fundamentals of and principles for effective teaching and learning remain paramount, regardless of how a subject is delivered. Curriculum design practices and orientations consequently become imperative as these comprise the entire process of the analysis of learning needs and outcomes and objectives, as well as the decisions made concerning methods of delivery to attain those outcomes and objectives. Technology should be used effectively by all staff members involved in the development, design and implementation of curricula.

Hannum (2008:220-223) states that although there are multiple benefits of using technology such as enhanced learning, increased engagement, increased access, greater job relevance, promotion of deep processing and understanding, there also is the danger of

misapplying technology. Misapplication, for example, may take the form of placing content online or on learning management systems and expecting it to replace traditional classroom instruction, or changing the mode of delivery, but not revising the content. Hannum further explains that quality instructors do more than dispense content; they motivate, they modify instruction to meet the needs of the student and they design the entire learning experience. Reeves and Reeves (2013:127) surmise that it is essential to examine the alignment of all components in the blended learning environment, including content, objectives, instructional design, student tasks, teacher roles, technology, and assessment. Posner (2004:95-96) states that technology can change how content is covered by creating new disciplinary areas (e.g. computer sciences), reconfiguring disciplinary course content (e.g. computer-aided mechanical drawing), new ways of processing information (e.g. word processing & spreadsheets), and tools to share information (e.g. the internet & learning management systems).

As curriculum design is heavily dependent on and influenced by context, it is vital to consider the curriculum challenges in the South African context and the implication thereof for developing and embedding a relevant QA system in engineering training for artisans, technicians and certificated engineers at TVET Colleges. Jaffer *et al.* (2007:142) argue that the challenges are situated in identifying and conceptualising ways in which educational technology can contribute meaningfully to student learning experiences, curriculum design, and pedagogical design. The role of educational technology has to be reconsidered within the broader educational scope that is driven by educational needs, rather than being technologically driven.

### **3.7 PERSPECTIVES ON CURRICULUM CHALLENGES IN SOUTH AFRICAN POST SCHOOL**

As already mentioned, it is essential to consider the curriculum challenges that South African post-school is facing to critically consider the implications for embedding relevant QA instruments in undergraduate curriculum design, evaluation or re-design. Botha (2009:159-179) identifies several curriculum issues that South African universities are facing. This is also relevant for the TVET College sector in South Africa for engineering studies for artisan, technician and certificated engineers training. She highlights the fact that curriculum is a multi-dimensional concept and that the context in which a curriculum is considered determines which theoretical understandings are appropriate. Botha (2009:159-179) presents the curriculum issues in a six-cluster framework that is discussed in this section. The work of Breier (2001) and other authors are discussed along with the clusters

in the form of important questions associated with these concerns. The discussion will be followed by possible implications these challenges may hold for the development of QA system aligned with industry requirements for training and evaluation of engineering artisans, technicians and certificated engineers in curricula in TVETs for this study.

The curriculum forms the crux of teaching and learning in post-school institutions. The post-school curriculum is determined by the scope and sequence of intended outcomes, distinguishing between the ends and means of the curriculum, thus guiding instruction and assessment. The curriculum, therefore, must provide valuable information to guide the recognition of lifelong learning and prior learning (Botha 2009:165). With the above-mentioned issues in mind, the following valuable question by Breier (2001) comes to mind: Continuous retraining and reskilling seem to have become increasingly important in terms of employment and other needs. How would curricula address these needs?

Botha (2009:166) explains that with the democratisation of South Africa came to the awareness of the need for increased access to post-school. This is prioritised by the National Plan for Higher Education (RSA MoE 2001) to provide increased access to post-school education and to produce graduates with skills and competencies necessary to meet the resource needs of the country, and promote equity in terms of access and to redress past inequalities through ensuring that the student and staff profiles are representative of the South African society.

Internationalisation is defined as the “process of integrating the international dimension into the teaching-learning, research and service functions” of a higher education institution (Knight 2001:229; Knight 2004:5-6). To many, it means the inclusion of an international, intercultural, and/or global dimension in the curriculum and teaching-learning process (Knight 2004:5-6). An example of internationalisation is the agreements and joint projects involving institutions on the continent beyond South African borders, as well as other countries. As a result of these agreements and many other foreign students applying to study in South Africa, there is an ever-growing component of registered foreign students and academic staff from other countries on our campuses (Altbach *et al.*, 2009:34-35; Botha 2009:170; HESA 2009:8).

Internationalisation is influenced by globalisation and these phenomena will influence the post-school curriculum (e.g. the content, teaching-learning processes, etc.). The curriculum impacts the degree to which students gain a deeper understanding of international issues and develop intercultural skills; therefore, it impacts general graduate attribute development and employability (Knight 2001:235). With the aforementioned information in mind, the

following valuable questions by Breier (2001:2-3) warrant attention: Which kind of curriculum would prepare students for participating in a global economy? How can curricula accommodate the effects of massification and changes in student populations? How can quality in the curriculum be responsive to the needs of the economy, the development of society at large and communities in particular? To what extent should the curriculum be responsive to the needs of the economy, the development of society and communities in particular? How compatible is global citizenship with national identity formation and what is the role of post-school in this regard?

The societal and labour market needs in South Africa call for a shift from strict disciplinary boundaries to working in a more cross-disciplinary manner, from there the challenge of the diffusion of disciplinary boundaries. A need exists for interdisciplinary knowledge, competences, experiences, insights and applications in South Africa because of the demands of the 'real world'. The diffusion of disciplinary boundaries implies a curriculum consisting of subjects that accommodate a changing state of knowledge and subjects that are useful for living in contemporary society (Botha 2009:174; Ensor 2004:342-344). Appropriately qualified graduates who are equipped to address the economic, political and social needs of the country are much sought after and universities and other training institutions (like TVET Colleges for this study), must be responsive to these needs (cf. Chapter 1 & 2).

According to Muller (2008:35), there are also risks related to the diffusion of disciplinary boundaries. These risks may include, amongst others, confusion with the academic undertaking, identity confusion among students and employers, over inclusion/involvement of programmes across the spectrum, lack of intellectual and social cohesion, as well as difficulty in managing such a curriculum from a human resources point of view. With these risks in mind, the following valuable questions asked by Breier (2001:2) are relevant: Should the curriculum promote traditional disciplines, inter-disciplinarily or trans-disciplinarily? What skills and forms of knowledge do employers and social value? How generic and how specific should the development of these skills be?

In summary, Botha (2009:177) proclaims that when institutions are reconsidering/redesigning curricula, it is important to take note that the clusters of challenges may be intertwined and interrelated. A new curriculum structure is necessary to improve graduate output without compromising the quality of the exit standards and outcomes of qualifications and to enable curricula to be enhanced in the interest of better alignment with contemporary international, national and regional conditions (Mouzakitis, 2010). Furthermore, curriculum structure also is necessary to ensure cognisance is taken

of the diversity of educational backgrounds that characterises the South African student intake.

The balance between internationalisation and localisation (with specific reference to Africanisation) of curricula seems to be a daunting task in the endeavours to produce graduates who understand both the international and local dimensions and complexities of the sector in which they will be employed. Students need to be equipped with skills that are not only transferable across cultures and contexts but also need to develop and understand their own identity to respect, accommodate and contribute to a non-African workforce. Because of the need for graduates to work in a more cross-disciplinary manner as explained above, curricula should address the development of graduate attributes that will equip students with knowledge, skills, experiences and insights to cope with the realities of the 'real world' within a particular country.

### 3.8 A SUMMARY OF DEVELOPING THEMES AND PATTERNS

To conclude the section concerning curriculum perspectives, Figure 3.5 depicts the important inter-related and interdependent themes/components that emerged from the curriculum perspectives, design models and processes.

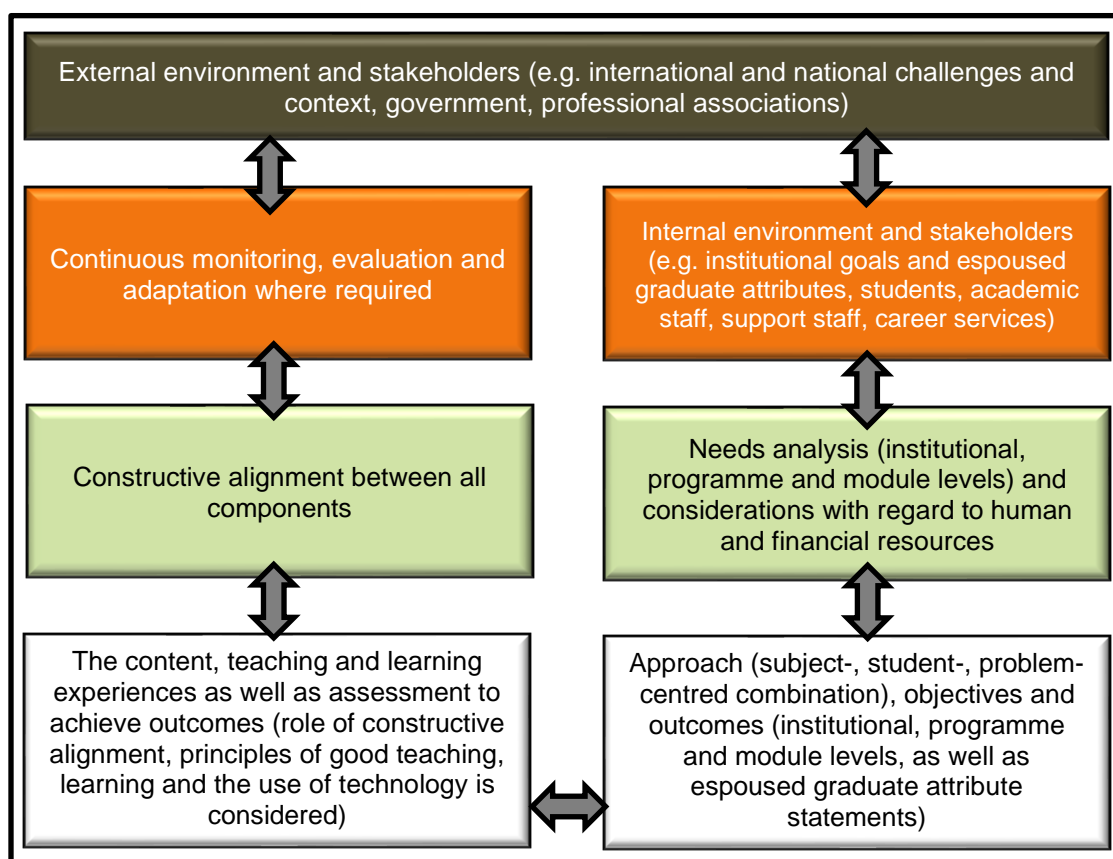


Figure 3.5: Interrelated, systematic and cyclical themes in curriculum design

### 3.9 CONCLUSION

An exploration of influential curriculum perspectives and approaches to curriculum design revealed valuable facets and challenges to be kept in mind during the process of curriculum design, development and review, of which one of the most important is that curriculum design always has to ensure alignment of discipline-specific outcomes, and teaching, learning and assessment strategies.

In this chapter, the quality assurance system in South Africa was discussed (Zaki 2008:486; cf. Figure 3.1 & 3.2) and more specifically, concerning programme/curriculum development, since this is another key to unlocking the research question: What are the challenges experienced by private and public TVET providers in post-school education and training for engineering training programmes in terms of quality assurance? Furthermore, programme development (curriculum development) was investigated concerning best practice internationally. One of the objectives of the study was to determine how effective quality assurance systems are with a view to the presentation of a specific engineering training programme for post-school, adult learners at public TVET providers, in comparison with QA systems used for this purpose by private TVET providers who offer the same programme; and how these QA systems might be enhanced in future. These micro-elements, with specific reference to the curriculum, will also form the foundation of the data analysis and findings that will be presented in Chapter 6 (Findings of the mixed-methods surveys). In the next chapter, Chapter 4, the research design and methodology used in conducting the research presented in this thesis will be discussed.

## CHAPTER 4

### RESEARCH DESIGN AND METHODOLOGY

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#### 4.1 INTRODUCTION

The review of literature discussed in Chapters 2 and 3 has explored certain concepts regarding quality assurance and programme development (curriculum development) with reference to best practice internationally. From a theoretical perspective, several concerns were raised about both public and private providers that emerged from the research. It would appear that not all TVET Colleges meet quality requirements, particularly with regard to the qualifications of facilitators and academic staff. In this chapter, the researcher will subsequently address the research design and methodology employed in this study.

The chapter commences with a description of the type of research conducted, then elaborates on the research design and the research methods utilised. The research methods refer to the sampling, data collection, quality assurance and ethical considerations pertaining to the study. In Chapter 1, it was argued that the perception and experience of the industry that students leaving the TVET College sector to enter the world of work unprepared for their role and function. The research attempted to determine whether this unpreparedness is the result of **poor curriculum development or inadequate quality assurance systems and processes** in TVET Colleges. To address this question, the research is exploratory in nature in that it seeks to provide insight in and an understanding of the problem (Polonsky & Waller 2011:94).

The pragmatic research paradigm allows elements of both constructivist and post-positivistic and analytical interpretation and reporting of data and opens the door for the researcher to apply mixed-methods research (Mertens 2010:11) to investigate the identified research problem. The researcher examined experiences of individuals in three groups at the sample TVET institutions where the research was conducted, namely students enrolled at the institutions, lecturers/instructors at the institutions, and heads and/or QA managers and/or heads of divisions. This was done to gather information and learn from their perspectives and perceptions. A document analysis was conducted in cooperation with persons responsible for QA at the institutions.

#### 4.2 THE PURPOSE OF THE RESEARCH

The purpose of the research was to explore and describe the effectiveness of the QA systems for engineering training programmes for post-school, adult learners at public TVET

providers in comparison with QA systems used for this purpose by private TVET providers, that offer the same programmes, and how these QA systems might be adapted and/or enhanced in future. The study also aimed at establishing how QA systems can be applied appropriately for the world of work to be accommodated in undergraduate curriculum design and delivery in TVET Colleges' training curriculum for engineering artisans, technicians and certificated engineers.

Since this study focuses on QA of post-school education and training through programmes for adult learners, it overlaps with at least five of the eight key themes identified by Tight (2012:8) in the context of research in higher education and training, namely

- Teaching and learning;
- Course design;
- Student experience; and
- Quality assurance system policies.

Tight (2012:179) makes a useful distinction between the concepts of research methodology and methods. Methodology refers to the underlying approaches and world views adopted by researchers, whereas methods essentially are techniques for data collection and analysis.

### 4.3 RESEARCH APPROACH – MIXED-METHODS RESEARCH

**Mixed-methods research** refers to combining qualitative and quantitative data, methods, methodologies, and/or paradigms in a study or set of related studies, thus mixed-methods research is a special case of multi-method research. This approach to professional and academic research emphasizes that one-method research can be improved through the use of multiple data collection and analysis methods, perspectives, viewpoints, and paradigms.

The term 'multi methodology' was used since the 1980s but since the 1990s the term 'mixed-methods research' has become more popular for this research movement in the behavioural, social, business, and health sciences. This pluralistic research approach has been gaining popularity since the 1980s (Onwuegbuzie & Leech, 2005).

Trochim (2006:n.p.) adopts an enhanced approach in stating that “both qualitative and quantitative research can be used to address almost any kind of research question”, and that qualitative data can be interpreted using quantitative methods and vice versa. This

supports a mixed-methods approach. Buchanan and Bryman (2007:487), however, warn that “no central core of traditions, frameworks and concepts, and no unified theoretical or practical proposal” may result in a kind of wooliness and problems with trustworthiness and credibility of the results. With these reservations in mind, a mixed-methods research approach was adopted, integrating qualitative and quantitative techniques for data collection and analysis. Combined qualitative and quantitative methodologies (as used in the research reported here) are regarded best suited for programme evaluations (De Vos 2002:367). This conviction was strengthened further by an updated version of De Vos *et al.*'s book (2011).

According to Creswell (2009), a number of arguments exist for considering mixed-methods research as a separate research approach in the social sciences. Three possibilities for approaching a study to exist, namely quantitative, qualitative and the quantitative-qualitative or mixed-method approach. Authors increasingly recognised the advantages of using quantitative and qualitative data collection in a single study and delineated a number of mixed-method designs.

Four factors help researchers to determine the type of mixed-methods design for their study. For the purpose of this study, the researcher, therefore, took a close look at the various designs and applied the four factors to come to a conclusion about which would be best suited for the study. These factors are:

- The implementation of data collection;
- The priority is given to quantitative or qualitative research;
- The stage in the research process at which integration of quantitative and qualitative research occurs; and
- The potential use of a transformational value or action-oriented perspective in the study.

Several authors (e.g. Patton, 1990; Rossman & Wilson, 1985; Tashakkori & Teddlie, 1998) suggested that a pragmatic approach formed the foundation for these designs. This philosophy, drawn from Deweyan ideas and articulated by Cherryholmes (1992), maintains that researchers should be concerned with applications, with what works, and with solutions to problems. In light of this, the authors have called for the use of both quantitative and qualitative methods to best understand research problems.

Approaches to data analysis also need to be sensitive to the design being implemented in a mixed-methods study. Different analysis approaches have been suggested for integrating

quantitative and qualitative data that explore how the information might be transformed or analysed for outlier cases (Caracelli & Greene, 1993). The researcher relied on standard data analysis approaches (e.g. descriptive and inferential analysis of quantitative data, coding and thematic analysis of qualitative data). Alternatively, the analysis may require some data transformation to integrate and compare dissimilar databases (e.g. quantitative scales are compared with qualitative themes, qualitative themes are converted into scores).

#### **4.4 RESEARCH DESIGN FOR THIS STUDY**

Research design refers to all the decisions made about how to conduct a research project and is an important step in the research process because it provides a 'road map' or plan for how to rigorously conduct a study to best meet certain objectives. Design refers to a procedure for collecting, analysing, and reporting research such as found in the time-honoured designs of quantitative experiments and surveys and in the qualitative approaches of ethnographies, grounded theory studies, and case studies.

The discussion below will commence with the design and methodology of this study and progress to the more specific methods used for data collection and analysis.

Deciding on design parameters is a critical component of any research project. This is the point where "the rubber hits the road", so to speak, and issues of validity and reliability (trustworthiness), transferability, generalisability (credibility), bias, integrity, and a careful understanding of which research methods would best contribute to solving the research problem come under the spotlight. Cooper and Schindler (2004:140) state that the research design is "the blueprint for the collection, measurement and analysis of data" while Zikmund, Babin, Carr and Griffin (2010:66) define it as "a master plan that specifies the methods and procedures for collecting and analysing the needed information". The blueprint's aim is to establish a detailed plan of action, which focuses the research on the problem statement.

Research methodology is defined as the general approach a researcher adopts in carrying out a research project (Leedy & Ormrod 2005:12). Two well-known approaches in research determine which design be adopted, namely the qualitative and quantitative approaches. The quantitative approach is described as highly controlled and formalised, and entails the testing of a theory with a number of variables, measured in numbers and analysed by means of statistical calculations (Cresswell, 2003). The qualitative approach, on the other hand, is an interpretive approach, aimed at determining participants' beliefs, notions, values, and opinions. The qualitative researcher thus is more concerned with understanding than with explaining (Fouché & Delpont 2002:79).

The research design of this study is in accordance with a “QUAL < QUAN” approach (Morse 2003:197), which means that both qualitative and quantitative methods were used, with the qualitative approach being predominant. This provided opportunities for triangulation, leading to enhanced validity, reliability, credibility and trustworthiness of the results.

Triangulation “is a term borrowed from navigation and surveying, where a minimum of three reference points is taken to check an object’s location” (Easterby-Smith, Thorpe & Lowe 2002:146). Triangulation is called a “pragmatic norm” in modern research (McNeill & Chapman 2005:66). In terms of research, triangulation means that different forms of information could be gathered using different measures, time frames and sources. By measuring or collecting information on a phenomenon in more than one way provides the opportunity to lay bare more aspects of the phenomenon. This enables the comparison of information gathered at different locations by different researchers to see if there are any similarities or differences. Such a design normally implies combining different methods which are crucial in investigating complex questions and issues. It is a preferred means of clarifying the relationship of data collected from a specific, selected group to data collected from a wider population in a survey. It also allows for the use of official statistics or other documents such as policies. For these reasons, the mixed-methods design was appropriate for this study.

Easterby-Smith *et al.* (2002:146) identified different forms of triangulation, namely

- Triangulation of theories, involving models and theories from different disciplines to explain situations in another discipline. An example would be looking at models or theories from business to try to explain models or theories in education, such as the stakeholder model (Roome & Wijen 2006:2; Freeman *et al.*, 2010:26,33) or the human capital model (Mankiw 2012:399).
- Data triangulation means data that have been collected at different time frames or from different sources (Easterby-Smith *et al.*, 2002:146), or a finding or a generalisation is verified by several different research methods (Driscoll & Brizee 2010:n.p.). The time frame concept is evident in this study as data were collected in several studies over a period of about 15 years. This was discussed in Chapter 2 and different sources were used in carrying out the empirical part of this research (see the discussion on sampling below).
- Triangulation by investigators occurs when data results on a single situation which derived from various sources are compared (Easterby-Smith *et al.*, 2002:146). It was only partially used in the current research, and in a purely historical sense (for example, the studies conducted by the Council for Higher Education [CHE], Umalusi, Council for

Higher Education Accreditation [CHEA] and Blom, which have been referred to in the literature discussion). The researcher has, however, not worked collaboratively with other researchers.

- Finally, Easterby-Smith *et al.* (2002:146), state that “methodological triangulation uses a combination of different methods, both qualitative and quantitative”. For the methodological triangulation to be effective, it needs to incorporate methods from the quantitative and qualitative approaches. This type of triangulation takes into account characteristics from both research approaches. The discussion below indicates that methodological triangulation was a key feature of the research reported here.

#### 4.5 SELECTION OF PARTICIPANTS AND DATASETS

Traditionally the term ‘sampling’ appears to be associated more with a positivist, quantitative research paradigm than a post-positivist, constructivist or interpretive qualitative paradigm. However, the mixed-methods approach of this study included a quantitative data collection technique as well as qualitative techniques, making sampling an appropriate technique to use for the selection of participants. Coldwell and Herbst (2004:74) define sampling as “the act, process or techniques of selecting a representative part of a population for the purpose of determining parameters or characteristics of the whole population”. Although this study aimed at selecting typical providers and participants for this research, my main aim was not to focus on generalising the findings, but rather to render the findings contextually transferable. Researchers often believe that they can obtain a representative sample by using a sound judgement, which will result in saving time and money (Black 2010:1).

First, the four TVET providers were selected purposively by making use of the following selection criteria (cf. Table 4.1):

- The providers had to be South African institutions;
- The selected providers all had to offer the same engineering training programmes for post-school, adult engineering students in the TVET; and
- At least one functional and one dysfunctional *public* TVET provider, as well as at least one functional and one dysfunctional *private* TVET provider, were selected.

The criteria, ‘functional’ and ‘dysfunctional’, were defined in terms of the success and throughput rates (80% or more was adopted by the researcher) of the relevant students at the TVET providers, as projected in the statistical data that had been obtained and interpreted (DHET, 2019). Another criterion that was used as the success rate of job

placements from TVET College after students had completed their studies. Job placement and pass rates were treated as confidential as demanded by the four TVET Colleges before exposing information to the researcher. In all four TVET institutions, job placement is seen as a high priority after a student completes his/her studies.

The selection of the engineering students, lecturers/ instructors, and programme heads at the four selected providers was done purposively by applying the following criteria:

- Approximately 50 to 100 post-school engineering students at each provider who were 18 years or older (i.e. they had to be post-secondary, adult learners) who at the time were enrolled at the selected providers. In the case of the private providers, it entailed a smaller sample, because of a much smaller target population.
- At least two lecturers/instructors per provider who at the time were teaching in the engineering training programmes.
- At least one programme head and/or QA manager per provider that was involved in the relevant training programmes.
- QA official and/or manager in charge of documentation with regard to the curriculum, study material and QA documentation who was directly involved in the QA processes for the document analysis. This person from each one of the four samples selected TVET institutions were not involved in any of the interviews as mentioned above during research conducted at particular TVET institution.

#### **4.5.1 The target population**

Three population groups were involved, namely student participants, academic managers and lecturing staff, and two data collection techniques were used in the study, namely a questionnaire survey and group interviews. Data also were collected by means of document analysis.

The population of this study has common characteristics in that they all were involved in TVET curricula at different levels. This provided a solid platform from which a sample could be drawn purposively (Mouton 1998:134; Patton 2015:45-63). The population for this study is located in the TVET College sector in South Africa. The focus was on the (a total of four) colleges selected from all TVET Colleges in South Africa out of the 53 Public- and 291 Private TVET Colleges distributed over the nine provinces in SA (TVET Colleges South Africa, 2019). All of them fall under DHET. One curriculum manager or the person responsible for learning program curriculum at each college from the selected TVET Colleges in Gauteng and the Western Cape also formed part of the research population, as

TVET Colleges must follow a national curriculum. These TVET Colleges mentioned, agreed to help with research. Irrespective of a TVET College is private or public, they must comply with the minimum requirements of the DHET (TVET Colleges South Africa, 2019).

#### **4.5.2 Sampling techniques**

A combination of the following sampling techniques was used. It was in some cases situational driven in order to reach the biggest possible population:

##### **4.5.2.1 Purposive sampling**

Purposely selecting relevant staff was the best option to ensure involving participants with the appropriate knowledge of and work experience at pertinent TVET Colleges (Cohen *et al.*, 2007:115). Purposive sampling means that participants were selected because of some defining characteristics that made them the holders of the data needed for the study. The job titles of the research participants selected for the sample were academic managers, such as deputy principals, curriculum planners, college heads, Heads of departments, programme managers, senior lecturers, and lecturers/instructors. The selected sample of respondents possessed a wide range of characteristics based on their TVET College work experience, skills and knowledge, which rendered them suitable to provide relevant information. Post title and level of appointment, as well as the qualifications of the participants also served as selection criteria. The sample was selected purposefully to include a variation of TVET College teaching experience, namely from post-level-1 lecturers to lecturers with more work experience, and academic managers with less experience, as well as those with more background and experience were selected by each TVET College internally and introduced to the researcher. Through these criteria an attempt was made to compose relatively balanced and comparable groups – if all the participants from one institution, for example, were just male or female, relatively young and inexperienced, the groups would be unbalanced and that might have reflected in the data.

##### **4.5.2.2 Opportunity sampling**

Opportunity sampling refers to selecting people from the target population who are available at the time of the investigation and willing to take part. It is based on convenience. An opportunity sample is obtained by asking members of the population of interest if they would participate in the study (Mcleod 2014:n.p.). This was done by the Campus Heads or their Deputy Campus Heads. Those who agreed to take part, came out very clear during the interview where they were some very eager to answer the questions through the session,

with some of them very knowledgeable on TVET College operations. This is a quick and easy way of choosing participants (advantage), but may not provide a representative sample, and might turn out to be biased (disadvantage). Availability and willingness to participate formed an inclusion criterion in the selection of the institutions, as some institutions responded negatively on the very first communication in this regard, and others merely did not respond at all.

#### **4.5.2.3 Volunteer sampling**

The researcher also made use of volunteer sampling, a purposive sampling technique, which is a “type of non-probability sampling that is most effective when one needs to study a certain cultural domain with experts within” (Tongco 2007:147). Volunteer sampling was used to select students for the questionnaire for engineering students at the TVET Colleges. Volunteer sampling is a comprehensive ‘invited volunteer participation’ sampling technique, according to which students in their classes were invited to complete the questionnaire and only those who agreed willingly participated. This was done on the day the research was conducted their distinctive lecturers in the class. Lecturers were notified two weeks in advance before the research took place at the four distinctive TVET providers. The researcher managed to get a program for the day when the research was conducted from all four TVET College respondents before my departure to the particular TVET institution to conduct the research.

#### **4.5.3 Ensuring representativeness**

Responses sometimes may be inaccurate, especially if the respondents misinterpret the questions in self-completing questionnaires, or (even worse) if someone other than the intended recipient completes the survey; therefore, ensuring representativeness requires a substantial sample size (Baruch & Holtom 2008:1151). It was anticipated that the response rate would produce a reasonable sample size for analysis and assumed that the participants would answer honestly. In case of any clarity, the researcher was available to clarify to prevent misunderstandings.

According to Bartlett, Kotrlik and Higgins (2001:46), the researcher conducting a quantitative survey needs to make sure that the sample is sufficiently large and representative of the population because confidence in the results rests largely on the following two factors:

- The size of the sample is linked to notions of certainty, validity and reliability (in

quantitative terms), or trustworthiness (in qualitative terms).

- However, representative sampling usually is not possible to achieve in qualitative research because of the exploratory nature of the research, the potential problems of negotiating access, and the amount of work involved for one person.

In some cases, one has to make use of an opportunity sample (Woods 2006:n.p.) in those areas where access is offered. In such cases, how one does the sampling must be clearly explained and care must be taken to avoid inappropriate generalisations of the findings.

According to Lund Research Ltd. (2010:n.p.), “total population sampling is a type of purposive sampling technique where you choose to examine the entire population (i.e. the total population) that has a particular set of characteristics”. In this study, such sampling was used via the college campus heads and his/her management team where the research was conducted, with the aim of facilitating deeper insight in the phenomenon of interest and mitigating the risk of missing potential insights from members that were not included. It was kept in mind throughout the research, while research was done at each TVET College. The researcher had to rely on the college campus management team to enable him to reach as many as possible student respondents as well as the most suitable candidates for the two interview schedules. Total population sampling is a purposive, non-probability sampling technique, meaning that it is “not possible to make statistical generalisations about the sample being studied” (Lund Research Ltd., 2012:n.p.), although analytical generalisations about the population being studied are possible (Yin 2003:31).

The following possible limitations, however, are noted: There are 53 public TVET Colleges and 291 private TVET Colleges in SA (TVET Colleges South Africa, 2019). For the purposes of this research, two public and two private TVET institutions were selected, of which one public and one private institution were functional, and one public and one private college were dysfunctional.

All the tuition providers in the sampling frame (cf. Table 4.1) had listed email addresses and contact details, and thus were included in the sample. According to Strydom (2011:92), this amounts to “judgement sampling”, since the researcher did not have direct contact with all the sampled providers. The cost of employing research assistants to contact the approximately 53 public and 291 tuition providers in order to administer the questionnaire manually rendered that option impossible. The researcher had to travel to each of the four selected TVET institutions to conduct the research, in order to ensure that the information needed for the research was gathered. During the process of approaching them, some did not cooperate fully in the sense that they did not even answer phone calls or emails. Thus,

the decision was made to only involve those who answered my calls and replied to my emails.

A variety of sampling methods and data selection techniques were used as described in the preceding paragraphs. Table 4.1 provides a succinct explanation of the samples, sampling techniques and sources from which data were obtained.

#### **4.5.4 The sampling frame**

A sampling frame or selection frame (Zikmund *et al.*, 2010:391) refers to a list or any other record of the population and data sets from which all the samples or selection units were drawn. The sampling frames used for this study are shown in Table 4.1 below.

**Table 4.1: Sampling/selection frames and data collection**

Participant Group / Data set group	Target Population / Data set	Sampling / Selection	Source
A review of relevant local and international literature.	Random samples collected from online sources and libraries.	Opportunity sampling Purposeful sampling	Library and online literature review. Skills Portal website – <a href="http://www.skillsportal.co.za">www.skillsportal.co.za</a>
A collection of statistical data relating to success and throughput rates of engineering students.	Two public TVET institutions and two private TVET institutions. In each of the above two categories, one functional and one dysfunctional institution.	Purposive and opportunity sampling was used in selecting the participating institutions. To ensure two private and two public institutions were involved, purposive sampling was applied. Opportunity sampling came into play as only those institutions indicating interest in the project were approached to participate. In each category one functional and one dysfunctional institution.	Statistical data on the results of students enrolled in the relevant engineering training programmes at the TVET institutions were obtained from the system database of the four sampled institutions.
An analysis of relevant legislation, policies, QA systems as well as the relevant programme, teaching and assessment documents.	Five distinctive documents: <ul style="list-style-type: none"> <li>• Legislation</li> <li>• Policies</li> <li>• QA System</li> <li>• Programme teaching documents</li> <li>• Assessment documents</li> </ul>	Five distinctive documents per institution. The documents were selected purposefully based on the information needed.	Documents used at each of the four selected TVET institutions, having a bearing on the engineering programmes.
A quantitative survey questionnaire for engineering study students.	Students at four TVET institutions took part in the survey. The actual number that took part was 253 students in total for the four TVET Institutions.	Engineering departments at participating TVET Colleges. Invited volunteer participation sampling technique was used. Students were invited during class time to complete the questionnaire; those who agreed willingly participated. 253 students participated.	Engineering departments at participating TVET institutions – 253 out of 300 (84%) students in total took part in the completion of the questionnaire.
Qualitative, semi-structured interviews with heads/ programme heads and instructors at TVET institutions.	Two instructors/ lecturers per TVET institution and two heads/programme heads of division/institution. Interviews with the lecturers and the management staff, respectively, were conducted separately.	The sample was selected purposefully to ensure the information required would be obtained and to include a variation of TVET College teaching experience. Four per TVET institution: Two lecturers/instructors and two management staff members.	Instructors/lecturers and programme heads / QC managers were selected, i.e. four participants per TVET institution involved in the engineering training programmes. Lecturers/instructors and managers were interviewed separately.

Thus, three populations groups were involved in the data collection which entailed the following methods: (i) a quantitative, self-constructed survey questionnaire for engineering students at TVET Colleges; (ii) qualitative, semi-structured interviews with programme heads and managers, and (iii) qualitative, semi-structured interviews with lecturers/instructors at TVET institutions. Other data used in the study were data gathered by means of (iv) the literature study, (v) a collection of statistical data relating to success and throughput rates of engineering students, and (vi) an analysis of relevant documentation.

#### **4.6 DATA COLLECTION**

The modus operandi followed with each of the samples needs to be explained, as well as how the researcher went about collecting the statistical data and analysing relevant documentation. The starting point of the data collection process was the “transformation of general educational research and policy concerns into specific research questions for which the data are intended to supply an answer” (Siniscalco & Auriat 2005:5). The secondary research questions (cf. 2.1) that this study addressed were:

- What mechanisms are in place in the South African education and training system to instil a QA mindset or culture in the various stakeholders?
- Why has QA become such a critical focus area in education?
- How do private providers perceive QA in their respective organisations? In the case of public TVET providers, there is a national policy in place applicable to all public TVET providers.
- What are the problems concerning existing QA policies, practices and processes?
- Are there any feasible alternatives to the current models and paradigms of QA in public- and private education and TVET training institutions in South Africa?

In the effort to find answers to these questions, three different research instruments (questionnaire, interview schedule with two different samples and a document analysis survey) was used to aim at different target groups. Statistical data relating to the success and throughput rates of engineering students also were gathered.

##### **4.6.1 The questionnaire survey**

Students from the four TVET institutions selected took part in the questionnaire survey. The purpose of the survey was to collect data. The purpose of this questionnaire was to collect data on student perceptions of their teaching, learning, and assessment, including practical

work (task-based assessment and work-based experience and their perception of their employability after TVET College training).

The researcher wanted to address the following objectives:

- To investigate what the current local and global perspectives, needs and directives are per training to the QA of engineering training programmes for post-school, adult learners in TVET.
- To investigate the implications of existing legislation, policies and systems on/for QA for engineering training programmes for post-school, adult learners in TVET in South Africa.
- To investigate how **public** TVET providers interpret and implement the policies and systems for assuring quality in engineering programmes for post-school, adult learners.
- To investigate how private TVET providers interpret and implement relevant policies and systems for assuring quality in their engineering programmes for post-school adult learners.

An arrangement was made with the institutions to have the questionnaires completed during class times because that was the only way it could ensure a high response rate and not unnecessarily infringe on their time. The researcher was present at all times when the questionnaires were handed out to the students by himself and the lecturer after the lecturer introduced me to the students.

At the various TVET institutions, the student participants were handed the questionnaires to complete in the lecture rooms where they had gathered for lectures. After the lecturer had explained to them why he or she was leaving and for how long and had introduced the researcher to the class he/she left, and the students were greeted and asked whether they were willing to stay and complete the questionnaire. Upfront permission was applied for from each particular TVET College head office. They gave written permission to the campus where the research was conducted. It was explained that completing the questionnaire would be regarded as written consent. They were ensured that the questionnaires were anonymous and that there was no way in which anyone would be able to trace their opinions back to them; everything in the study was dealt with in strict confidentiality, and the researcher was the only person who would be allowed access to the completed questionnaires. Thereafter, the purpose of the study and what advantage it might hold for engineering training, as well as what was expected of them, were explained. They were thanked for their participation and willingness and pointed out that they were making an important contribution to the engineering profession. After having asked if they had any

questions about the process of the study, the questionnaires were handed out, and the indication was given that they could start to complete them immediately and that they could take as much time as they needed. The researcher was present to assist in the case of clarities and to ensure that there were no interferences or irregularities.

The actual number that took part was 253 students in total for the four TVET institutions. At all the institutions the questionnaires were completed in less than an hour and handed back to me. Once the questionnaires were completed and handed back, the lecturer or instructor commenced with the lecture.

The questionnaires for the students (cf. Appendix A) contained questions requiring a ranking of opinion (a 5-point Likert scale) with options Strongly Agree, Agree, Not Sure, Disagree and Strongly Disagree, typical of a quantitative survey, as well as space for the respondents' reasons or own opinions to allow for qualitative analysis. A questionnaire is said to be standardised when "each respondent is to be exposed to the same questions and the same system of coding responses" (Siniscalco & Auriat 2005:3; Bhat, 2019).

The questions followed the terms of Siniscalco and Auriat's (2005:22) classification, namely closed and open-ended questions, but no contingency questions were used in any of the research instruments. Closed questions may use a frequency scale, and importance scale, or an agreement scale (Siniscalco & Auriat 2005:23); in my questionnaires, all these scales were applied. A Likert scale was used to measure different views/opinions on the questions (frequency and importance came into play here). Closed questions sometimes were phrased as statements, for example, "Quality assurance is a critical business imperative", and responses noted had a bearing on the agreement or not.

Open questions have the potential to elicit responses unanticipated by the researcher (Gray 2004:194; Gray 2017:190-214). Questions and statements in my questionnaire, for example: "What suggestions do you have for improvements in the QA system?" or "What are the key problems you had to deal with concerning accrediting providers?" were completely open, and respondents could respond in their own words providing their own opinions.

The open elements of the questionnaire allowed for qualitative analysis, with the exception of the closed questions which were analysed quantitatively. The final question on all the questionnaires was a completely open question asking for the participants' suggestions for possible alternatives to existing QA systems. This approach facilitated both quantitative and qualitative analysis.

#### 4.6.2 Interviews with academic and management staff

Qualitative research often utilises groups for data collection. A group involves conducting an interview with a group of people, and with a defined time constraint (DiCicco-Bloom & Crabtree 2006:315). Semi-structured interviews with two samples (lecturers/instructors and college heads/heads of divisions) were used as a data-gathering method. These interviews were conducted with senior management staff and academic (lecturing) staff. Interview schedules compiled by the researcher were forwarded to all participants before the time to guide them in preparing for the interviews and to ensure full cooperation and meaningful responses.

The researcher considered using an on-line group discussion as that would minimise travelling time and costs, and also would allow for obtaining responses in an asynchronous manner. According to De Wever, Schellens, Valcke, and Van Keer (2006:2), an asynchronous arrangement is a common technique in educational research. However, the response rate for asynchronous group interviews usually is not as good as when the researcher conducts face-to-face interviews with the group (De Wever *et al.*, 2006).

The interview schedule used for the interview with QA managers, heads and instructors/lecturers was the same for the four TVET institutions (see Annexure B). The participants did not have to complete the questionnaire but were interviewed by the researcher, and he took notes. It is recommended that interviews take place in a venue where the participants would feel comfortable (Boyce & Neale 2006:3). In this study, the groups gathered in the boardroom or an office at the home institutions of the participants, which contributed to a relaxed and natural environment. Each interview lasted more or less one to one and a half-hour. The interviews were audio-taped (with permission of the participants) and transcribed later (IB Transcription Services 2008:n.p.). These in-depth interviews allowed for a deep probing of the interviewees' experiences as key informants to accreditation and quality assurance of public and private providers (DiCicco-Bloom & Crabtree 2006:315).

As explained, the same interview schedule was used for both groups. Although the essential questions were contained in the interview schedule, they were not set in a specific order as in a structured interview, and they provided for deeper exploration of specific issues as the need arose (Merriam 2009:90). In order to explore an idea in greater depth, a question in the interview schedule may prompt further *ad hoc* questions as the interview proceeds (DiCicco-Bloom & Crabtree 2006:315). A semi-structured interview is not as loose as an unstructured interview and tends to avoid discussion of unimportant and irrelevant issues.

Using an interview guide provided a means for triangulation of the results (Merriam 2009:114).

Two focus groups were interviewed per TVET institution. One interview with lecturers/instructors and the other one with the management staff at each of the selected colleges. Two respondents were interviewed during two interviews at each institution's engineering campus at the four selected TVET institutions, thus a total of eight sets of data was collected.

Some cautions concerning semi-structured interviews warrant mention: Interviewees may present a biased viewpoint; the time-intensive nature of interviews; lack of generalisability; and the skill of the interviewer (Boyce & Neale 2006:3). The impact of these problems can be minimised by drafting an interview protocol and a good question schedule (cf. Appendices A, B & C) ahead of time, scheduling the interviews for a defined duration, and attaching to each questionnaire the informed consent form, a document checklist and an interview schedule. The generalisation problem is minimised by the results of the surveys. The researcher's experience in the field of accreditation of private providers and as national moderator for a private institution enabled him to keep the interviewees focused on the main issues.

#### **4.6.3 Data collection for document analysis**

Data also were collected for the analysis of relevant legislation, policies, and QA systems, as well as the relevant programme, and teaching and assessment documents. The persons responsible for the quality assurance system at each participating TVET institution agreed to answer the questions. The researcher used a checklist (cf. Appendix C) and put the questions to the participants during an interview with a duration of approximately one hour to one and a half hours. The checklist was compiled based on the analysis of the relevant aspects of training engineering courses and comprised questions on the following (cf. Appendix C):

- Curriculum and supporting documentation consisting of 18 relevant questions, followed by questions which addressed the following aspects:
  - Theoretical assessments/tasks with eight relevant questions; and
  - Practical assessments/tasks with eight relevant questions;

This was done individually with the relevant member of staff who was either involved with

QA at the college or responsible for the QA at the campus or the entire college. Participants were not involved with any of the other interviews at the college when this research was conducted.

The questions on this document analysis were all generated from the literature review and according to the principles of the above-mentioned topics that were covered in the document analysis.

This document analysis was an integral part of this research. It tested the relevant aspects which covered all the ingredients of quality teaching as per the above-mentioned aspects around curriculum and supporting documentation e.g. teaching aids like presentations, textbooks models etc. Theoretical assessments with tasks/assignments as well as practical assessments were also covered.

The purpose of these interviews was to gain an understanding of the awareness and knowledge of the participants of the documents, and the views and opinions of the participants on the information contained in the documents, as well as to determine the interviewees' awareness and comprehension of the expectations regarding quality assurance *per se* and engineering education and training specifically. The researcher also wanted to establish the inherent quality of the documents involved and the degree to which these documents fostered or inhibited quality education, training and assessment. Examples of data collected from these sources included information on the curriculum content, objectives and outcomes, professional and industry needs, teaching methods, programme accreditation, theoretical and practical assessments, task-performance assessment, and more (cf. Appendix C).

These interviews had no pre-set duration and continued until no more new ideas or opinions were put forward (i.e. data saturation was reached). The researcher conducted the interviews using an interview guide. Again, the items were a mix of open-ended and closed questions to allow for qualitative and quantitative data to be collected.

The samples described above (cf. 4.6.1-4.6.3) comprised samples of those people most involved with and affected by QA in private and public TVET providers. The questionnaires, interview schedules, document analysis and any other relevant material requested were made available to the participants before the interviews were conducted.

#### **4.6.4 Collection of statistical data**

Statistical data related to success and throughput rates of engineering students at the four institutions also were collected. Data were downloaded from the SAP (System Analysis Process) database (Eskom Generation TAM results from Fit for Duty Stats, 2017). Data also were collected during the interviews with representatives of the participating institutions (cf. 4.6.2), albeit these statistical data were only given orally during the interviews as no access could be granted to the institutions' systems as the information kept there were regarded confidential to ensure students' privacy.

The purpose of the statistical data collection was to be able to establish an understanding of the success rates of the various TVET institutions and to look for indicators of congruence between the findings of the qualitative data and the statistics about success rates. The following types of data were looked at:

- Enrolments;
- Pass rates (1<sup>st</sup> year, 2<sup>nd</sup> year);
- % failures per study year; and
- % students completing the programme in the prescribed time.

The researcher managed to find National results which did not show at the good picture at all.

Only statistics on engineering students' results as found on the SAP database were collected for use and confirmed during the interviews. The same types of data were collected from the four sampled institutions. Examples of data collected are included. You will find this info is for the pass rate of initial enrolments for Public- and Private TVET Colleges in SA (Statistics on TVET, CET & Private colleges examinations in South Africa 2015:2-19; DHET, 2018).

#### **4.6.5 Recapitulation**

The researcher was responsible for collecting the data, which brought him in close contact with the student, staff and management participants in the study. This added to the trustworthiness of the qualitative data as the researcher also could observe body language and reactions that accompanied responses which put responses in context. This is an important aspect of dealing with response bias (Furnham, 1986), as some of the closed

questions asked about attitudes or opinions.

Most of the questions did not present any difficulties, but I made some adaptations to the questionnaire to allow for easier statistical analysis. The trial run asked participants to suggest improvements or make comments at the end of the questionnaire, and these were incorporated into the final questionnaire.

Research questions do not interview questions, and, according to (Hall 2019:1), research questions provide guidance on the kinds of issues that should be addressed and the types of questions that should be used. The mixed-methods approach used in this questionnaire survey and interview schedules contained both closed (quantitative) and open (qualitative) questions and thus support the research paradigm underpinning the research.

The instruments used to conduct the survey are provided in Appendices A-C, which contains the questionnaire to students, the interview schedule used for heads, QA managers and lecturers/instructors at TVET institutions, and the QA checklist for study material, and all relevant QA documents at TVET institutions.

Chapter 6 includes comments on problems experienced with the questions.

#### **4.7 VALIDITY AND RELIABILITY**

It is important for a researcher to address validity from the outset to ensure that time is not wasted by discovering *posteriori* that the findings are not valid. Every step of the process requires validity assessment. Leedy and Ormrod (2005:97) state that this contributes to the “accuracy, meaningfulness, and credibility of the research project as a whole”. The researcher should thus ensure that all aspects of the research are focused on the research problem, and specifically and accurately describe what is happening. Accurately sourced data best reflect the reality of the situation.

Validity (credibility in qualitative studies) describes the degree to which the research findings are true. Walliman (2006:34) lists these types of validity:

- Measurement validity – the degree to which measures (for example, questions in a questionnaire) successfully indicate concepts.
- Internal validity – the extent to which “causal statements are supported by the study”. Threats to internal validity in quantitative research may be theoretical, interpretive, or

descriptive in nature. In this study, internal validity was maximised by reducing sampling error and researcher bias (Salkind 2010:1172) through triangulation of results and reflexivity (Johnson & Christensen 2010:265). Researcher bias has already been identified in the opening sections of this chapter, and the researcher was ever mindful both of personal biases as well as the need for internal validity.

The problem is that the term “validity” implies a purely positivist, quantitative paradigm. The same applies to “reliability”. In qualitative research, this concept has been defined as quality, rigour and trustworthiness (Golafshani 2003:602), better aligned to an interpretive, constructivist approach. Validity is linked closely to reliability and dependability: one cannot exist without the other (Golafshani 2003:602). Reliability is defined as “a characteristic of measurement concerned with ... accuracy, precision, and consistency” (Cooper & Schindler 2004:710). Data which are accurate and precise ensue in the belief that the information is authentic. In respect of these findings, the key aspect centres on whether the research findings can be repeated and will yield the same results when applied at a different time and place (Cooper & Schindler 2004:292; Walliman 2006:34). In qualitative terms, this is called “confirmability” (Morse *et al.*, 2002:14), and is an indicator of internal reliability. However, in qualitative research, we rather prefer to “reliability” as “dependability”.

The integrity of the researcher may also jeopardise the validity of the findings if the researcher is “too close” to the problem. Coldwell and Herbst (2004:78) note that the “personal prejudices of either the designer of the study or the data collector may tend to induce bias”. Bias introduces subjective elements into the research process, which invariably have a negative impact on the authenticity of the results. A mixed methodology reinforces triangulation, which in turn assists with minimising personal bias.

Not only must the researcher show integrity, but data that are gathered must also have integrity. According to Danforth (2008:n.p.), data integrity “gives the users the assurance that information they see is consistent, correct, and accessible and that it builds on the trustworthiness of the information to the user”. Thus, when accuracy, consistency/ reliability and validity are all present, the data could be said to have integrity. For the researcher, this is an ethical issue. According to (Kimmel 1988:34), “an unethical judgement can undermine the rights of research participants through the methods used, or society at large through the implications of research findings”. In social research, this relates more to “intellectual and moral soundness” (Kimmel 1988:34), rather than to normative scientific integrity. The researcher, therefore, had the responsibility to ensure that the research findings and conclusions relied on data of the highest possible integrity. In quantitative research it is

related to “objectivity”; in qualitative research, we normally refer to “conformability”.

#### 4.8 VERIFICATION STRATEGIES

Evaluating the quality of research is essential if findings are to be utilised in practice and incorporated into practice (Smith & Noble 2014:17,2,2-3). Concepts such as reliability, validity and generalisability typically are associated with quantitative research and alternative terminology is used in relation to their application to qualitative research. In addition, some of the strategies adopted by qualitative researchers to enhance the credibility of their research are outlined.

Another very important question one should ask is: *Are the terms reliability and validity relevant to ensuring credibility in qualitative research?*

Assessing the reliability of study findings requires researchers and health professionals to make judgements about the ‘soundness’ of the research in relation to the application and appropriateness of the methods used and the integrity of the final conclusions. Qualitative research is frequently criticised for lacking scientific rigour with the poor justification of the methods applied, lack of transparency in the analytical procedures and the findings being merely a collection of personal opinions and subject to researcher bias (Smith & Noble 2014:2,3). For the novice researcher, demonstrating rigour when undertaking qualitative research is challenging because there is no accepted consensus about the standards by which such research should be judged.

Although the tests and measures used to establish the validity and reliability of quantitative research cannot be applied to qualitative research, there are ongoing debates about whether terms such as validity, reliability and generalisability are appropriate to evaluate qualitative research (Smith & Noble 2014:2,3 & 4). In the broadest context, these terms are applicable, with validity referring to the integrity and application of the methods used and the precision with which the findings accurately reflect the data, whilst reliability describes consistency within the employed analytical procedures (Smith & Noble 2014:4). However, if qualitative methods are inherently different from quantitative methods in terms of philosophical positions and purpose, then alternative frameworks for establishing rigour are appropriate (Smith & Noble 2014:3).

The following verification strategies (based on Morse *et al.*, 2002:18) were used to ensure the validity of the data and the interpretation thereof. Updated literature (Smith & Noble

2014:17,2-3) was used to confirm Morse *et al.*'s views.

#### **4.8.1 Ensuring methodological coherence**

Throughout the preceding discussion, a mixed-methods approach has been emphasised. Semi-structured interviews containing open-ended questions and participant questionnaires completed by students provided data for qualitative analysis.

#### **4.8.2 Sampling sufficiency**

The sampling approach was described in detail in a previous section (cf. 4.5). The purposive sampling method provided a sample that was big enough to negate any questions about representativeness. Four different target populations provided data which allowed for triangulation of the findings. Four TVET institutions - two private and two public TVET Colleges were selected. In each TVET institution, target population groups were selected. The one group comprised engineering students at the college. The other groups were college head and/or head of the division, lecturers/instructors and QA manager responsible for quality assurance at the institution. For each of the participating colleges, similar samples were selected.

#### **4.8.3 The relationship between sampling, data collection and analysis**

As discussed by Marshall and Rossman (1999:26), the process of gathering and analysing data is iterative. Qualitative research, in particular, tends to be iterative (Becker 2009:547) in that one revisits concepts, theories and paradigms to understand more fully what one is observing. According to Becker (2009:545), this iterative process means that qualitative researchers “start with ideas, orienting perspectives, or even specific hypotheses, but once they begin, they investigate new leads; apply useful theoretical ideas to the (sometimes unexpected) evidence they gather; and, in other ways, conduct a systematic and rigorous scientific investigation”.

Ensuring that every possible nuance of the information supplied had been analysed meant examining and revisiting the quantitative results, the qualitative answers, and the group and other interview transcripts. Information that appeared to contradict the main threads of the analysis was re-examined and is highlighted in the discussion of the findings.

#### 4.8.4 Theory development

A theory is an organised body of interrelated constructs and generalisations that systematically explains and predicts some observed phenomena. The development of theory arises out of an examination of the minutiae of the data to create a conceptual and theoretical foundation for understanding the target phenomenon (Lunenburg, 2011). This research report presents a newly developed framework to provide a platform for further research into the quality assurance of post-school private and public TVET providers for engineering training at TVET Colleges.

Morse *et al.* (2002:19) maintain that the above (cf. 4.8) verification strategies, “contribute to and build reliability and validity, thus ensuring rigour” of the research.

#### 4.8.5 Triangulation

In the social sciences, triangulation is often used when two (or more) methods were used in a study to compare the findings obtained by means of the multiple data collection methods. "The concept of triangulation is borrowed from navigational and land surveying techniques that determine a single point in space with the convergence of measurements taken from two other distinct points" (Patton, 1999). The idea is that one can be more confident with a result if different methods led to the same result.

Triangulation involves using multiple data sources in an investigation to produce understanding. In this study, it was applied to establish the extent of the consistency of findings generated by different data collection methods.

Having qualitative and quantitative data in a study elucidates complementary aspects of the phenomenon, and the points where the data diverge usually are of great interest to the qualitative researcher and provide other insights (Patton, 1999).

Merriam (2009:108) suggests that the interviewer should be “distanced” from the interview group in order to avoid subjectivity and influencing group members to think in a particular way. The researcher avoided commenting, in order not to impose ideas on the discussion. The strategy of triangularisation of different data sources of information to establish themes, as well as member checking to determine the accuracy of findings was applied in this study. This study aligns itself to Duffy (1993:143), who describes methodological triangularisation as the use of two or more methods of data collection procedures within a single study where findings are categorised into themes which lead to verification of data, recommendations

and final conclusions. Triangularisation of data in this study from the questionnaire to students and the semi-structured focus group interviews performed where literature findings were considered to assess the key differences and similarities. This is to validate the findings from empirical data.

Triangularisation was further used to limit bias in varying ways in the use of quantitative and qualitative data to improve data quality. Furthermore, in addition, triangularisation was used to underscore the validity of the findings of this study. Triangularisation was achieved by comparing data with the findings from the quantitative and qualitative measures in order to determine whether similar or different data patterns emerged (cf. 5.3.1-5.3.3).

#### **4.9 GENERALISABILITY OR TRANSFERABILITY**

In quantitative terms, generalisability means the extent to which the research findings and the conclusions of the research apply to the real world. (As indicated in the first bullet below, the findings are generalised to the population from which a sample was drawn.) "Transferability" is an equivalent term used in qualitative research. However, it is not always the case that good research will reflect the real world, since "we can only measure a small portion of the population at a time" (Experiment-Resources.com 2012:n.p.).

Yin (2003:31) describes two types of generalisation, namely "analytic generalisation" and "statistical generalisation", respectively.

- Analytic generalisation is not "generalisation to some defined population that has been sampled but rather relates to a theory of the phenomenon being studied, a theory that may have much wider applicability than the particular case studied. In this, it resembles experiments in the physical sciences, which make no claim to statistical representativeness, but instead assume that their results contribute to a general theory of the phenomenon".
- A statistical generalisation is a statement which is usually, but not always, true (this kind of statement could lead the researcher to potential fallacious, automatic generalising of a finding to a universal population (Yin 2014:20).

Generalisation to situations other than those identical to the experimental situation helps to reduce scepticism. However, it is highly unlikely that every single element in an experiment could be repeated exactly, making statistical provision unfeasible. Generalisation usually derives only from logical considerations (Neufeld 1970:445). In qualitative research, logical

considerations contribute to generalisable or transferable results (the latter term often being preferred by qualitative researchers) via extrapolation to similar situations (Golafshani 2003:600).

The challenge in qualitative research is that there usually are only a small number of participants. This restricts the ability of researchers to understand the diversity and heterogeneity within the population studied and can lead to “simplistic or partial accounts that exaggerate the uniformity of the phenomenon or impose a single model that only fits a part of the population” (Maxwell 2007:n.p.). Addressing this problem requires using a relatively large, mostly homogeneous sample with some variations. For example, the homogeneity of the tuition providers arose from the fact that they all were accredited and had to comply with standard accreditation and quality assurance policies and procedures. The variations, in this case, include that the tuition providers (participating institutions):

- ranged from survivalist small, world-competitive small-scale, to large (in terms of SAQA’s classification [2004:12]);
- operated as private TVET provider or public TVET provider – two samples for both;
- offered engineering training programmes for artisan and technician training (for whole qualifications, unit standards training, skills programmes, or short courses); and
- operated at TVET /FET and HET levels, some across both; some at one or the other.

The results, therefore, are limited to internal generalisability (contextual transferability), which is acceptable because external generalisability is not crucial in qualitative studies (Maxwell 2005:115). However, in the current instance, the results also should have face generalisability, meaning that there is “no obvious reason not to believe that the results apply more generally” (Maxwell 2005:115).

#### **4.10 ANALYSIS OF THE DATA**

The researcher is a novice researcher with some expertise in the qualitative analysis but little expertise or experience in quantitative analysis or knowledge of statistics.

Qualitative data refer to non-numerical information such as interview transcripts, notes, video and audio recordings, images and text documents (Dudovskiy 2018:n.p.). For the analysis of data gathered from the group discussions (interviews) the transcriptions of the audio-recorded interviews and the notes taken during the interviews were used. Qualitative data analysis is a process aimed at ordering and structuring the data collected, and making meaning of a mass of information.

Quantitative data analysis makes use of descriptive statistics, which may include the calculation of frequencies of variables and differences between variables. A quantitative approach is usually associated with finding evidence to either support or reject hypotheses that have been formulated at the earlier stages of the research process (Dudovskiy 2018:n.p.).

This study generated various kinds of data in four phases. Phase one (published data and literature) comprised a review of documents such as policies, theses, government publications, books, journals and reports related to TVET curricula and leadership. This provided insight, interpretation and application of the views of various authors on quality assurance and curriculum change, which assisted with the formulation of question items in the empirical part of the study.

Phase two involved a questionnaire survey among students enrolled at the four selected TVET institutions where the research was conducted (cf. Table 4.1). The number of respondents that took part was 253.

Phase three involved a total of 16 respondents who participated in semi-structured group interviews. Participants were selected purposefully from four participating public and private TVET institutions registered under the DHET and located in the Western Cape and Gauteng. If a Private TVET institution is registered, it must be registered as a Private TVET institution with Department Higher Education and Training (DHET, 2018). Group interviews were conducted with eight TVET interest groups. Two interest groups per TVET institution of the four TVET institutions that took part in the research.

Finally, in phase four of the study, the findings of the previous three phases were insightfully integrated into a proposed framework for quality assurance in TVET Colleges to lead curriculum change in the TVET College sector with a view to enhancing the capacity for curriculum change to be relevant with regard to industry needs. A complete document analysis with regard to the following documents was conducted at each one of the four participating TVET institutions where the research was conducted to close the loop in this research project:

- Legislation;
- Policies;
- QA System;
- Programme teaching documents; and
- Assessment documents.

The process ended with the legitimation step, which involved assessing the reliability and trustworthiness of both the qualitative and quantitative data and subsequent interpretations.

#### **4.10.1 Qualitative analysis**

Tere (2006: n.p.) states that qualitative analysis can be regarded as a continuum, with highly qualitative, reflective types of analysis at one end, and on the other end, those which treat the qualitative data in a quantitative way, by counting and coding data. This can consist of indexing, coding, sorting, retrieving or otherwise manipulating data (“data reduction, data display and conclusion drawing and verification” [Miles & Huberman 1994:10]). In other words, the focus is on the procedures of analysis and the interpretation of the data, or, as Coffey and Atkinson (1996:7,10) put it, “an imaginative, speculative, artful, flexible and reflexive analysis”.

There are many methods described in the literature but in this research, the following three methods were applied:

##### **4.10.1.1 Thematic analysis**

“Thematic analysis” refers to data analysed by theme (Tere 2006: n.p.). This type of analysis is inductive, allowing the themes to emerge from the collected data without any preconceived ideas of the researcher or interfering in the process. In this type of analysis, data collection and analysis usually take place simultaneously. Even background reading and the literature review can form part of the analysis process, especially if it can help to clarify an emerging theme. Thematic analysis involves coding which is discussed in detail below. This supported the fourth criterion for data integrity, namely the development of theory, as discussed earlier (Morse *et al.*, 2002:18). The researcher did not develop a theory.

##### **4.10.1.2 Comparative analysis**

Closely connected to thematic analysis is comparative analysis (Tere 2006:n.p.; Gibbs 2010:n.p.) where data from different settings, groups or time periods are analysed to identify similarities and differences. Tables or matrices present the comparisons. The data collected from different sources were compared and contrasted, and the process continued until the researcher was satisfied that no new issues could be found. For example, the experiences of the principals/accreditation and ETQA managers of public and private TVET tuition providers with those collected from the student questionnaires in this research was

compared. The Experiences of the current engineering students with those of the lecturers/instructors and heads of division at TVET Colleges were also compared.

Comparative and thematic analyses were done simultaneously, with the researcher using transcripts, notes and the literature review as points of reference.

#### **4.10.1.3 Coding**

Patton (2002:465) states that coding provides a framework for organising collected data, and provides a platform for the interpretation to follow. It is an exploratory process commencing with open coding while developing initial categories by considering the data in minute detail. Open coding is achieved by breaking up data into meaningful parts and describing these in a single word or short phrase. The main aim of coding is to break down and understand the data, and to develop categories which will be ordered as the analysis proceeds.

Looking for themes involves coding. This means the identification of passages of text or other information and applying labels to them to indicate that they are examples of some thematic idea or pattern (Babbie 2010:400; Muijs, 2010). A key feature of the current research was coding that, as Babbie (2010:406; Muijs, 2010) puts it, “readily applies to the coding of open-ended questionnaire responses”.

The coding took several forms. The categories used were both very specific (e.g. use of a given word) or general (e.g. theme of the communication). Coding categories need to reflect the content of the communication accurately and precisely. The coding was undertaken in this research related to the conceptual framework discussed in Chapters 2 and 3. This was selective coding (Gray 2009:508), meaning that the researcher did systematic coding with respect to a core concept. While this was not intentional during the literature study, it seems to have turned out as coding by default, amounting to “*a priori* coding” (Mills, Eurepos & Wiebe 2010:227) by establishing categories based upon some theory prior to the analysis. Chapters 2, 3 and this Chapter (4) showed that the conceptual framework underpinning this research consists of the macro-, micro- and meso-elements of quality assurance in education (cf. Figure 2.1).

Jansen (2010:n.p.) states that “the core task in coding is to determine the relationship between the data fragment and the knowledge aims of the study” and requires “theoretical sensibility and creativity”. It is a “dynamic, intuitive and creative process of inductive reasoning, thinking and theorising” (Basit 2003:143). In other words, it is not merely a

mechanical exercise but an active and purposeful search for meaning.

Leech and Onwuegbuzie (2007:563) identify the following qualitative data analysis tools, among others: method of constant comparison, keywords-in-context, word count, and classical content analysis. These were the most appropriate tools for the purposes of this research.

Constant comparison (Leech & Onwuegbuzie 2007:565) was used in the study, and comprised of:

- a deductive approach where codes were identified *a priori* and then looked for in the data;
- an inductive approach where codes emerged from the data (*a posteriori*).

This method supported the investigation of the “overarching question” (Leech & Onwuegbuzie 2007:576), namely:

*How effective are the quality assurance (QA) systems for the presentation of engineering training programmes for post-school, adult learners at public TVET providers, in comparison with QA systems used for this purpose by private TVET providers who offer the same programmes; and how might these QA systems be adapted and/or enhanced in future?*

The constant comparison approach uses the keywords-in-context (KWIC) analysis, first discussed by Fielding and Lee (1998 cited in Leech & Onwuegbuzie 2007:566), “that reveals how respondents use words in context by comparing words that appear before and after keywords”. For example, the word “frustration” might appear in a transcript or answer to an open-ended question, but if it appears together with “regulatory authorities” or “lack of in-house expertise” the keyword, “frustration” would imply different things. Keywords were chosen through previous research or theory (i.e., *a priori*), and determined by the frequency of use throughout the data set (i.e., *a posteriori*).

A third mechanism is “word count”, which is “based on the belief that all people have distinctive vocabulary and word usage patterns” (Leech & Onwuegbuzie 2007:567) that would highlight a recurring theme. A caution here is that decontextualisation may be a problem that could lead to a misinterpretation of the results. This technique is common in analysing transcripts of group interviews, thus it is appropriate for this thesis. However, the researcher elected to code cognitive and semantic chunks as opposed to coding or counting words, in order to see the context in which the word was used (Gustafsson 2006:78,80). This was done in an attempt to gain a deeper understanding of what had been studied and

to continually refine interpretations. This process was adapted from Neuendorf (2009:67-83). All the narrative data collected were coded. Essentially this consisted of coding the answers to the open-ended questions in the questionnaires, the group interview transcripts and the semi-structured interview transcripts. Table 4.2 below summarises the *a priori* coding in a framework.

**Table 4.2: A priori coding framework**

Major Coding Categories for Social Research	Major themes	Associated concepts
Act / activities	Accreditation	Requirements, ETQA, need
Meanings/definitions	Quality assurance	Inspection, process control, auditing, standards and ISO 9000
Acts, activities, events	Registration	Requirements, department, need
Processes/methods	Frustrations	Policies, people, application of standards
Perspectives	Problems	Attitudes, perceptions, misunderstanding, resources, ethics
Perspective	Positive aspects	Policies, people
Participation/strategies	Alternatives	Proposals, suggestions
Settings/context	Types of providers	TVET, HET, ABET, mixed, SMME, NGO, for-profit, not-for-profit, workplace
Settings/context	Programmes	Full qualifications, unit standards, part qualifications, short courses
Settings/context	Funding	Students fees, learnerships, grants, bursaries
Relationships/Structures	Stakeholders	Consultation, workshops

*Adapted from: Lofland, 1971:14-15; Lofland, et al. 2006:121; Borgdan & Biken, 2007:174-176*

To uncover the essential features of the issues under investigation and to outline the transferable features among them, the returned questionnaires, group interview transcripts and interview transcripts were coded by creating a series of mind-maps to identify emerging themes. This then allowed for systematic organisation and coding of the data to facilitate the extraction of significant statements. Analysis of the literature on QA in post-school engineering education and training in TVETs as detailed in Chapters 2, 3 and 4 provided the coding framework.

Table 4.1 lists excerpts from texts assigned to one or several activities. Activities not correlated with any codes presented in the table were coded as “other” and thus kept in the coding framework. This allowed for the possible development of previously unidentified additional themes. This speaks to the iterative nature of exploratory research (Marshall & Rossman 1999:26). The coding procedure is conceptualised in Figure 4.1.

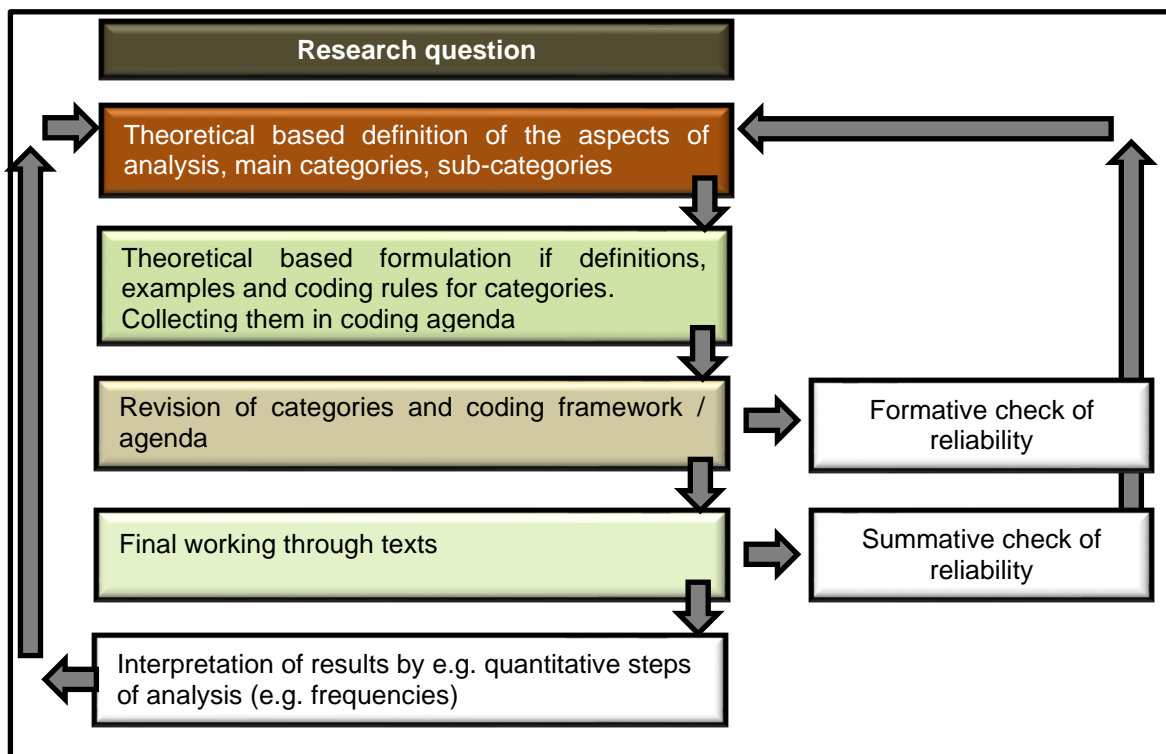


Figure 4.1: Coding procedure (Source: Mayring 2000:2)

#### 4.10.2 Quantitative analysis

Quantitative data analysis makes use of descriptive statistics including measures of central tendency (averages – mean, median and mode) and measures of variability about the average (range and standard deviation) (Cohen *et al.*, 2007:507). Displaying these by means of charts and graphs gives the reader a ‘picture’ of the data that have been collected and used in the research project (Mendenhall, Beaver & Beaver 2009:4). In addition, inferential statistics draw conclusions about a whole population from a representative sample and make predictions about the characteristics of that population (Mendenhall *et al.*, 2009:4).

Actual numbers with regard to the surveys depend on response rates. In this study, the researcher had full control over the response rate, by physically visiting the TVET Colleges and other respondents per appointment. To make sense of the data, they need to be summarised in a meaningful way. Presentation of typical values, as well as variances in the data, create a mental picture of the data and the people, events or objects they relate to. According to Experiment-Resources.com (2011: n.p.), “Quantitative studies usually require extensive statistical analysis, which can be difficult, due to most scientists not being statisticians. In my research, this will not be necessary. The field of statistical study is a whole scientific discipline and can be difficult for non-mathematicians”. This was the position of the researcher in this study too, although he is qualified in Mathematics and Statistics.

All quantitative studies have some descriptive statistics, usually accompanied by frequency tables. This was the focus of this study, and there was no need for deeper inferential statistical analysis. The two main types of descriptive statistics used in research papers are measures of central tendency, (averages, modes or means), and measures of dispersion (range and standard deviations). Measures of central tendency were used; not measures of dispersion.

The choice of which particular descriptive statistics to report may affect the data “picture”, with the potential to mislead if care is not taken (Mooi & Sarstedt 2011:83). To counteract this, the data are displayed in various ways, for example in bar graphs and pie charts with data tables.

#### **4.11 ETHICAL CONSIDERATIONS**

The researcher followed the code of ethics for research at the University of the Free State, reflected in the Ethical Clearance letter, dated 21 August 2017. The ethical clearance number is UFS-HSD2017/0591. The Ethics Committee of the UFS approved the research design, the questionnaires, and interview schedule, and the researcher adhered to the guidelines throughout. All sources of information and data used in the research have been acknowledged according to the prescribed methods. The researcher was further sensitive to ethical principles guiding research involving humans, such as confidentiality, anonymity, privacy, obtaining consent and approval, avoiding harm, and voluntary termination of participation.

Ethical guidelines, according to Leedy and Ormrod (2005:101), include:

- protection from harm – either physical or psychological harm where, for example, people might feel coerced or stressed by participating; or they might fear reprisals from the authorities should they express a negative opinion;
- informed consent – participants must be provided with full information about the project so that they can decide for themselves whether they wish to participate or not;
- the right to privacy – the personal details of participants should be protected; and
- honesty – the purposes of the research must be clear and transparent.

In order to protect the participants from harm, it was ensured that the risk of participating in the study was minimised. Prior to the research, the participants were informed of the nature of the study, and that each of those selected had a choice to take part voluntarily or refuse participation.

In relation to the semi-structured interviews, the participants were informed when the appointments were made for these interviews, so that the interviews would be recorded for transcription purposes, and obtained their consent for the recordings to be made. In addition, the participants were also informed that their answers would be transcribed and used for analysis. The participant group was a closed group, and participation was by invitation only, so the discussion was not open to the public, thus assuring confidentiality. Identification of individual participants was not necessary for the research, therefore during the discussions identifiers were avoided as far as possible, thus securing the right to privacy and anonymity. The identifiers allowed were limited to referring to two public and two private TVET providers which took part in the survey; two were 'functional' and the other two 'dysfunctional'. Participants were referred to as:

- Students enrolled for engineering studies training at the TVET Colleges at the time of the study;
- QA manager (preferably) or another person in charge of the programme; programme head; curriculum and QA managers at the selected TVET institutions;
- At least two lecturers/instructors responsible for engineering studies training; and
- Document analysis with Head and QA Manager or manager responsible for quality assurance at the TVET institutions.

In addition, no person apart from the researcher had access to the participants' identities and even that was limited by using email addresses of organisations instead of personal contact details. The provision of such details was not required. The UFS Research Ethics Clearance Committee approved the study on 21 August 2017.

#### **4.12 CHAPTER SUMMARY**

This chapter provided a detailed account of the research philosophy, strategy and methodology demarcating the research. The pragmatic research paradigm was adopted, which allowed elements of both constructivist and post-positivistic analysis, interpretation and reporting of data and opened the door for the researcher to apply mixed-methods research (Mertens 2010:11) to investigate the identified research problem.

The methods of data collection and research methodologies were described, with the use of both qualitative and quantitative data collection methods (surveys with intra-method mixing, semi-structured interviews), justified as the most appropriate methodologies to use to achieve the objectives of the study. This chapter also elucidated the processes used in the data gathering and analysis and addressed the issues of reliability, validity and

trustworthiness associated with the study. Finally, ethical measures taken in carrying out the research were highlighted.

The next chapter (Chapter 5) provides a discussion of the analysis of the data and the results of the empirical study in terms of the research design.

## **CHAPTER 5**

### **DATA ANALYSIS AND FINDINGS OF THE INTERVIEWS AND SURVEY**

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Chapters 1, 2 and 3 addressed the first three research objectives in depth. In order to address the last two objectives, this chapter will involve a discussion of the in-depth analysis of the data collected via surveys, semi-structured interviews and a focus group discussion. With this, we can close the loop on the primary research question and aim.

The primary research question was: How effective are the quality assurance (QA) systems for engineering training programmes for post-school, adult learners at public TVET providers, in comparison with QA systems used for this purpose by private TVET providers who offer the same programmes; and how might these QA systems be adapted and/or enhanced in future?

#### **5.1 INTRODUCTION**

Chapters 1 to 3 laid the background to the study, with the following research aim and objectives in mind:

##### **5.1.1 Research aim**

This study was aimed at determining how effective the quality assurance (QA) systems for engineering training programmes for post-school, adult learners at public TVET providers are, in comparison with QA systems used for this purpose by private TVET providers who offer similar programmes; and how these QA systems might be enhanced.

##### **5.1.2 Research objectives**

To attain the aim of the study, the researcher strived to achieve the following objectives:

- i. To investigate what the current local and global perspectives, needs and directives are pertaining to the quality assurance of engineering training programmes for post-school, adult learners in TVET.
- ii. To investigate the implications of existing legislation, policies and systems on/for quality assurance for engineering training programmes for post-school, adult learners in TVET in South Africa.

- iii. To investigate how public TVET providers interpret and implement the policies and systems for assuring quality in engineering programmes for post-school, adult learners.
- iv. To investigate how private TVET providers interpret and implement relevant policies and systems for assuring quality in their engineering programmes for post-school adult learners.
- v. To compile (based on data collected in this study) a preliminary QA framework that may be used by public and private TVET providers in SA to assure the quality of the engineering training programmes that they offer for post-school, adult learners.

## 5.2 LIMITATIONS

Before the analysis the data is discussed, it is important to note statistics that arose out of the survey conducted at the four respondent TVET Colleges. The interviews for principals and an accreditation manager of public and private tuition providers were conducted on the premises by myself at the four selected sample TVET Colleges. The same interview schedule was used for lecturers/instructors who were the lecturing staff at the TVET Colleges. Many of the colleges that offer engineering courses, and were approached, did not even respond to my e-mails or returned my phone calls. This supports the finding by Blom (2011:15) that one of the major problems in research is poor responses from possible participants in research.

After eliminating all the erroneous e-mail addresses, a follow-up e-mail was sent a few days after the initial e-mail had been sent. The TVET providers that responded positively than were included in the study. The survey questionnaires for students were answered by all the possible respondents because the researcher was physically present. I managed to get four colleges, two private and two public TVET providers, to participate in this research.

The researcher approached 53 registered TVET state colleges in South Africa but the responses were poor, as only eight of the fifty-three colleges answered on the e-mails. Eventually, two state-funded TVET Colleges agreed to participation, one of which invited the researcher cordially, to visit the institution to conduct this research. Assurance was given of their co-operation. According to the research plan, two-state TVET Colleges and two private TVET Colleges were required. Ten private colleges, of which three agreed, was approached and according to the research plan, two of the three was involved. These two are very prominent TVET institutions in the South African DHET arena.

All four TVET institutions (who had agreed to assist) were visited to conduct the research. Regarding the implementation of the student questionnaire, a physical presence made a

remarkable difference – to the extent that it determined the outcome of this survey.

A limitation placed on the results is that triangulation of the findings of this questionnaire was not possible. Findings of the in-depth semi-structured interviews with the Heads/ETQA Manager, lecturers/instructors and the document analysis for triangulation were used.

Literature reports,

*The term 'triangulation' originates in the field of navigation where a location is determined by using the angles from two known points. Triangulation in research is the use of more than one approach to research a question. The objective is to increase confidence in the findings through the confirmation of a proposition using two or more independent measures. The combination of findings from two or more rigorous approaches provides a more comprehensive picture of the results than either approach could do alone (Bryman, n.d.; Tashakkori & Teddle, 2003; Williamson, 2018).*

The response rates for all data collection instruments used are summarised in Table 5.1 below.

**Table 5.1: Sample size and response rates (n=253)**

Questionnaires	Students
Distributed	300
Undeliverable	47
Returned questionnaires	253
Rejected due to non-completion*	0
Final total for analysis	253
Response rate %	84.3

*\*Non-completion means that the participant started the survey, but only answered some of the questions*

### 5.2.1 HODs and/or quality assurance manager

The same interview schedule (cf. Appendix 2) was used for both the HODs and/or QA managers and the instructors/lecturers. Interviews were conducted separately. The results regarding the response rate are given in Tables 5.2 and 5.3.

**Table 5.2: Response rate - HODs and/or QA Manager (n=8)**

Interviews conducted	4
Rejected due to non-completion	0
Final total for analysis	4
Response rates %	100

### 5.2.2 Instructors/Lecturers

As stated above, the same interview schedule that was used for the HODs and/or QA

managers was used for the instructors/lecturers, and the interviews were conducted individually. The results in terms of response rate are provided in Table 5.3.

**Table 5.3: Response rate - Instructors/Lecturers (n=8)**

<b>Interviews conducted</b>	<b>4</b>
Rejected due to non-completion	0
Final total for analysis	4
Response rates %	100

### 5.2.3 Current students at TVET Colleges

The response rate results for the survey among the students are displayed in Table 5.1 above. Of the 300 questionnaires distributed, 253 were finally included in the study.

### 5.2.4 Quality assurance document analysis at TVET College

For purposes of the document analysis, a questionnaire schedule was used, and personal interviews were conducted by the researcher with the person responsible for QA at each institution. The four interviews rendered four fully completed questionnaires, that is, a 100% response rate.

**Table 5.4: Document analysis of QA documents (n=4)**

<b>Distributed</b>	<b>4</b>
Returned	4
Undeliverable	0
Rejected due to non-completion	0
Final total for Analysis	4
Response Rates %	100

In Chapter 4 (cf. 4.7.1.6) it was explicated that the target response rate required was four TVET providers, which was attained. The large degree of overlap in the results between public and private providers, as discussed below, as well as between other research participants mitigated the non-response bias. The conclusion, therefore, is that because of the similar findings in many cases, a higher response rate would not have made a significant difference to the research results.

The findings reported in this chapter are not new or revolutionary, but rather serve to confirm, empirically, the arguments put forth in the discussions in Chapters 2, 3, and 4.

### 5.3 THE COMPOSITION OF THE RESPONDENT SAMPLE

The respondent sample (four selected TVET Colleges) was selected from the whole range of providers in terms of SAQA's classification (SAQA 2004:7), and the registered private providers offering engineering studies. The composition of the sample is set out below:

Sample of public and private providers (for full details cf. Chapter 4):

- Two of the 53 public colleges falling under the DHET's Register of Public TVET providers (DHET, 2016).
- Two of 291 private colleges of which only a few offered engineering studies theory and practical training as indicated on the Register of Private providers (DHET, 2013; DHET, 2017B; DHET, 2018).

From these four providers, four groups of participants were selected. The following research instruments were used to collect data from each of these groups (cf. 4.6.2):

- A questionnaire survey among students in the participating TVET Colleges;
- Interviews with the heads, QA manager or member of college management at each of the participating colleges;
- Interviews with lecturers/instructors of the participating colleges; and
- Document analysis regarding the curriculum, QA policy and study material at the participating colleges.

#### 5.3.1 Questionnaire for students in TVET Colleges

The questionnaire used to collect data from the students is enclosed as Appendix A. Closed questions (21) were used, and the students studying at the TVET Colleges involved in the research completed the questionnaires in the presence of the researcher. The results will be reported in two categories: Category 1 and Category 2 for both public and private TVET providers. The complete picture for both public and private providers is displayed separately based on the different related aspects combined as per questions asked in the questionnaire.

##### 5.3.1.1 *Category 1*

The findings reported in Category 1 have a bearing on accreditation, stakeholders forums, need for change and political drive behind changes, preparation the future and government

funding, funding of studies, further studies, student decisions, tailor-made courses, preparation for future further studies, tailor-made courses and the right to further studies, current course, course information, and the comparability of courses.

For this Category 1 compared related aspects in the responses to find possible similarities between the responses of the students in the public institutions and those in private institutions.

**a) Aspects related to the accreditation of courses at TVET institutions and comparability with international standards**

*Responses to Questions 1, 7, 8, 9, 10 and 20 were compared Public vs Private colleges as follows (referring to both **public and private** TVET Colleges).*

*One of the first areas explored in this study was students' opinion about the importance of accreditation and the extent to which they attached value to the accreditation of the engineering programmes at TVET Colleges. The consistency of their responses was gauged by five interrelated questions referred to in Tables 5.4 (a) and (b).*

*These questions explored the importance students attached to the accreditation of an engineering programme (Questions 1, 9 & 10) offered at the TVET College. Questions 7, 8 and 20 interrogated the value of accreditation. It can be argued that if the respondents (students) understood the value of accreditation, they would be far more critical regarding the quality and the fitness for purpose of their training. For the purposes of the research, it was assumed that there may be important differences in the response patterns of public TVET Colleges compared to those of private TVET Colleges.*

The responses to these interrelated questions are set out in Table 5.4 (a) and (b).

**Table 5.4 (a): The responses of students of public TVET Colleges regarding accreditation (n=121)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not answered
1.	Accreditation of courses offered at TVET training providers is important for me as a student.	49 (40%)	65 (54%)	7 (6%)	0	0	0
7.	An institution needs to be accredited to offer courses for recognised qualifications by the South African Qualifications Authority.	64 (53%)	47 (39%)	8 (7%)	1 (.5%)	1 (.5%)	0
8.	I shall be able to find a job much easier if I have successfully completed an accredited training course at a TVET institution.	64 (53%)	43 (36%)	11 (9%)	1 (1%)	2 (1%)	0
9.	My fellow students value accreditation of a TVET institution's programme offerings.	23 (19%)	56 (46%)	37 (31%)	4 (3%)	1 (1%)	0
10.	Accreditation has a beneficial effect on overall competitiveness of TVET Colleges.	30 (25%)	61 (50%)	26 (21%)	3 (3%)	0	1 (1%)
20.	I made sure upfront that my current course at the college is comparable with international standards.	23 (19%)	49 (41%)	33 (27%)	8 (7%)	2 (1%)	6 (5%)

**Table 5.4 (b): The responses of students of Private TVET Colleges regarding accreditation (n=132)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
1.	Accreditation of courses offered at TVET training providers is important for me as a student.	66 (50%)	57 (43%)	7 (5%)	2 (2%)	0	0
7.	An institution needs to be accredited to offer courses that are recognised qualifications by South African Qualifications Authority.	50 (37%)	69 (51%)	13 (12%)	0	0	0
8.	I shall be able to find a job much easier if I have successfully completed an accredited training course at a TVET institution.	42 (32%)	69 (52%)	17 (13%)	4 (3%)	0	0
9.	My fellow students value accreditation of a TVET institution's programme offerings.	15 (11%)	80 (60%)	33 (25%)	4 (4%)	0	0
10.	Accreditation has a beneficial effect on overall competitiveness of TVET Colleges.	24 (18%)	75 (57%)	28 (21%)	4 (3%)	1 (1%)	0
20.	I made sure upfront that my current course at the college is comparable with international standards.	30 (22%)	61 (46%)	29 (22%)	10 (8%)	0	2 (2%)

From the data presented in Tables 5.4 (a) and (b) it is evident that students are appreciative of accreditation. Students in public TVET Colleges overall were positive towards accreditation, but those from private TVET Colleges appeared to have a much stronger view with regard to the importance of accreditation. It is interesting to see that more than 31% of the respondents at public TVET Colleges and 25% at private TVET Colleges were unsure about the value that fellow students attached to accreditation, whether accreditation was beneficial in terms of the competitiveness of TVET Colleges, and comparable with international training standards. Therefore, the conclusion may be drawn that accreditation is not such a prominent issue for TVET students. It also suggests that they do not often talk to fellow students about accreditation. They also do not look at what other colleges locally and abroad have to offer.

**b) Comparison related to stakeholder forums**

*Responses to Questions 2, 3 and 4, relating to stakeholder's forums, as provided by students in the public and private TVET Colleges were compared. These interrelated questions had a bearing on the participation of students as stakeholders, and the importance of the role they played in the TVET College sector. The questions were related to:*

- *their feelings about students' importance as stakeholders (Question 2)*
- *invitations to participate in stakeholder forums (Question 3)*
- *whether issues raised at such forums were incorporated in policies and practices (Question 4).*

*For the purposes of this research, it was assumed that there might be differences in the response patterns of students at public TVET Colleges in comparison with those at private TVET Colleges.*

The breakdown of responses to the interrelated questions are provided in Table 5.5 (a) and (b) below.

**Table 5.5 (a): Breakdown of responses of public TVET College students regarding stakeholder forums (n=121)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not answered
2.	The students are the most important stakeholders in the TVET College sector in SA.	48 (40%)	52 (43%)	18 (15%)	0	3 (2%)	0
3.	As learner/student or representative I get invited to participate in stakeholder forums at the college.	8 (6%)	32 (26%)	42 (35%)	19 (16%)	19 (16%)	1 (1%)
4.	Issues raised by students at such forums indeed have been incorporated into policies and practices.	7 (6%)	32 (26%)	45 (37%)	15 (12%)	20 (17%)	2 (2%)

**Table 5.5(b): Breakdown of responses of private TVET College students regarding stakeholder forums (n=132)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not answered
2.	The students are the most important stakeholders in the TVET College sector in SA.	37 (28%)	66 (50%)	20 (15%)	8 (6%)	1 (1%)	0
3.	As learner/student or representative I get invited to participate in stakeholder forums at the college.	10 (8%)	58 (44%)	31 (23%)	22 (17%)	11 (8%)	0
4.	Issues raised by students at such forums indeed have been incorporated into policies and practices.	5 (4%)	46 (34%)	56 (42%)	14 (11%)	11 (9%)	0

The data presented in Table 5.5 (a) and (b), indicate a pattern in participation in stakeholder forums, but to a larger extent at private TVET Colleges than in public TVET Colleges. Uncertainty about such forums was higher at public TVET Colleges than in private TVET Colleges. An aspect that is clearly notable is the high level of uncertainty regarding the aspect of issues raised at stakeholder forums which are 37% at public TVET Colleges and 42% at private TVET Colleges.

However, by far the majority of students agreed and strongly agreed that they were the most important stakeholders in the TVET College sector in SA for public TVET Colleges (83%) and private TVET Colleges (78%).

**c) *Need for change in the education and training system/students' opinion about the political drive behind changes in the SA TVET Education and Training system***

*Responses to Questions 5 and 14, as received from students into public and private TVET Colleges, were compared. The two questions explored the students' opinions regarding the need for change in the SA TVET Education and Training system, and whether they regarded it as politically driven.*

**Table 5.6 (a): The responses of students in public TVET Colleges regarding changes and a political drive behind these changes (n=121)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
5.	A need exists for changes in the educational environment in public, post-school TVET education and training in SA.	40 (33%)	62 (51%)	14 (12%)	4 (3%)	1 (1%)	0
14.	Our current education and training system in South Africa is politically driven.	30 (25%)	49 (41%)	26 (21%)	10 (8%)	3 (2.5%)	3 (2.5%)

**Table 5.6 (b): The responses of students in private TVET Colleges regarding changes and a political drive behind these changes (n=132)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
5.	A need exists for changes in the educational environment in public, post-school TVET education and training in SA.	36 (28%)	70 (52%)	19 (14%)	5 (4%)	1 (1%)	1 (1%)
14.	Our current education and training system in South Africa is politically driven.	44 (33%)	51 (38%)	28 (21%)	5 (4.5%)	4 (3.5%)	0

The data presented in Table 5.6 (a) and (b) show a consistent pattern indicating that according to students we need changes in post-school TVET education and training in SA. A large percentage of the respondents agreed and strongly agreed (public TVET Colleges 84%; and private TVET Colleges 80%) that a need existed for change in the educational environment in the public, post-school TVET education and training system in SA. Twelve percent of the respondents in public institutions and 14% of the respondents indicated that they were uncertain in this regard.

On the question about whether changes in the current SA education and training system were politically driven, the majority of participants from both public (66%) and private (71%) colleges agreed and strongly agreed. Uncertainty (21% for both public and private colleges) here was less prominent. This may suggest that changes to the SA TVET Education and Training system are more prominent for the participants than might have been suspected.

**d) Preparation for students' future and government funding**

*Questions 6 and 15 explored whether the need for change in the system was required to prepare the students better for the world of work, and to receive more funding from government to post-school TVET Education and Training in SA. To gauge the consistency of the responses two questions were included which are of importance to skills development in the SA economy, namely about government funding for engineering critical scarce skills, and, complementary to this question, whether the need for change in the SA education and training system exists because of a need to prepare students better for the world of work. For the purposes of this research, it was assumed that there would be important differences in the response patterns of the private and public colleges.*

The breakdown of the responses to these questions appears in Tables 5.7(a) and (b).

**Table 5.7(a): Government provision for funding and preparedness of students for the world of work - Public TVET Colleges (n=121)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
6.	Government must provide more funding for post-school TVET technical engineering education and training in SA, since engineering is a scarce skill in the SA economy.	77 (64%)	36 (30%)	4 (3%)	2 (2%)	1 (0.5%)	1 (0.5%)
15.	A need exists for change in our current education and training system in South Africa to prepare learners better for the world of work.	55 (46%)	57 (47%)	9 (7%)	0	0	0

**Table 5.7(b): Government provision for funding and preparedness of students for the world of work - Private TVET Colleges (n=132)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
6.	Government must provide more funding for post-school TVET technical engineering education and training in SA, since engineering is a scarce skill in the SA economy.	66 (50%)	49 (37%)	11 (8%)	4 (3.5%)	2 (1.5%)	0
15.	A need exists for change in our current education and training system in South Africa to prepare students better for the world of work.	60 (45%)	55 (42%)	15 (11%)	1 (1%)	0	1 (1%)

From the data presented in Table 5.7(a) and (b) it became clear that there is a difference in the responses between students from public and private TVET providers on the aspect of funding from the government for scarce skills in the SA economy. The participants from public TVET providers mostly (94%) strongly agreed and agreed that government should provide more funding for engineering scarce skills, as did 87% of students in private institutions, which clearly indicates consistency in the responses on this aspect.

On the question regarding the need for change in the current education and training system in SA in order to prepare students better for the world of work, 93% of public TVET students responded 'strongly agree' and 'agree', compared to 87% of private provider students. The percentage of students that agreed or strongly agreed was higher with the students from public TVET Colleges and this may be an indication that the students wanted to change. In private TVET Colleges it might be possible that the desired changes already had taken place in accordance with the needs of the world of work. However, the responses did not show any significant difference between the two groups of respondents. There also was a slight degree of uncertainty around these two aspects - slightly higher (7% for public & 11% private colleges) with private providers.

**e) Funding of studies**

*The private and public institutions' students' responses regarding funding and employment to Questions 6 and 12 also were compared. Another area that was explored in this study was the students' opinion concerning funding from government and how they at that stage were funded to pay for their studies at TVET Colleges. In order to gauge the consistency of their response, two interrelated questions were asked (cf. Table 5.8(a) and (b)). The questions explored the students' opinions about government funding for post-school TVET technical engineering education and training in scarce skills in the SA economy and how they were supported to pay for their studies.*

The responses are presented in Table 5.8(a) and (b) below.

**Table 5.8(a): Public TVET College students' opinion on government provision of funding and how respondents were funded for studies (n=121)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
6.	Government must provide more funding for post- school TVET technical engineering education and training in SA, since engineering is a scarce skill in the SA economy.	77 (64%)	36 (30%)	4 (3%)	2 (2%)	1 (0.5%)	1 (0.5%)
		Employed student	Bursary holder	Private student (own funds)	Part-time	Other	Not Answered
12.	Are you attending the TVET College as an employed student, bursary holder, private student, or part-time student? You may mark more than one of the boxes below	11 (9%)	75 (62%)	24 (20%)	6 (5%)	4 (3%)	1 (1%)

**Table 5.8(b): Private TVET College students' opinions about government provision for funding and how respondents are funded for studies (n=132)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
6.	Government must provide more funding for post-school TVET technical engineering education and training in SA, since engineering is a scarce skill in the SA economy.	66 (49%)	49 (37%)	11 (8%)	4 (3.5%)	2 (2.5%)	0
		Employed Student	Bursary holder	Private student (own funds)	Part-time	Other	Not Answered
12.	Are you attending the TVET College as an employed student, bursary holder, private student, or part-time student? You may mark more than one of the boxes below	30 (23%)	66 (50%)	19 (14%)	8 (6%)	9 (7%)	0

According to the data in these tables, a consistent majority is in favour of government funding for engineering studies at TVET Colleges as a scarce skill. Both the public TVET Colleges (94%) and the private TVET Colleges (86%) agreed and strongly agreed in favour of government funding. To a lesser extent, both public and private TVET Colleges indicated uncertainty in this regard.

In response to the question on whether the students were employed students, bursary holders, private students (own funds) or other, only 9% of those who indicated that they attended public TVET Colleges and 23% of those attending private TVET Colleges were employed. A higher percentage was bursary holders, namely 62% of the public TVET College students and only 50% of the private TVET Colleges. The number of private students who funded their own studies also differed: 20% at public TVET Colleges compared to 14% at private TVET Colleges, which indicates that students paying for their own studies were three times more at private colleges than at public colleges. This might be because in general the government only makes bursaries available for study at public institutions.

**f) Students' decisions on further studies**

*Question 11 explored another aspect of free choice from the side of students, namely to study engineering at a TVET College. Students' freedom of choice to study at the TVET College is indicated in Tables 5.9(a) and (b), which also may imply that the students had the opportunity to make their own decisions. The results further indicate a difference in the response pattern of the students from public TVET Colleges compared to those in private TVET Colleges.*

The summarised data for this question are provided in Tables 5.9 (a) and (b) below.

**Table 5.9(a): Responses regarding students' freedom of choice to study at a public TVET College (n=121)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
11.	I have decided out of my own free will to study at my current TVET College.	68 (56%)	37 (31%)	3 (2%)	7 (6%)	5 (4%)	1 (1%)

**Table 5.9(b): Responses regarding students' freedom of choice to study at a private TVET College (n=132)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
11.	I have decided out of my own free will to study at my current TVET College.	60 (56%)	62 (46%)	7 (5%)	2 (2%)	1 (1%)	0

From the data presented in Table 5.9(a) and (b), it is evident that most students indicated that they were studying at the TVET Colleges out of their own free will. The processed data indicated that 87% of public TVET College students and 92% of private TVET College students strongly agreed and agreed on this item.

**g) *Student decisions, tailor-made courses at their TVET College, preparation for future and student opinion on the right to further studies***

*The next area explored was based on Questions 11, 16, 17 and 19 in the student questionnaire. A comparison was made regarding the following aspects of the students' opinions, will and choices on different aspects:*

- *Student decided from his / her own will to study at TVET College*
- *Students' current studies are tailor-made to meet the needs of the customer (student/employer)*
- *Students' opinion on whether the studies prepare them well for the world of work in their field of study*
- *Students' opinions on their right to post-school adult education.*

In order to gauge consistency, four interrelated questions were posed (cf. Table 5.10 (a) & (b)). The questions explored the opinions of students about their freedom to make decisions based on their experience about whether the college offered courses to suit the needs of customers, their opinion about whether the current studies prepared them for the world of work, and the students' opinions on their right to post-school education. For the purposes of this research, it was assumed that there might be important differences in the response patterns of the students from public TVET Colleges as compared to those of private TVET Colleges.

The responses to the interrelated questions are set out in Table 5.10(a) and (b).

**Table 5.10(a): Responses regarding student's opinion, will and choices on different aspects: Public TVET Colleges (n=121)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
11.	I have decided of my own free will to study at my current TVET College.	68 (56%)	37 (31%)	3 (2%)	7 (6%)	5 (4%)	1 (1%)
16.	The TVET College at which I am currently studying also offers courses that are tailor made to the needs of the customer.	19 (16%)	44 (36%)	43 (36%)	3 (3%)	8 (7%)	4 (2%)
17.	In my opinion, based on my experience, I believe that my current studies prepare me well for the world of work in my field of study (discipline).	52 (43%)	48 (40%)	13 (11%)	2 (1%)	0	6 (5%)
19.	The studies for which I am currently enrolled at the college, is my right to post-school adult education.	39 (32%)	62 (52%)	10 (8%)	1 (1%)	1 (1%)	8 (6%)

**Table 5.10(b): Responses regarding students' opinion, will and choices on different aspects: Private TVET Colleges (n=132)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
11.	I have decided out of my own free will to study at my current TVET College	60 (45%)	62 (47%)	7 (5%)	2 (2%)	1 (1%)	0
16.	The TVET College at which I am currently studying also offers courses that are tailor made to the needs of the customer.	17 (13%)	74 (56%)	24 (18%)	10 (8%)	7 (5%)	0
17.	In my opinion, based on my experience, I believe that my current studies prepare me well for the world of work in my field of study (discipline).	34 (25%)	74 (56%)	17 (13%)	5 (4%)	0	2 (2%)
19.	The studies for which I am currently enrolled at the college, is my right to post-school adult education.	27 (20%)	68 (52%)	24 (18%)	7 (5%)	4 (3%)	2 (2%)

From the data presented in Tables 5.10(a) and (b), it clearly came to the fore that it is important for the students to make their own decisions. This is the opinion of students (strongly agree and agree) from public TVET Colleges (87%) and for private TVET Colleges (92%). It was also noted that on the aspect of the colleges offering tailor-made courses to meet the needs of the customer, public TVET (52%) and private TVET (69%) clearly differed. Only 52% of public TVET College students strongly agreed and agreed on this aspect of tailor-made courses to suit the needs of the customers compared to 69% of students from private TVET Colleges.

On the aspect of whether the courses offered prepared students for the world of work, students at public TVET Colleges (83%) agreed and strongly agreed that the courses offered at their TVET College prepared them for the world of work. If this aspect is compared to private TVET Colleges (81%), there is more similarity in the results.

Regarding students' right to further studies, students from public TVET Colleges (84%) and private TVET Colleges (72%) agreed and strongly agreed. At the private TVET Colleges 18% were unsure, whereas at public TVET Colleges only (8%) were unsure about this aspect. This suggests that students at public and private TVET Colleges differed regarding the right to further studies, with a degree of more uncertainty among private college students.

**h) Taylor-made courses and opinion of students on the right to further studies**

*Another area that was explored in the responses on Questions 16 and 19 entailed a comparison between the data collected from public and private TVET Colleges regarding whether the courses they followed were tailor-made to satisfy the needs of the customer, and whether they were of the opinion that students had a right to post-school adult education. In order to gauge the consistency of their responses, two interrelated questions were asked (cf. Table 5.11(a) and (b)). Through these questions, I wanted to determine whether the students understood the value of tailor-made courses and customer (the industry) needs, as compared to their right to post-school education. Based on the responses it may be argued that in their opinion the TVET College offered courses which were tailor-made to suit the industry's needs and they had the right to post-school adult education, in other words, due to their rights they were enabled to study and do what the industry required to prepare them to earn a living after their studies. For the purposes of this research, it was assumed that there might be important differences in the response patterns of students from public TVET Colleges compared to those of private TVET Colleges in this regard.*

The responses to the interrelated questions are summarised in Table 5.11(a) and (b) below.

**Table 5.11(a): Responses regarding students' opinions on whether courses were tailor-made to customers' needs and students' right to further education at public TVET Colleges (n=121)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
16.	The TVET College at which I am currently studying also offers courses that are tailor-made to the needs of the customer.	19 (16%)	44 (36%)	43 (36%)	3 (2%)	8 (7%)	4 (3%)
19.	The studies for which I am currently enrolled at the college are my right to post-school adult education.	39 (32%)	62 (51%)	10 (8%)	1 (1%)	1 (1%)	8 (7%)
<b>Combined average results</b>		24%	43.5%	22%	1.5%	4%	5%

In Table 5.11(b) the opinions of students of private TVET Colleges are given.

**Table 5.11(b): Responses indicating students' opinion on tailor-made courses and their right to further education at private TVET Colleges (n=132)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
16.	The TVET College at which I am currently studying also offers courses that are tailor-made to the needs of the customer.	17 (13%)	74 (56%)	24 (18%)	10 (8%)	7 (5%)	0
19.	The studies for which I am currently enrolled at the college are my right to post-school adult education.	27 (20%)	68 (52%)	24 (18%)	7 (5%)	4 (3%)	2 (2%)
<b>Combined average results</b>		16.5%	54%	18%	6.5%	4%	1%

From the data presented in Table 5.11(a) and (b) it is evident that a consistent pattern is emerging, indicating that for the combined aspects on tailor-made courses and the students' right to further education, slightly more students at private TVET Colleges (70.5%) agreed and strongly agreed compared to those from public colleges (67.5%). It is further interesting to note that there was uncertainty from the side of both public colleges (22%) and private colleges (18%) about the aspects of tailor-made courses to suit the needs of the customer combined with the right to further studies. The conclusion reached here is that students regarded it as their right to study and to be prepared for the world of work with a tailor-made course; to be better prepared to satisfy the needs of the industry - the main employer of the students entering the labour market.

**i) Current course attended by students**

*Another area explored in the study was the course/study field of engineering that the students attended at the TVET Colleges. From the data presented in Table 5.12(a) and (b), providing the data from Question 13 (referring to public and private TVET Colleges) regarding the courses that respondents attended at the time of the study. For the purposes of the research, it was assumed that there might be differences in the response patterns of students from public and private TVET Colleges, more specifically in relation to skills programmes, and tailor-made courses for specific purposes. The responses to the interrelated questions are provided in Tables 5.12(a) and (b) below.*

**Table 5.12(a): Responses of students on the course they attended at a public TVET College (n=121)**

Question		Engineering Diploma and Trade (Full course)	Engineering Diploma	Skills programme only, e.g. Pumps, Hydraulics, etc.	Trade only, e.g. Fitter	Other	Not Answered
13	Please indicate the course or part of a course for engineering that you are currently studying?	21 (17%)	17 (14%)	3 (3%)	48 (40%)	21 (17%)	11 (9%)

**Table 5.12(b): Responses of students regarding the course they attended at a private TVET College (n=132)**

Question		Engineering Diploma and Trade (Full course)	Engineering Diploma	Skills programme only, e.g. Pumps, Hydraulics, etc.	Trade only, e.g. Fitter	Other	Not Answered
13	Please indicate the course or part of a course for engineering that you are currently studying?	47 (36%)	21 (16%)	7 (5%)	55 (42%)	2 (1%)	0 (0%)

From the data presented above for both private and public TVET Colleges, it is evident that the majority of the students enrolled either studied for an Engineering Diploma and a Trade, Engineering Diploma only, or Trade only. Some students attended a skills programme only. Although the pattern is quite representative in each category, it shows that all the respondents of the private TVET Colleges answered the question. The response of private TVET Colleges showed a more distributed pattern between the specific courses attended by students, whereas of the public college students 9% did not answer the question, compared to 0% of the private TVET College students.

From Table 5.12(a) and (b) the following came to the fore:

- The number of students enrolled for the Engineering Diploma with a trade was (17%) at public TVET Colleges than at private TVET Colleges (36%).
- Enrolment in the Engineering Diploma course was more alike in public TVET Colleges (14%) and private TVET Colleges (16%).
- The same applies to enrolment for Skills Programmes, namely 3% for public TVET Colleges compared to 5% for private TVET Colleges.
- Engineering Trade student participants formed a contingent of 40% of public TVET College enrolment, compared to 42% for private TVET Colleges.
- Enrolments in courses other than engineering were 17% for private TVET Colleges and 2% in public TVET Colleges (of the student participants).
- A significant difference was found in the percentage of students who did not answer this particular question, namely 9% of public TVET College students compared to 0% of private TVET College students.

**j) Course information before commencement of studies**

*Question 18 of the questionnaire asked of participants to indicate the extent to which they had received sufficient information on the courses and learning pathways at the institution where they studied. From the data presented in Table 5.13(a) and (b) it was evident that in the majority of instances, student information was sufficiently available before they commenced with their studies.*

For the purposes of the research, it was assumed that there might be important different outcomes in the response patterns of the students from public TVET Colleges compared to those of private TVET Colleges. The ratings in response to this specific question are provided in Table 5.13(a) and (b) below.

**Table 5.13(a): Responses of students at the public TVET Colleges regarding upfront awareness of their learning pathway to achieve their qualification (n=121)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
18.	I have been made aware upfront and before commencing with my training course of the pathway of becoming an apprentice / learner aiming to become an engineering artisan or engineering technician.	32 (27%)	55 (45%)	11 (9%)	9 (7%)	6 (5%)	8 (7%)

**Table 5.13(b): Responses of students at private TVET Colleges on upfront awareness of their learning pathway to achieve their qualification (n=132)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
18.	I have been made aware upfront and before commencing with my training course of the pathway of becoming an apprentice / learner aiming to become an engineering artisan or engineering technician.	25 (19%)	79 (59%)	17 (13%)	9 (7%)	0	2 (2%)

From the data presented in Table 5.13(a) and (b) it was evident that a consistent pattern was emerging, indicating that students had been well informed about the learning pathway of their course, before the commencement of their studies. Students from public TVET Colleges (72%) strongly agreed and agreed with this statement, compared to students from private TVET Colleges (78% strongly agreed and agreed) which implies that students attending private TVET Colleges had been better informed about and had a clearer view of what they were about to embark upon. It also is noteworthy that public TVET Colleges (9%) and private colleges (13%), therefore, 11% of the public and private college students (on average) indicated that they were unsure of the learning pathway of their course. It should also be noted that 12% of the public TVET College student participants and 7% of the private TVET College student participants disagreed and strongly disagreed that they had been made aware upfront of the learning pathway of their course before commencement of their studies. At public TVET Colleges 7% of the students and at private TVET Colleges 2% did not answer the question.

**k) Exploring standards of courses**

*Question 21 of the questionnaire for the student participants from public and private TVET Colleges was aimed at exploring students' awareness of the comparability of their course to national standards. In order to gauge the consistency in the response patterns of students' one question was asked as indicated in Table 5.14(a) and (b). I wanted to determine whether students understood the comparability of standards of TVET College engineering courses. The high degree of uncertainty in the responses to this question gives us an indication of the possibility of ignorance in this regard amongst students as respondents, and that maybe the thought of the standards of a course never even had occurred to them.*

The response rates to this question are given in Table 5.14(a) and (b) below.

**Table 5.14(a): Responses of students in public TVET Colleges regarding comparability of their course to national standards (n=121)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
21.	Before the time I made sure that the course I am currently following at the college is comparable with courses at other SA TVET Colleges.	26 (21%)	58 (48%)	22 (18%)	7 (6%)	2 (2%)	6 (5%)

**Table 5.14(b): Responses of students in private TVET Colleges on the comparability of their course regarding national standards (n=132)**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
21.	Before the time I made sure that the course I am currently following at the college is comparable with courses at other SA TVET Colleges.	25 (19%)	69 (52%)	31 (23%)	2 (2%)	3 (2%)	2 (2%)

With reference to the data presented in Table 5.14(a) and (b), we see a consistent pattern in students' opinion about the standards of their courses. They regarded their courses as comparable with international standards with a percentage of 69% of students in public colleges agreeing strongly and agreeing, compared to 71% of students in Private colleges. But there also was a high degree of uncertainty amongst both the respondents in public TVET Colleges (18%) and in private TVET Colleges (23%) with regard to the standards of their course compared with national standards. An overall similarity occurred in the responses to this question regarding the comparability of their courses to national standards for both public and private TVET Colleges on the one hand, but also regarding the high percentage of respondents who were unsure about the standards of their courses, namely 18% in the public TVET Colleges compared to 23% of private TVET College student respondents. More students at private TVET Colleges thus were unsure about the standards of their courses.

### 5.3.1.2 **Category 2**

In Category 2, five different themes to scrutiny were subjected, namely:

- Bibliographical info
- Student perceptions regarding quality in TVET Colleges
- Students' perceptions regarding political and social influences on TVET Colleges
- Student satisfaction
- Differences between public and private TVET Colleges

#### **a) Theme 1 – Biographical Information**

*Referring to biographical information explored, a comparison was drawn between the following aspects (cf. Table 5.15 below for comparisons):*

- *Students' choice of TVET College out of their own free will*
- *Student attendance as employed, bursary holder, private (own funds), part-time student, or other arrangements for attendance*
- *Student in Engineering Diploma, Engineering Diploma and Trade, Skills programme only, trade only, or other arrangements for attending*
- *Comparability of standards of students' study course with other SA TVET Colleges and international standards*
- *Comparability of the course enrolled for with courses at other SA TVET Colleges.*

The above aspects were compared for the public- and private TVET Colleges, and it was assumed that there might be important differences in the response patterns of students in the above- mentioned TVET Colleges. Question 11, 20 and 21 addressed student's choices of the students, comparability of their courses with international standards, and

comparability with other SA TVET College's standards. Question 12 addressed the financing method of the student for his/her studies. Question 13 addressed the specific engineering course each student attended. For the purposes of the research, it was assumed that there might be important differences in the response patterns of students from public TVET Colleges compared to those of private TVET Colleges.

The responses to Questions 11, 12, 13, 20 and 21 as interrelated questions are given in Table 5.15 (a) and (b) below.

**Table 5.15(a): Biographical info referring to public TVET Colleges**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not answered
11.	I have decided out of my own free will to study at my current TVET College.	68 (56%)	37 (31%)	3 (2%)	7 (6%)	5 (4%)	1 (1%)
		Employed Student	Bursary holder	Private student (own funds)	Part-time	Other	Not answered
12.	Are you attending the TVET College as an employed student, bursary holder, private student, or part-time student? You may mark more than one of the boxes below.	11 (9%)	75 (62%)	24 (20%)	6 (5%)	4 (3%)	1 (1%)
		Engineering Diploma and Trade (Full course)	Engineering Diploma	Skills programme only, e.g. Pumps, Hydraulics, etc.	Trade only, e.g. Fitter	Other	Not answered
13.	Please indicate the course or part of a course for engineering that you are currently studying?	21 (17%)	17 (14%)	3 (3%)	48 (40%)	21 (17%)	11 (9%)
		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not answered
20.	Before the time I made sure that the course I am currently following at the college is comparable with international standards.	23 (19%)	49 (41%)	33 (27%)	8 (7%)	2 (1%)	6 (5%)
21.	Before the time I made sure that the course I am currently following at the college is comparable with courses at other SA TVET Colleges.	26 (21%)	58 (48%)	22 (18%)	7 (6%)	2 (2%)	6 (5%)

From the data presented in Table 5.15 (a) and (b) it is evident that the overwhelming majority of students for both public TVET Colleges (87%) and private TVET Colleges (92%) decided out of their own free will to study at the TVET College they are currently studying.

On the question whether students were employed, bursary holder, private (own funds) students, part-time students or other, a matter of concern was the low number of employed students at public TVET Colleges (9%) and private TVET Colleges (23%), as well as the number of bursary holders at public TVET Colleges (62%), and private Colleges (50%). This raised the question of why they did not receive bursaries, as engineering is considered as a scarce skill in South Africa. It is interesting to note that with regard to funding at private TVET Colleges, 14% were studying with private funds, compared to 20% of the student participants at the public TVET Colleges. This difference is not that significant.

**Table 5.15(b): Biographical info referring to private TVET Colleges**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
11.	I have decided out of my own free will to study at my current TVET College.	60 (45%)	62 (47%)	7 (5%)	2 (2%)	1 (1%)	0
		Employed Student	Bursary holder	Private student (own funds)	Part-time	Other	Not answered
12.	Are you attending the TVET College as an employed student, bursary holder, private student, or part-time student? You may mark more than one of the boxes below.	30 (23%)	66 (50%)	19 (14%)	8 (6%)	9 (7%)	0
		Engineering Diploma and Trade (Full course)	Engineering Diploma	Skills programme only, e.g. Pumps, Hydraulics, etc.	Trade only, e.g. Fitter	Other	Not answered
13.	Please indicate the course or part of a course for engineering that you are currently studying?	47 (36%)	21 (16%)	7 (5%)	55 (42%)	2 (1%)	0
		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
20.	Before the time I made sure that the course I am currently following at the college is comparable with international standards.	30 (22%)	61 (46%)	29 (22%)	10 (8%)	0	2 (2%)
21.	Before the time I made sure that the course I am currently following at the college is comparable with courses at other SA TVET Colleges.	25 (19%)	69 (52%)	31 (23%)	2 (2%)	3 (2%)	2 (2%)

It also was found that the majority of engineering students at both public (40%) and private TVET Colleges (42%) studied only in their trade. Students enrolled for only the Engineering Diploma without an apprenticeship including a trade accounted for 14% at public TVET Colleges, and 16% private TVET College students. It also was interesting to note that at the public TVET Colleges, 17% of the engineering students also studied courses other than those for the Engineering Diploma, Skills Programme or a Trade, as compared to merely 1% at private TVET Colleges.

It is further interesting to note that public TVET College students (60%) and private TVET Colleges students (68%) claimed that they made sure (strongly agree/agree), upfront that their course was comparable with international standards. However, there also was a relatively high degree of uncertainty, namely 27% at public TVET Colleges and 22% of private TVET College students. It further was encouraging to note that some students made sure upfront (strongly agree/agree) that their course was comparable to the standards of other TVET Colleges in SA, namely 69% of public TVET Colleges and 71% of the student participants of the private TVET Colleges. This also shows that more students at the private TVET Colleges were concerned about the quality of their qualification. However, slightly fewer student respondents at the public TVET Colleges (18%) than at the private TVET Colleges (23%) were unsure about the comparability of their course with courses offered at other SA TVET Colleges.

***b) Theme 2 – Students’ perceptions regarding quality in TVET***

*Based on the data presented in Tables 5.16(a) and (b) the following related aspects were explored in the measurements of the following:*

- *Importance of accredited course to respondents*
- *Recognition of courses by SAQA for accreditation*
- *Job hunting after completion of accredited courses*
- *Students’ and fellow students’ perceptions of the value of accreditation*
- *Students’ opinions on whether accreditation is beneficial for colleges*
- *Students’ opinions on whether the courses offered are tailor-made to satisfy the needs of the customer.*

For the purposes of the research, it was assumed upfront that there might be important differences in the response patterns of students from public TVET Colleges compared to those of private TVET Colleges. The response frequencies on interrelated questions (Questions 1, 7, 8,9,10 & 16) are provided in Table 5.16 (a) and (b) below.

**Table 5.16 (a): Theme 2 – Students’ Perceptions regarding quality in Public TVET Colleges**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
1.	Accreditation of courses offered at TVET training providers is important for me as a student.	49 (40%)	65 (54%)	7 (6%)	0	0	0
7.	An institution needs to be accredited to offer courses for which students will receive qualifications recognised by the South African Qualifications Authority.	64 (53%)	47 (39%)	8 (7%)	1 (0.5%)	1 (0.5%)	0
8.	I shall be able to find a job much easier if I have successfully completed an accredited training course at a TVET institution.	64 (53%)	43 (36%)	11 (9%)	1 (1%)	2 (1%)	0
9.	My fellow students value accreditation of a TVET institution’s programme offerings.	23 (19%)	56 (46%)	37 (31%)	4 (3%)	1 (1%)	0
10.	Accreditation has a beneficial effect on the overall competitiveness of TVET Colleges.	30 (25%)	61 (50%)	26 (21%)	3 (3%)	0	1 (1%)
16.	The TVET College at which I am currently studying also offers courses that are tailor-made to the needs of the customer.	19 (16%)	44 (36%)	43 (36%)	3 (3%)	8 (6%)	4 (3%)
<b>Average</b>		<b>34%</b>	<b>44%</b>	<b>18%</b>	<b>2%</b>	<b>13%</b>	<b>5%</b>

The response frequencies on interrelated questions (Questions 1, 7, 8, 9, 10 & 16) with reference to private TVET Colleges are provided in Table 5.16(b). From the data presented in Table 5.16 (a) and (b) it became evident that there is a consistent pattern of student perceptions regarding quality in TVETs. These results were very positive, as public TVET College students (78%) indicated that they strongly agreed and agreed with the statements, which is in close congruence with private TVET College students (81%) opinions.

Thus, it is evident that in both public and private TVET Colleges student respondents were appreciative of the above-mentioned aspects regarding quality education in TVETs. A degree of uncertainty (public TVET Colleges 15% and private colleges 12%) was noted amongst student respondents in respect of these quality-related aspects, which might be indicative of students blindly believing in the quality of education at their institutions, or, at this stage of their lives, they might have been not really concerned about their own performance in future, to the extent that they had not even considered the quality of their education prior to this study.

**Table 5.16 (b): Theme 2 – Students’ Perceptions regarding quality in private TVET Colleges**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
1.	Accreditation of courses offered at TVET training providers is important for me as a student.	66 (50%)	57 (43%)	7 (5%)	2 (2%)	0	0
7.	An institution needs to be accredited to offer courses for which students will receive qualifications recognised by the South African Qualifications Authority	50 (38%)	69 (52%)	13 (10%)	0	0	0
8.	I shall be able to find a job much easier if I have successfully completed an accredited training course at a TVET institution.	42 (32%)	69 (52%)	17 (13%)	4 (3%)	0	0
9.	My fellow students value accreditation of a TVET institution’s programme offerings.	15 (11%)	80 (61%)	33 (25%)	4 (3%)	0	0
10.	Accreditation has a beneficial effect on the overall competitiveness of TVET Colleges.	24 (18%)	75 (57%)	28 (21%)	4 (3%)	1 (1%)	0
16.	The TVET College at which I am currently studying also offers courses that are tailor-made to the needs of the customer.	17 (13%)	74 (56%)	24 (18%)	10 (8%)	7 (5%)	0
	<b>Average</b>	<b>27%</b>	<b>54%</b>	<b>15%</b>	<b>3%</b>	<b>1%</b>	

The conclusion can be drawn that there is a degree of congruency in the students' perceptions regarding quality in private and public TVET Colleges, with the private college students slightly more positive or alert to quality measures than the public college students.

**c) Theme 3 – Students' perceptions regarding political and social influences on TVETs**

*The related aspects of students' perceptions regarding political and social influences on TVETs were explored. To gauge consistency, the results of the responses on the following interrelated questions were compared (cf. Table 5.17 [a] & [b]):*

- *Students are the most important stakeholders in TVETs*
- *Students' participation in stakeholder forums*
- *Issues raised at such forums incorporated in policies and practices*
- *A need exists for changes in the TVET sector in SA*
- *Government must provide more funding to TVETs to promote the training in scarce skills*
- *Is the current TVET system in SA politically driven?*

The questions explored students' opinions on the value they attached to their own importance as stakeholders (Questions 2, 3 & 4) while Questions 5, 6 and 14 interrogated the role of government in TVET Colleges. Regarding the questions on Government's role in TVETs they attached a high value to changes in the TVET education system, and to Government funding for scarce skills, and they expressed clear opinions on the matter of whether the education and training system in SA was politically driven or not.

For the purposes of the research, it was assumed that there would be a similarity in the response patterns of the students from public TVET Colleges and those of private TVET Colleges. The frequencies of the responses on interrelated Questions 2,3,4,6, and 14 are given in Table 5.17 (a) and (b) below.

**Table 5.17 (a): Perceptions of public TVET College students regarding political and social influences on TVET Colleges [n=121]**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
2.	The students are the most important stakeholders in the TVET College sector in SA.	48 (40%)	52 (43%)	18 (15%)	0	3 (2%)	0
3.	As learner/student or representative I get invited to participate in stakeholder forums at the college.	8 (7%)	32 (26%)	42 (36%)	19 (12%)	19 (17%)	1 (2%)
4.	Issues raised by students at such forums indeed have been incorporated into policies and practices.	7 (6%)	32 (26%)	45 (37%)	15 (12%)	20 (17%)	2 (2%)
5.	A need exists for changes in the educational environment in public, post-school TVET education and training in SA.	40 (33%)	62 (51%)	14 (12%)	4 (3%)	1 (1%)	0
6.	Government must provide more funding for post-school TVET technical engineering education and training in SA, since engineering is a scarce skill in the SA economy.	77 (63%)	36 (30%)	4 (1.5%)	2 (1.5%)	1 (1%)	1 (1%)
14.	Our current education and training system in South Africa is politically driven.	30 (25%)	49 (40%)	26 (21%)	10 (8%)	3 (3%)	3 (3%)

**Table 5.17 (b): Perceptions of private TVET College students regarding political and social influences on TVET Colleges [n=132]**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
2.	The students are the most important stakeholders in the TVET College sector in SA.	37 (28%)	66 (50%)	20 (15%)	8 (6%)	1 (1%)	0
3.	As learner/student or representative I get invited to participate in stakeholder forums at the college.	10 (8%)	58 (44%)	31 (23%)	22 (17%)	11 (8%)	0
4.	Issues raised by students at such forums indeed have been incorporated into policies and practices.	5 (4%)	46 (35%)	56 (42%)	14 (11%)	11 (8%)	0
5.	A need exists for changes in the educational environment in public, post-school TVET education and training in SA.	36 (27%)	70 (52%)	19 (14%)	5 (4%)	1 (1%)	1 (1%)
6.	Government must provide more funding for post-school TVET technical engineering education and training in SA, since engineering is a scarce skill in the SA economy.	66 (50%)	49 (37%)	11 (8%)	4 (3%)	2 (2%)	0
14.	Our current education and training system in South Africa is politically driven.	44 (33%)	51 (39%)	28 (21%)	5 (4%)	4 (3%)	0

From the data presented in Table 5.17 (a) and (b) it is evident that the majority of the student participants had indicated that they strongly agreed/agreed that they were the most important stakeholders in the public TVET Colleges (83%) and private TVET Colleges (78%), with similarity in the degree of uncertainty among public TVET College students (15%) and private TVET Colleges students (15%).

On the question whether students were invited to stakeholder forums (Question 3), 41% public TVET Colleges and 68% of private TVET College students in the study strongly agreed and agreed that they were invited. It is thus clear that in the case of private TVET Colleges that students got invited to stakeholder forums way more often than in the case of the public TVET College students. Thus, although the results of the data clearly indicated that both groups regarded themselves as the most important stakeholders, the public TVET College respondents indicated that they were not invited to stakeholder forums often as was the case with the private college participants.

On Question 4 regarding whether issues raised at such forums were incorporated in policies and practices at their TVET College, 33% of the public TVET Colleges students indicated strongly agreed and agreed compared to 39% of the private TVET College participants.

Based on these findings, it can be concluded that private TVET Colleges attached more value to students as stakeholders, as these students were more involved in the stakeholder forums, and at these institutions, the forum outcomes had been incorporated in the colleges' policies and practices. On the other hand, it is notable that public TVET Colleges attached less value to students as stakeholders, as fewer students indicated that they were invited to stakeholder meetings and they also felt that they were excluded from decisions made at stakeholder forums that were incorporated into the TVET College policies and practices. Seen as a whole, however, similarities did occur in the responses of the two types of institutions.

With reference to Questions 5, 6 and 14 referring on the need for changes in our TVET Education and Training system, government funding for scarce skills and whether the Education and Training system in SA is politically driven, the majority of responses to these related questions were strongly agreed/agree for public TVET Colleges (84%) and private TVET Colleges (80%). Uncertainty on the question that asked whether the SA education and training system is politically driven, a relatively high degree of uncertainty came to the fore among both the participants from the public- and the private TVET Colleges (21%).

**d) Theme 4 – Student Satisfaction**

*The next area that was explored in this study was aspects related to student satisfaction. In order to gauge the consistency of the responses, five interrelated questions were asked (cf. Table 5.18 (a) and (b)). These related items were Questions 8, 16, 17, 18 and 19 where the students had to indicate the extent to which they agreed or did not agree that (i) they would find a job easily after completion of an accredited course; (ii) the TVET institution offered courses tailor-made to meet the needs of customers; (iii) their studies prepared them well for the world of work; (iv) they were made aware before the course commenced of the possible pathways to their chosen careers, and lastly (v) pursuing their studies was their right to further education and training.*

For the purposes of the research, it was assumed that there might be important differences in the response patterns of students from public TVET Colleges compared to those of private TVET Colleges. The frequencies of the responses to each of the interrelated questions are set forth in Table 5.18 (a) and (b).

**Table 5.18 (a): Student satisfaction as measured by five specific aspects of participating public TVET Colleges [n=121]**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
8.	I shall be able to find a job much easier if I have successfully completed an accredited training course at a TVET institution.	64 (53%)	43 (36%)	11 (9%)	1 (1%)	2 (1%)	0
16.	The TVET College at which I am currently studying also offers courses that are tailor-made to the needs of the customer.	19 (16%)	44 (36%)	43 (36%)	3 (2%)	8 (7%)	4 (3%)
17.	In my opinion, based on my experience, I believe that my current studies prepare me well for the world of work in my field of study (discipline).	52 (43%)	48 (40%)	13 (10%)	2 (2%)	0	6 (5%)
18.	I have been made aware upfront and before commencing with my training course of the pathway of becoming an apprentice / learner aimed at becoming an engineering artisan or engineering technician.	32 (26%)	55 (45%)	11 (9%)	9 (8%)	6 (5%)	8 (7%)
19.	The studies for which I am currently enrolled at the college, is my right to post-school adult education.	39 (32%)	62 (51%)	10 (8%)	1 (1%)	1 (1%)	8 (7%)

From the data presented in Table 5.18 (a) and (b) it is clear that a consistent pattern emerged indicating that students were appreciative of the following aspects in their courses:

- The majority strongly agreed and agreed that they would be able to find employment due to the accredited courses they followed (public TVET Colleges 89%; private TVET Colleges 84%).
- The majority strongly agreed and agreed about receiving proper preparation for the world of work through their studies at the TVET institution they studied (public TVET Colleges 83% & private TVET Colleges 81%).

**Table 5.18 (b): Student satisfaction as measured by five specific aspects of participating private TVET Colleges [n=132]**

Question		Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Not Answered
8.	I shall be able to find a job much easier if I have successfully completed an accredited training course at a TVET institution.	42 (32%)	69 (52%)	17 (13%)	4 (3%)	0	0
16.	The TVET College at which I am currently studying also offers courses that are tailor made to the needs of the customer.	17 (13%)	74 (56%)	24 (18%)	10 (8%)	7 (5%)	0
17.	In my opinion, based on my experience, I believe that my current studies prepare me well for the world of work in my field of study (discipline).	34 (25%)	74 (56%)	17 (13%)	5 (4%)	0	2 (2%)
18.	I have been made aware upfront and before commencing with my training course of the pathway of becoming an apprentice / learner aimed at becoming an engineering artisan or engineering technician.	25 (19%)	79 (59%)	17 (13%)	9 (7%)	0	2 (2%)
19.	The studies for which I am currently enrolled at the college, is my right to post-school adult education.	27 (20%)	68 (52%)	24 (18%)	7 (5%)	4 (3%)	2(2%)

- They agreed that they have been made aware before commencing with their studies about the learning pathways of their distinctive courses aimed at becoming an engineering artisan or engineering technician (public colleges 71%; private TVET Colleges 78% strongly agreed/agreed).
- They believed it was their right to receive post-school further studies (public TVET College respondents strongly agreed & agreed 83%; private TVET Colleges 72%).

**e) Theme 5 – Differences between Public- and Private TVET Colleges**

*Although a large degree of similarity occurs in the frequency of responses as completed by student participants of the private and public institutions, a number of differences occurred, and these need to be discussed. These differences and similarities will now be indicated in tables in the same sequence as the questions (items) appeared on the questionnaire, and discussed.*

**1) Accreditation of courses offered at TVET training providers is important to me as a student**

*Regarding accreditation of courses, it came to the fore that it is important to the student (cf. Table 5.19).*

**Table 5.19: Question 1: Response frequency and percentage: Public and private Institutions**

Question 1	Public TVET Colleges(n=121)		Private TVET Colleges (n=132)	
	Frequency	%	Frequency	%
Strongly Agree A*	49	40%	66	50%
Agree B*	65	54%	57	43%
Unsure C	7	6%	7	5%
Disagree D	0	0%	2	2%
Strongly Disagree	0	0%	0	0
Not Answered	0	0%	0	0%

*\*Strongly agree and agree were calculated together to arrive at the indicated single percentage for the scale point on the agreement and used as a figure in the findings.*

On the aspect of accreditation, there is a similarity in the responses between public and private TVET Colleges, as indicated in the table above.

**2) The students are the most important stakeholders in the TVET College sector in SA**

*On the aspect regarding students being most important stakeholders in the TVET College sector a slight difference was observed between participants of from public and private TVET Colleges in the data that were recorded (cf. Table 5.20).*

**Table 5.20: Research results: Frequency - Public TVET Colleges versus private TVET Colleges**

Question 2	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	48	40%	37	28%
Agree B	52	43%	66	50%
Unsure C	18	15%	20	15%
Disagree D	0	0%	8	6%
Strongly Disagree	3	2%	1	1%
Not Answered	0	0%	0	0%

**3) As learner/student or representative I get invited to participate in stakeholder forums at the college**

*On the aspect of students having been invited as student or representatives to participate in stakeholder forums at the college quite a difference was observed between the public and private TVET Colleges. The opinions expressed were quite diverse (cf. Table 5.21). On this aspect, a difference between public and private TVET Colleges was recorded as more student from private colleges reported that they participated in stakeholder forums.*

**Table 5.21: Participation of students in stakeholder forums**

Question 3	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	8	7%	10	8%
Agree B	32	26%	58	44%
Unsure C	42	34%	31	23%
Disagree D	19	16%	22	17%
Strongly Disagree	19	16%	11	8%
Not Answered	1	1%	0	0%

**4) Issues raised at such forums indeed have been incorporated into policies and practices**

*On the aspect regarding stakeholder's forums, the majority of the public college respondents were unsure whether the decisions made at such forums were incorporated in the TVET College policies and procedures. A larger percentage of students from private colleges were unsure (cf. Table 5.22). No significant difference was shown between public and private TVET Colleges from the data the recorded, based on the frequencies and percentages in the above table. This is a surprising finding as it could be assumed that if students were part of the stakeholder forum they would know if policies were implemented. The 42% of private college students stating that they were unsure was thus not anticipated.*

**Table 5.22: Research results: Students' opinions reincorporation of forum decisions in policies and procedures**

Question 4	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	7	6%	5	4%
Agree B	32	26%	46	35%
Unsure C	45	37%	56	42%
Disagree D	15	12%	14	11%
Strongly Disagree	20	17%	11	8%
Not Answered	2	2%	0	0%

**5) A need exists for changes in the educational environment in public, post-school TVET education and training in SA**

Regarding the aspect of a need for changes in the TVET education and training environment, the Public TVET Colleges respondents strongly agreed and agreed to a slightly larger extent than the private TVET College respondents (cf. Table 5.23). A small difference was detected between the opinions of private and public TVET College students, but clearly, a need for change exists.

**Table 5.23: Research results: Students' opinions re a need for change in TVET education and training (frequencies & percentages)**

Question 5	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	40	33%	36	27%
Agree B	62	52%	70	53%
Unsure C	14	12%	19	14%
Disagree D	4	3%	5	4%
Strongly Disagree	1	1%	1	1%
Not Answered	0	0%	1	1%

**6) Government must provide more funding for post-school TVET technical engineering education and training in SA, since engineering is a scarce skill in the SA economy**

On the aspect of students' opinion on whether the government must provide more funding for TVET training to address scarce skill in the SA economy, the respondents for the private TVET providers came out more prominently. This may be because the government does not provide any funding to private TVET providers as in the case of public TVET providers (cf. Table 5.24). Small differences were observed between the responses of public and private TVET College students. The majority of the participants agreed that the government should provide more funding to support training in scarce skills.

**Table 5.24: Research Results: Government must provide more funding for TVET training**

Question 6	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	77	64%	66	50%
Agree B	36	29%	49	37%
Unsure C	4	3%	11	8%
Disagree D	2	2%	4	3%
Strongly Disagree	1	1%	2	2%
Not Answered	1	1%	0	0%

**7) An institution needs to be accredited to offer courses for which students will receive qualifications recognised by the South African Qualifications Authority**

Referring to the aspect of accreditation of providers, the public TVET Colleges came out a bit more prominently as they strongly agreed and agreed that accreditation of courses was important (cf. Table 5.25). Small difference occurred between public and private TVET students' opinion with the public TVET providers feeling somewhat stronger about the accreditation of courses.

Table 5.25: Research Results: Participants' opinion on the need for accreditation of courses

Question 7	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	64	53%	50	38%
Agree B	47	39%	69	52%
Unsure C	8	7%	13	10%
Disagree D	1	0.5%	0	0%
Strongly Disagree	1	0.5%	0	0%
Not Answered	0	0%	0	0%

**8) Students' opinion regarding finding a job on completion of studies**

*On the aspect of finding a job easier after completion of studies, more public TVET College respondents strongly agreed and agreed than the private TVET provider students (cf. Table 5.26). A small difference was found between the public and private TVET provider students' responses to the question about the ease with which they could find employment to the extent that 4% more public student respondents strongly agreed and agreed than the participants from the private providers.*

Table 5.26: Research Results: Finding employment after completion of studies is easier

Question 8	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	64	53%	42	32%
Agree B	43	35%	69	52%
Unsure C	11	9%	17	13%
Disagree D	1	1%	4	3%
Strongly Disagree	2	2%	0	0%
Not Answered	0	0%	0	0%

**9) Opinions on fellow students' valuing accreditation of TVET institutions' programme offerings**

*On the aspect of how the students valued the accreditation of programme offerings, a larger number of participants from the private TVET providers strongly agreed and agreed on this aspect. The feeling of uncertainty about accreditation was higher amongst the student respondents in public TVET Colleges (31%) than those in the private TVET Colleges (25%). (cf. Table 5.27)*

Table 5.27: Research Results: The value of the accreditation of programme offerings

Question 9	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	23	19%	15	11%
Agree B	56	46%	80	61%
Unsure C	37	31%	33	25%
Disagree D	4	3%	4	3%
Strongly Disagree	1	1%	0	0%
Not Answered	0	0%	0	0%

Table 5.28 clearly indicates that the student respondents from the public and private colleges differed in their opinion of the value of the accreditation of programmes. This might

have been due to the private institutions informing the students better about the meaning and purpose of the accreditation of programmes. The percentage of students who indicated they were unsure (31% & 25% respectively), also implies that the students might not have been aware of the accreditation of programmes and its importance.

**10) Accreditation has a beneficial effect on the overall competitiveness of TVET Colleges**

*On the aspect of competitiveness of TVET Colleges, as indicated in the table below, private TVET Colleges and public TVET Colleges almost the same on the aspect of competitiveness amongst TVET providers (cf. Table 5.28).*

**Table 5.28: Research results of public TVET Colleges and private TVET Colleges regarding accreditation**

Question 10	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	30	25%	24	18%
Agree B	61	50%	75	57%
Unsure C	26	21%	28	21%
Disagree D	3	3%	4	3%
Strongly Disagree	0	0%	1	1%
Not Answered	1	1%	0	0%

**11) Students indicating that they have decided out of their own free will to study at the current TVET College**

*With reference to whether the students had a free choice to go to their current TVET College, results showed that more private TVET students were sure of this and studied at the private college of their own free will than students in the public colleges, albeit that in both cases the vast majority (agree/ agree strongly) agreed with this statement (cf. Table 5.29). In this instance, there was a small (5%) difference between public TVET Colleges (87%) and private TVET providers (92%). Students indicated that they had made the choice of their own free will, but a larger percentage (10%) of the public colleges' students indicated that they disagreed or strongly disagreed with this statement than was the case with the private colleges' students (2%).*

**Table 5.29: Public and private TVET College students' decision to attend a college of their choice (frequencies & %)**

Question 11	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	68	56%	60	46%
Agree B	37	31%	62	47%
Unsure C	3	2%	7	5%
Disagree D	7	6%	2	1%
Strongly Disagree	5	4%	1	1%
Not Answered	1	1%	0	0%

12) **Are you attending the TVET College as an employed student, bursary holder, private student, or part-time student?**

More students at private TVET Colleges (23%) indicated they were employed than at public TVET Colleges (9%). On the other hand, fewer private TVET College students (50%) compared to public TVET College students (62%) studied with bursaries. A significantly larger number of students at the private TVET Colleges (60%), as compared to public TVET College students (20%) were private students who funded their own studies, while 62% of the public college students and 50% of the private college students indicated that they were bursary holders (cf. Table 5.30).

**Table 5.30: Funding of studies – Public and Private TVET Colleges**

Question 12	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	11	9%	30	23%
Agree B	75	62%	66	50%
Unsure C	24	20%	19	14%
Disagree D	6	5%	8	6%
Strongly Disagree	4	3%	9	7%
Not Answered	1	1%	0	0%

Significant differences between private and public TVET Colleges were observed regarding employed students, private funding and government funding, which might have been expected when comparing private and public institutions.

13) **Please indicate the course or part of a course in engineering that you are currently studying**

More students at private TVET Colleges (36%) compared to students at public TVET Colleges (17.5%) were studying for the full course of Engineering Diploma and a Trade. No significant difference existed between the percentages of student respondents in public TVET Colleges (14%) and private TVET Colleges (16%) doing only the engineering diploma. The largest percentages of student respondents indicated they were doing the trade only, namely 40% (public TVET Colleges) and 42% (private TVET student) respondents. Students indicating they did courses other than engineering, were 21 public college students (17.5%), compared to two private TVET College students (1%) (cf. Table 5.31).

**Table 5.31: Public and private TVET College students' courses**

Question 13	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Engineering Diploma and Trade	11	9%	47	36%
Engineering Diploma only	75	62%	21	16%
Skills Programme only, e.g. Pumps, Hydraulics, electrical basic, etc.	24	20%	7	5%
Trade only, e.g. Fitter	6	5%	55	42%
Other	4	3%	2	1%
Not Answered	1	1%	0	0%

From these results it seems that more than half (52%) of the private TVET College respondents were enrolled for engineering programmes, while the majority of college

respondents were following trade only programmes (40%), the engineering diploma and trade (17.5%), and other (17.5%) programmes. Why 9% of the public college students did not answer the question, was not clear.

**14) Our current education and training system in South Africa is politically driven**

*On the statement that the South African education and training system for TVET is political driven, the majority of the students from the private TVET providers indicated that they strongly agreed/agreed (72%) and the majority of the student respondents from the public TVET College students (65%) were in agreement, albeit with a slightly lower percentage. In both public and private TVET Colleges, 21% of the student respondents were unsure. Very few respondents disagreed with this statement (cf. Table 5.32). Very small percentages of the respondents from both the college groups (11% & 7% respectively) disagreed/strongly disagreed with this statement, while 3% of the public sector colleges did not answer. In total it may be concluded that the majority of the respondents held the same views on this statement, that is, they either agreed or were unsure.*

**Table 5.32: Public and private TVET College students' opinions on whether the training system in South Africa is politically driven**

Question 14	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	30	25%	44	33%
Agree B	49	40%	51	39%
Unsure C	26	21%	28	21%
Disagree D	10	8%	5	4%
Strongly Disagree	3	3%	4	3%
Not Answered	3	3%	0	0%

**15) A need exists for a change in our current education and training system in South Africa to prepare learners better for the world of work**

*As depicted in Table 5.33 the vast majority of the respondents either agreed or strongly agreed with this statement, namely both public TVET Colleges (93%) and private TVET Colleges (87%). One student from the private institutions did not agree and one strongly disagreed, while a few respondents from the public TVET Colleges (7%) and private TVET Colleges (11%) were unsure.*

**Table 5.33: Public and private TVET College students' opinion on whether the need exists for change in our current education and training system to prepare learners better for the world of work**

Question 15	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	55	46%	60	45%
Agree B	57	47%	55	42%
Unsure C	9	7%	15	11%
Disagree D	0	0%	1	1%
Strongly Disagree	0	0%	0	0%
Not Answered	0	0%	1	1%

Although small, on this aspect another difference occurred between public and private

TVET Colleges as 93% of the public college respondents and 87% of the private institutions' respondents agreed and strongly agreed. As with the previous statement, one student from the private institutions disagreed and one disagreed strongly, and one did not respond, while from the public institutions' respondents no-one disagreed, strongly disagreed or refrained from responding.

**16) The TVET College at which I am currently studying also offers courses that are tailor-made to the needs of the customer**

*In both groups of respondents, the majority strongly agreed or agreed, namely the private TVET providers' respondents with (69%), as compared to public TVET providers' respondents with 52%. A number of the student respondents from the public TVET Colleges (36%) and private TVET College (18%) were unsure about this aspect. This might be due to the students not being sure who the 'customer' is, or it may be that they do not know their own or the customers' needs to whom they will be of service one day. More students from the private institutions (8%) disagreed with the statement, while only 2% of the public institutions' respondents disagreed.*

**Table 5.34: Public and private TVET College students' opinion on whether the college at which they currently are studying offers courses that are tailor-made to the needs of the customer**

Question 16	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	19	16%	17	13%
Agree B	44	36%	74	56%
Unsure C	43	36%	24	18%
Disagree D	3	2%	10	8%
Strongly Disagree	8	7%	7	5%
Not Answered	4	3%	0	0%

**17) Opinions of students on whether their current studies prepare them well for the world of work in their field of study (discipline)**

*Regarding preparation for the world of work by means of their studies, a large number of respondents from both public TVET Colleges (83%) and private TVET Colleges (82%) strongly agreed and agreed. The student respondents from both public TVET Colleges (11%) and private TVET Colleges (13%) rendered a relatively high not sure response rate (cf. Table 5.35). On this aspect, the student respondents' opinions showed very small differences, and more similarity was observable in the findings.*

**Table 5.35: Research results (frequency & %) – Public and private TVET College students' opinion on whether their studies prepared them well for work in their disciplines**

Question 17	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	52	43%	34	26%
Agree B	48	40%	74	56%
Unsure C	13	11%	17	13%
Disagree D	2	1%	5	4%
Strongly Disagree	0	0%	0	0%
Not Answered	6	5%	2	1%

**18) Students were informed in advance and before commencing with their training course of the pathway of becoming an engineering artisan or engineering technician**

The majority of the respondents from the private TVET Colleges (79%) and the public TVET Colleges (72%) indicated that they had been made aware of what their studies entailed to attain their aim, thus they either agreed or agreed strongly. Some students indicated they were unsure (public TVET Colleges 9% and private TVET Colleges 13%), and 7% of both groups disagreed, with 5% of the public institutions' students disagreeing strongly. Eight students from the public institutions also did not respond, while only two from the private institutions did not respond (cf. Table 5.36). Here again, only a small difference was observed between the responses of students from the private and public TVET Colleges, except for the strongly disagree and not answered points on the scale where observable differences were noted (public TVET Colleges 5% & 7% respectively, private TVET Colleges 0 & 2% respectively).

**Table 5.36: Research results – Public and private TVET College students' opinion on whether they had been made aware of what the course entailed to become an engineering artisan/technician**

Question 18	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	32	26%	25	19%
Agree B	55	46%	79	60%
Unsure C	11	9%	17	13%
Disagree D	9	7%	9	7%
Strongly Disagree	6	5%	0	0%
Not Answered	8	7%	2	1%

**19) The students' opinions regarding post-school adult education as a right**

Regarding the respondents' feelings about post-school studies being their right, the responses of strongly agree and agree from public TVET Colleges (83%) indicated a high degree of agreement with the statement, compared to the private TVET Colleges (72%). But still, it seems that the vast majority of respondents regarded post-school education as a right. Another significant difference came to the fore in the number of students who indicated that they were unsure - public TVET Colleges (10) compared to private TVET Colleges (24) (cf. Table 5.37). It also was observed that 8% of the private TVET respondents disagreed or disagreed strongly with this statement, while only 2% of the public institutions' respondents felt the same way. Only 2% of the private colleges' students did not respond to this statement, while 7% of the public colleges' students did not respond.

**Table 5.37: Research results (frequency & %) – Public and private TVET College students' opinion on whether they regarded their studies in post-school education as a right**

Question 19	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	39	32%	27	20%
Agree B	62	51%	68	52%
Unsure C	10	8%	24	18%
Disagree D	1	1%	7	5%
Strongly Disagree	1	1%	4	3%
Not Answered	8	7%	2	2%

**20) Students on whether they have verified in advance that the course enrolled for is comparable with international standards**

Respondents from both college groups seemed relatively unsure about this statement (public TVET Colleges 27% and private TVET providers 22%), indicating that perhaps they did not compare their institutions' standards (courses) with similar international courses, or that they just did not care, and we're happy with whatever the colleges offered them. Only 60% of the public TVET College students and 69% of the private TVET College students agreed or strongly agreed, which also gives a difference in the results. This difference becomes clearer when uncertainty and those who did not respond to the statement (public institutions 32%; private institutions 23.5%) are taken into account (cf. Table 5.38).

**Table 5.38: Research results (frequency & %) – Public and private TVET College students' opinion on whether they had ensured their courses were comparable with internal standards**

Question 20	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	23	19%	30	23%
Agree B	49	41%	61	46%
Unsure C	33	27%	29	22%
Disagree D	8	6%	10	7.5%
Strongly Disagree	2	2%	0	0%
Not Answered	6	5%	2	1.5%

**21) Students opinions on whether they have verified that the course they are currently following at the college is comparable with courses at other SA TVET Colleges**

In this case, it seems that the student respondents were better informed about standards in other TVET Colleges in South Africa. When compared, based on the responses of students from the private TVET Colleges (71% strongly agreed and agreed), they were more informed about the courses of other institutions than the students from the public TVET Colleges (69% strongly agreed and agreed). However, a large percentage of both groups indicated uncertainty or did not respond on the statement (public TVET Colleges 23% and private TVET Colleges 25%) (cf. Table 5.39). A conclusion can be made that differences do exist between students studying in engineering programmes at public and private TVET Colleges in SA; however, in most cases these differences were not significant

**Table 5.39: Research results – Public and private TVET College students' opinion on whether they had ensured their courses at the college were comparable with courses at other SA TVET Colleges**

Question 21	Public TVET Colleges n=121		Private TVET Colleges n=132	
	Frequency	%	Frequency	%
Scale:				
Strongly Agree A	26	21%	25	19%
Agree B	58	48%	69	52%
Unsure C	22	18%	31	23%
Disagree D	7	6%	2	2%
Strongly Disagree	2	2%	3	2%
Not Answered	6	5%	2	2%

### 5.3.1.3 **Conclusion: Theme 5 – Differences between public- and private TVET Colleges**

In conclusion, it is evident that there are differences in the response patterns of students from public and private TVET Colleges on almost every aspect in this part of the research. On the aspect of students participating in stakeholder forms, it was clear that students from private TVET Colleges were more involved than those from public colleges (cf. Table 5.22). A similar difference was found regarding students' opinion that issues raised by students in stakeholder's forums having been incorporated into policies and practices (cf. Table 5.23). Students, however, did not differ much in terms of their views on the government's obligation to provide more funding for post-school TVET technical engineering education (cf. Table 5.25). More significant differences were recorded on the funding of studies at public and private TVET institutions. It was interesting to note the significant difference in responses from employed students at private TVET Colleges (23%) that felt the state should contribute more to the funding, compared to those of public TVET Colleges (9%). The student also held different views regarding bursary funding for studies at public TVET (62%) versus private TVET College (50%) (cf. Table 5.31).

A key focus of this study was quality assurance in TVET Colleges, and accreditation of programmes thus is of crucial importance. Regarding the value students attached to accreditation, a slight difference was recorded (cf. Table 5.28), but both groups saw it as important. Students also differed on the question of students' freedom of decision making to study at a TVET College (cf. Table 5.30). On the aspect of the course and part course combinations, as followed by students at public and private TVET Colleges, significant differences were recorded; however, the similarity was found regarding the specific course for the engineering trade only (cf. Table 5.32). Regarding the aspect of the current education and training system is politically driven in SA, a difference in the responses of the two groups occurred regarding *strongly agree/agree*, while similarity was noted in the responses about *uncertainty* (cf. Table 5.33). With regard to the question about whether a need exists for change in the SA education and training system to prepare the learners better for the world of work, the overwhelming majority of respondents *strongly agreed/agreed*, although another slight difference between the two groups of respondents occurred (cf. Table 5.34). Another significant difference was recorded on the item asking the respondents whether their TVET College offered tailor-made courses to meet the needs of the customer in the industry. The high degree of uncertainty here was noted (cf. Table 5.35). On the aspect of the students having been made aware of the learning pathway of their training courses to become an engineering artisan/technician, a high indication was that the respondents

*strongly agreed/agreed*, although a difference of 6% was recorded (cf. Table 5.37). Regarding students' opinions on their right to further post-school studies, significant differences were recorded (cf. Table 5.38.) Significant differences were recorded on the certainty about the students' course comparability with international standards, with a relatively low *strongly agree/agree* and a high degree of *uncertainty* in both groups (cf. Table 5.39).

The following similarities were recorded in this questionnaire:

The similarity was recorded between public and private TVET College students on the question of how students regarded the importance of accreditation (cf. Table 5.20). Regarding the question whether students are the most important stakeholders in SA TVET Colleges, a slight difference was recorded in terms of the *strongly agree/agree* option, with similarity in terms of the option of *uncertainty* (cf. Table 5.21). Regarding a need for change, the two groups of students differed slightly on the *strongly agree/ agree* and the *uncertain* options (cf. Table 5.24).

A very small difference was recorded between the two groups' responses in favour of accreditation, which by implication is an indication of similarity (cf. Table 5.26). The students' opinions on finding employment easier after having completed an accredited course rendered another slight difference between the two groups (cf. Table 5.27). On the aspect of accreditation having a beneficial effect on the competitiveness of TVET Colleges, the exact similarity in the results was recorded for public and private colleges (cf. Table 5.29). The students from public and private TVET Colleges expressed overwhelmingly positive opinions about whether their courses prepared them well for work in their disciplines, namely, most students *strongly agreed/agreed*, with similar *uncertainty* recorded (cf. Table 5.36). Minor differences were recorded between the opinions of students from public and private TVET Colleges regarding the comparison of their courses with other TVET Colleges in SA courses. A high degree of *uncertainty* was recorded in both groups (cf. Table 5.40). The conclusion that was reached is that students in public and private TVET Colleges mostly hold different views like on comparability of their courses to international standards on aspects of quality assurance in the colleges where they studied at the time of the research. However, some similarities in certain responses also occurred, like in the instance of the accreditation of their courses, need for changes in TVET Colleges, as well as students' importance as stakeholders in the TVET College sector.

### 5.3.2 Focus group interviews with Heads and/or ETQA managers at participating TVET Colleges

It was essential to conduct the interviews separately with lecturers/instructors, and HODs and QA Managers in another, at the same institution, but using the same interview schedule. This was deemed necessary because of the hierarchy structure in the colleges. The HODs and QA Managers are part of management, while the lecturers and instructors are lecturing staff.

#### 5.3.2.1 *Participants view on the quality assurance system in use*

Heads and/or ETQA managers and lecturers/instructors at TVET Colleges were asked about the effectiveness of the QA systems for the engineering training programmes offered by their respective TVET institutions. One of the participants from a private institution indicated that in his college they compiled a QA document over and above the QCTO and various SETA QA documents, e.g. QCTO, 2011 (Participant A2). The participant felt that there were too many shortfalls in the SETA and QCTO QA documents. He substantiated this by claiming that no substantial evidence could be found that all stakeholders, for example, the industry, were involved in compiling the curriculum on the QA document. This view was supported by each and every private TVET College group interviewed. The interviewees from the public TVET Colleges claimed that they could not really do anything but complying because they were bound to DHET rules (Participant B1). Contrary to this or opinion, other participants, mainly private TVET College participants, expressed the view that much could be done to strengthen the QA system. The head of one of these private colleges expressed the view that,

*“[w]ithin our environment, we must make the difference for DHET to see what can be done”.*

This was substantiated by the claim that no student ever leaves their college after successful completion of the course without already being employed, or having a job offer (Participant A).

Regarding the effectiveness of the QA processes, the general opinion among the participants was that of dissatisfaction. The focus group members did not know exactly which processes were followed to ensure the quality of their offerings. What they did know was that QA is generic for all DHET public colleges in SA.

In the interview with participants of one of the public TVET Colleges it came to the fore that

the QA system apparently had been established by the former Further Education and Training Department which now falls under the Department Higher Education and Training (DHET) and they dictate the TVET College sector in all aspects of QA (Participant B2).

### **5.3.2.2    *The current quality of the engineering programmes at colleges***

One of the TVET College Heads stated that

*“courses are good in some cases, but have to be chopped and changed as technological changes take place, that does not happen” (Participant C2).*

He referred to the following aspects of concern:

- No continuity in revising curriculums for engineering.
- No “tailor-made” courses exist to address clients’ needs - only national generic programmes that lead to a particular qualification.

Other participants were more positive about the quality of the engineering programmes, for example, the Deputy Head of one public TVET College expressed his sentiments on how they applied QA in their immediate environment. He claimed that effective and efficient QA measures are applied, namely, test/examination papers/answer scripts are monitored and moderated internally regularly to determine whether all assessments are up to standard. In addition, partnerships with industry are very important, because the college students use their (industry’s) practical facilities due to a lack of facilities at the TVET College campus. Thirdly, he asserted that the college ensures that practical and theoretical training go hand in hand to complement each other.

The head of a private TVET College remarked that training programmes should be proactive to meet the needs of industry, and emphasised the following prerequisites for success (Participant A1):

A curriculum which is under constant review to ensure its relevancy. Suitably trained, enthusiastic staff members who are able and willing and on par with the latest developments must be appointed. Students must go through a selection test to determine their basic skills before admitted to a programme. One private college now has reached the point where industries approach it for students, and to run programmes to suit their needs. Students, parents and the industry are involved in planning, offering courses and important decisions. A successful programme starts with appropriate program development in which the lecturers/instructors are part of the process to ensure the quality of the product to be offered to students.

The participants were not in favour of the current NCV (National Certificate Vocational Education) course offered at institutions. They rather supported the CBMT (Competency Based Modular Training) for practical work and the NATED courses for theory. Although the feeling was that the latter course currently may be outdated in some sense, they expressed the view that an update of course content to more modern technology was all that was needed to make it suitable to meet the needs of the industry.

### **5.3.2.3 Quality assurance of programmes at the distinctive colleges**

On the question of how the quality of the programmes offered at the various TVET Colleges is assured, the participants raised a number of issues. Firstly, they saw assessments, assessment instruments and the assessment itself as of key importance. Linked to this was learner feedback and end of course feedback on evaluations. Lack of industry-related feedback is addressed on a constant basis. A participant explained that quality was assured by starting with the internal planning of a work schedule for three to six months. This planning includes a work schedule, assessments, moderations, and class visits.

*“These are all around the resources available at the college, which are lacking at some government TVET Colleges” (Participant D2).*

Continuous evaluation by means of formative assessments to monitor students’ progress is essential. Students are allowed three attempts to achieve competence. It was emphasised that the time to complete courses is too short to cover the curriculum. In this regard, one respondent (Participant C2) referred specifically to the NCV (National Certificate Vocational) Programme curriculum and its time for completion. Relevant teaching aids to make practical demonstrations more practically understandable was a problem experienced by one public TVET College. However, all respondents expressed the need for relevant teaching aids for more quality teaching.

### **5.3.2.4 The importance of accreditation of TVET providers**

On the aspect of how important accreditation of TVET providers was, the following general opinions were expressed:

Accreditation is most important, together with the recognition of a qualification - nationally and internationally. Accreditation is of utmost importance, to the extent that if a qualification is not accredited, it means absolutely nothing, locally and internationally. Accreditation is very important to set at a standard for the TVET institutions to attain.

*“But it must set standards that the industry and all TVET providers must comply with” (Participant A1).*

Some of the providers interviewed, however, clearly regarded this as a mere paperwork exercise. The Head of private college A emphasised:

*“It is important to follow a national standard which must be the same for all TVET providers”.*

The QA manager of private college B made the following statement: Private providers felt very strongly that TVET Colleges did not have enough leeway to do anything over and above what is required from industry, due to the lack of time and also as a result of having to comply with the demands of the curriculum of the DHET, which, in some cases, are outdated. Accreditation is non-negotiable for the student and the employer. The problem that was mentioned was related to being accredited, but the question asked was: Are the criteria in line with what industry needs? The respondents made it clear that within their frame of reference, they were not.

#### **5.3.2.5 The regulatory environment of TVET Colleges**

Regarding the regulatory environment of TVET Colleges, the following issues were pointed out by the various groups that were interviewed at the participating TVET institutions:

Students, in most cases the Student Representative Council (SRC), constantly keep telling institutions, “No students, no TVET College”. None of the respondents was impressed with this statement. They felt the SRC abused this so-called power.

*“Industries are the employers and they must play a vital role in in the whole process of regulating TVET providers which is not the case. The industry must come forward and use their powers to have more say in regulating TVET Colleges” (Participant D1).*

The DHET is the overhead monitoring body, while the QCTO monitors all occupational training. Umalusi monitors all Portfolios of Evidence (POEs) of students if they meet the required standards. Umalusi plays a very important role in TVET College training to ensure that minimum standards for quality training are met. The ETQA of the SETAs, more specifically, keeps an eye on outcomes-based learnerships and skills programmes. Within the wider context providers do not have a problem with the regulatory environment. The challenge is that initiatives are much more than the limited assistance provided. Institutions find it very frustrating to talk to the controlling bodies.

A major problem that came to the fore during the interviews was that the SETAs are not on

common ground regarding accreditation. Every SETA has its own ETQA (QA body) with its own rules and regulations. This causes confusion about the QA bodies, as providers regard UMALUSI's and QCTO's requirements the most common and aimed at levelling the playing field for all TVET providers. The SETAs are too centralised, which gives rise to too many different standards for the same aspect of the training, and the concomitant red tape.

### 5.3.2.6 *The most important stakeholders in engineering programmes*

On the question about who should be regarded as the most important stakeholder in the engineering programmes, the participants agreed on the following:

*"Students in conjunction with industry are the most important. The industry needs skilled labour. Employers are the ones who create opportunities for students who have completed their studies. Hand-in-hand with the industry they are the most important stakeholders" (Participant A1).*

Some participants indicated that in their view interested parties from industry, that is, the potential employers, are most important for the final output (the students). All respondents made it very clear that the industry should have an input in the curriculum planning and the minimum quality requirements for assessments (testing/examining students). A respondent expressed the view that the 'most important stakeholder' is to be found in a hierarchy with the employers, as the providers of jobs at the top level, followed by the students, and only then, at the third level, the DHET.

*"The TVET Colleges are supposed to be the link between the student and the industry. The industry puts forward its needs; the TVET College then must adapt to deliver the skills which they need, in other words, what does the industry need from a student to increase his/her employability?" (Participant D1).*

At another private college, the student was regarded as an

*"[i]ndividual who comes here with a need. He/she must get a qualification to prepare for the world of work" (Participant A1).*

The answer to the question about who is the most important stakeholder in TVET College programmes, was very clear as the participants agreed that industry must dictate and put on the table their needs which the TVET Colleges then must fulfil. But there are many shortfalls in the system, as the head of one of the private colleges proclaimed:

*"All the different departments of government, like the DHET, HET, and others, just are too many having a finger in the pie which augments the problems, and then the SETA ETQAs just make it worse" (Participant A1).*

### 5.3.2.7 *Participation of TVET Colleges in stakeholder forums*

Regarding invitations to TVET Colleges to attend stakeholder forums, the participants expressed their unanimous and total dissatisfaction. More specifically, participants from the private TVET Colleges claimed that this was an issue that made them “red under the collar”. The head of a private TVET College responded as follows:

*Hardly or never. Years ago, the SETAs invited representatives from the industry to forums, but these forums died a slow death. Costs could have been the main problem. It now seems that some people from large organisations with influence make decisions in isolation, where the entire industry and the TVET sector should be part of the decision-making” (Participant B 1).*

This was the general feeling among the participants interviewed. Confusion also reigned about the role of the QCTO, National Artisan Moderating Body (NAMB) who moderate all engineering training related matters for artisans, SETAs, etc., as can be seen from the remarks. One of the respondents pointed out that the local business forum invites them to their conferences that take place from time to time. They further indicated that they had a Provincial College Steering Committee Artisan / Technician Development Forum, initiated by NAMB, which meets about three to four times per annum (Participant D2).

Another participant made it clear that they had excellent representation at NAMB.

*“They invite pro-actively and do follow-ups” (Participant C1).*

A private TVET College participant responded as follows:

*“With other channels like the QCTO we need to contact them constantly to do follow-ups about their symposiums. We see these meetings of the regulating bodies mentioned above as very important to share information” (Participant A1).*

On the management side, they indicated that they do get invited to attend conferences, workshops, etc., but little or no attention is given to their inputs (Participant B1).

Attending work-related workshops and conferences are of key importance to the continuous professional development of staff. The participants reported on the kind of responses when they want to attend relevant workshops, conferences or seminars, they normally received by making the following remarks. A participant from the public colleges’ management group responded that they did not experience any resistance from college management, and maintained good relationships.

*"However, it is a different situation to get matters on the agenda and to push proposals through at such forums. This is not an easy task" (Participant C1).*

The participants reported that they were informed of forums and only needed to attend if they regarded it necessary. The majority of the participants interviewed confirmed that they never were asked to attend such meetings. Sometimes they do not receive any communication and no response from central management (Participant C1). Sometimes they would receive the minutes of the forum afterwards (Participant C2).

Another participant remarked that he/she always received

*"good responses. Reaction not negative. However, if your point of view is a threat to the organisers or those in charge, they are not so positive. It also depends on the subject discussed/touched" (Participant A2).*

A head of a division responded:

*"College Management always send a representative from management to attend and give feedback. I'm not so sure if this goes down to lower levels as it is supposed to be" (Participant C1).*

### **5.3.2.8 Incorporation in policies and practices of concerns raised at forums**

On the question whether matters or concerns raised at such forums were incorporated into policies and practices, most of the participants in the group agreed that they did not know what happened to their concerns raised at the forums (Participants D1 & D2). Another participant responded:

*"We are bound to DHET guidelines. Sometimes with crucial matters, we override DHET guidelines ... unfortunately with consequences" (Participant C2).*

This summarises the general responses from both private and public management participants in the interviews as another participant explained:

*"Very seldom that this happened through the years or that anybody gets this done via a forum. The experience was at such forums, a lot of cheap talking, but very little gets done" (Participant C1).*

One participant (Participant A1) mentioned that they had made a decent/substantial submission via these forums, namely the National Artisan Strategy for Skills Development Act.

*“Comments have been delivered, but no sign of any feedback at all” (Participant A2).*

Sometimes, the implementation of ideas raised at such forums is problematic if costs are involved. This was a common concern raised amongst the interview participants. One respondent indicated he did not have an answer to questions in this regard, because they were not invited to such forums (Participant B1). Only certain people get invited, and no policy was in place that had been implemented, as to their knowledge, that had been initiated at such a forum. Concerning policies, a request goes via the senior executive management channels for internal matters, which may be changed without the need to involve the DHET. If a case arises that has a bearing on national matters that involve all TVET Colleges, it has to follow the route via the DHET (Participant D1).

### **5.3.2.9 Problems and/or challenges with the presentation of engineering programmes**

In the discussion of problems/challenges with the presentation of engineering programmes, numerous aspects came to the fore. One participant stated that

*“The workshops are not fully equipped to demonstrate practical aspects of a concept, for example, how a boiler or an electrical motor works. Only theoretical knowledge is explained in many cases. Students must rely on pictures and the Google Internet search machine. The above speaks for itself regarding the relationship of the TVET with the industry” (Participant D1).*

Another participant said:

*“An ongoing problem which prominently stands out, that came out more specific at the public TVET Colleges, is the problem of remuneration packages for lecturing / instructional staff, considering the qualification requirements to be considered for these positions” (Participant C1).*

*“There also is a concern about permanent appointments which currently are not allowed by more specific government TVET Colleges. So, considering all these factors mentioned above, it is very important to look at the real facts: How are you going to attract the best lecturer/instructor with suitable qualifications and experience for these positions? It is nearly impossible!” (Participant D2).*

He further elaborated:

*“Potential employees are looking for job security and a living wage/salary. More specifically, technically qualified people are in high demand in the industry that offers competitive salaries. Indirectly this problem has a huge impact on the level of quality training offered for engineering training courses at the TVET College” (Participant D2).*

As far as the private TVET Colleges are concerned, they can make better salary offers, but salaries still must be cost-effective, considering the fact that private colleges do not receive government subsidies (Participant C1).

A participant (Participant A1) mentioned that their college was accredited by the following bodies, namely MERSETA, NAMB and QCTO.

*"No audit has been done in ten years' time by any of the above-mentioned QA or regulating bodies" (Participant A).*

This remark was made by the head of a private TVET institution who was of the opinion that auditing is even more important at a private institution than for a public institution.

*"We face numerous challenges, more specifically regarding admin. Lecturers/instructors are so overloaded with admin work that it affects their performance in the workplace. This happens more specifically with staff members who are more practically or technically orientated. Every time they do an assessment, way too much paperwork is involved" (Participant D1).*

#### **5.3.2.10 Positive matters related to quality assurance in the presentation of engineering programmes**

The following positive remarks were made regarding QA in the presentation of engineering programmes:

Lecturers present extra classes if students do not understand fully in the case of more complex learning material. This speaks for itself about lecturers being willing to walk the extra mile. A programme head of a public college responded to this statement made during the interview by saying:

*"But the motivation from the TVET College itself is not that good!" (Participant D2).*

The deputy head responsible for QA at a private college mentioned:

*"Technological aid is required for lecturing, for example, a data projector and computer. No more just 'talk and chalk'. One can show students the latest developments from the internet" (Participant A2).*

*"Prerequisites are a given to sit for national examinations. For theoretical examinations a student needs to get 45% for all theoretical tests. For the practical Competency Modular Based (CBMT) training, the student must pass the pre-tests on all modules to be admitted to do the final practical examinations" (Participant D2).*

A private institution received a compliment from the Chairman of the QCTO on the success and throughput rate of the college (Participant A1).

A student of one of the participating TVET Colleges came third in the World Skills Convention competition (Participant A1). This student studied at a private institution with all the necessary modern facilities for training.

### **5.3.2.11 Suggestions to address the challenges mentioned**

During the group interviews, suggestions were made to address the challenges mentioned during the interview. One of the participants indicated that

*“There is a desperate need for practical models and appropriate teaching aids to reinforce the learning process. Teaching aids that not only allow the students to hear or see the demonstration but to get involved too are absolutely vital in the learning process. Teaching aids must be relevant to the learning that takes place”* (Participant C2).

Another participant was of the view that:

*“If no quality teaching takes place, the quality of the outcome also will not be of the desired standard”* (Participant B1).

A head of division (Participant D2) referred to the “mop-up” system at the DHET, which means there must be evidence to prove a request for moderation. Umalusi (as QA body) must be supplied with relevant evidence when providers submit POEs. For external audits like SABS, sufficient evidence must be presented with tracking. The QA process can be more streamlined if internal QA is done by means of internal audits at TVET Colleges.

A participant (Participant D2) made the remark that if there were no standard, there could not be accreditation, because some or other criteria are required. The guidelines for the accreditation process, and more specifically about training equipment, according to the majority of participants, were not clear. Participant D stated that a public TVET College is accredited, but does not have suitable equipment in place. This equipment in some cases is very important for skills to be mastered through hands-on training and assessment. The private provider participant mentioned that their institution was in a partnership with industry whereby their students can go to industry for practical training. No other evidence of such facilities with industry partners came to the fore.

### **5.3.2.12 Participant views on the past and current education and training environment for engineering trainees in the South African context**

The following information was shared when interviewees shared their experiences, thoughts and views about the past and current education and training environment for engineering trainees in the SA context:

All interviewees from the various TVET Colleges emphatically pointed out that a practical link is essential to reinforce the learning process to make the learning process more practical/visible. A common comment from the participants in these interviews was that if this practical link was lacking in the training facilities to support theory training, a lack of practical support to theoretical training ensued.

Over the past two to three decades, processes have drastically changed at TVET Colleges in South Africa. All the participants were convinced that the 'old system' of technical / engineering training worked perfectly. Participant A explained:

*"The student came to the TVET College for theory training and after a semester/trimester went back to the employer for practical training. Thus one combined the two aspects of the engineering courses which are complementing each other. With the current system, many of the students do not have a job where they get practical training. Some colleges managed to get a temporary job for students to alternate theory and practical training"* (Participant A).

If was also mentioned that

*"If the student can undergo practical and theoretical training in the college, it makes the situation much better. In engineering courses, the theory and practical training are complementing each other"* (Participant D1).

*"Therefore, in conclusion, to make a success of engineering courses at TVET Colleges the theoretical and practical training must go hand-in-hand"* (Participant D2).

The participants from the public TVET Colleges concluded that this did not happen, because of a lack of job opportunities for students to get practical exposure in the workplace.

Another complaint that was heard repeatedly was this:

*"The weak school system does not adequately prepare students for engineering studies at TVET Colleges or any other post-school training"* (Participant B1).

One respondent described the current situation regarding engineering training as a chaotic experience. This respondent was of opinion that many students at the TVET College did

not even know the difference between the N1 to N6 National Engineering Diploma and the NQF outcomes-based courses.

*“Many so-called subject advisors from the SETAs also are not informed sufficiently – some do not even know the difference between the learnership and apprenticeship” (Participant A).*

All the participants in the interviews supported the “Old School” system, according to which all theory training that happens at the TVET Colleges was supported and strengthened by on-the-job practical training. All engineering courses ran parallel theory and practical programmes for the duration of the course, that is, until the candidate qualified. In their opinion, this should still be applied in all engineering courses at TVET Colleges. They further pointed out that the current learnership with outcomes-based POEs was not on par.

### **5.3.2.13 Views about a future education and training environment for engineering trainees in the South African context**

The thoughts and views about a future education and training environment for engineering trainees in the SA context can be concluded with further suggestions in this regard from the participants in this research. The following suggestions were expressed by the members of the management teams of the four participating TVET Colleges:

*“Practical real models to support the learning process to give more substance in the training process. In the engineering field, it is almost impossible to give substantial lectures without practical model support” (Participant C1). “A very popular excuse in the TVET Colleges in SA is the lack of funds to provide models to reinforce theoretical training with e.g. pumps, electrical motors, etc. for practical exposure” (Participant A1).*

The School Education and Training system must be rectified (at school level already). This came out very strong from the respondents in the interviews as a common concern for the participants at the managerial level at the respective TVET Colleges.

The TVET College system trains a large number of people, and ‘bums on the seat’, that is, sitting down and studying (student learning), seems to be more important than the quality of teaching to ensure future employability. Participants in the study, in general, viewed the education and training system in TVETs, as dictated by the DHET, as putting quantity before quality. Large numbers of youngsters get ‘a paper in the hand’ (receive a qualification), but have not necessarily mastered quality skills that enable them to execute a task (Participant D2).

Currently, five main engineering courses are offered at TVET Colleges (as indicated by the participants), namely:

- CBMT (practical) in conjunction with NATED Engineering (theory N1 - N6) courses.
- NC courses with six months' work and six months' practical training.
- NCV – three years of theoretical and practical training.
- Learnerships in all disciplines.

The participants' conclusions about the above-mentioned course options at TVET Colleges were the following:

On the positive side, the DHET is investigating the possibility of a different model incorporating NCV in the NATED programme (Participant C1). The opinion of experienced people amongst the participants was that they strongly felt that the NATED (N1 to N6) for engineering theory training must be combined with the CBMT (practical) for a much more well-trained and rounded-off individual. The general response amongst the participants was: "*Scrap NCV*". They see NCV as a duplication of N1 to N3.

#### **5.3.2.14 *The process of compiling the curriculum for an engineering course: Decisions on content and skills***

The participants were requested to explain the process through which they usually compiled the curriculum for an engineering course they taught, and, more specifically, how they decided on the content and skills to be taught. The following came forward from the interviews:

Participants responded that such decisions had to be approved by the SETA governing body for curriculum revising. A Curriculum Revision Committee (CRC) is in place, comprising major stakeholders in the industry. A private provider participant indicated that their institution changed the internal curriculum to suit the needs of the customer:

*"As a private provider, we make the necessary changes to satisfy the customer's needs"*  
(Participant A1).

The national curriculum is generic; therefore the candidates are examined externally, and the institution has to train the students according to the national curriculum to ensure they are prepared for their exams (Participant C2). The DHET prescribes to private and public providers on what has to be taken up in the syllabus and students are examined externally.

*“No opportunities are provided for TVET College lecturing staff to give input on the curriculum – neither regarding theory nor practical training” (Participant D1).*

All the participants at managerial and ground-level agreed on this.

A TVET institution that does respond to the customer’s needs, has a management policy that makes provision for such courses, but the participants complained that

*“this arrangement puts extra pressure on lecturers/instructors as they have to complete the national curriculum in the same period of time as the add-ons” (Participant A2).*

The majority of the participants proposed a better solution to the issue of curriculum review, namely to use the CBMT (practical) curriculum in conjunction with NATED N1 to N6 (theory) curricula.

#### **5.3.2.15 Teaching and assessment of students in the engineering training programmes at TVET institutions**

Respondents were requested to explain how they usually teach and assess the students in the engineering training programmes they offered at their TVET institutions. Theoretical teaching and some practical training and examinations take place at the TVET Colleges, provided they have the relevant and specific practical equipment available to do valid and appropriate practical training and testing.

At some public TVET Colleges no practical assessments can be done, due to a lack of equipment for appropriate testing, usually as a result of a lack of funds to buy these practical equipment (Participant D1). This respondent also pointed out the lack of government funding to buy expensive equipment. These public institutions must rely on partnerships with industry and have to send their students along with a certified assessor to such industry partners. The institutions have to be accredited to conduct valid practical assessments at the particular company in the industry (Participant D2). All participants reported that as far as theoretical assessments are concerned, the students write two formal tests during the semester/trimester and a final external examination at all private and public TVET institutions.

One private TVET College (Participant A1) pointed out that their teaching and training philosophy covered three phases, namely:

Phase 1 – Learning about; Phase 2 – Learning to do; Phase 3 – Learning to be

This whole process takes place until the student can prove that he or she has successfully attained Phase 3, guided by national policies for programmes in the TVET sector (Participant A2).

Students are internally assessed for admission to the national examinations for NCV, NATED theory examinations. These internal theoretical assessments during the term, then qualify the student for National NATED examinations.

### **5.3.2.16 Participants' comments and suggestions about quality assurance being incorporated in the ETQA policies and practices at institutions**

The participants had varied comments and suggestions pertaining to quality assurance, been incorporated in the relevant ETQA policies and practices at their distinctive institutions. Although the DHET has a generic ETQA policy in place for TVET institutions, in the research one of the respondents claimed that

*"no uniform standard for practical assessments at TVET Colleges" existed (Participant B1).*

As external assessments are conducted for practical and theoretical examinations, the papers are compiled by external examiners. If any errors slip through, it is a time-consuming process to get rectification. Furthermore, the exam papers are opened only on the day of the examination, when it is way too late to ask for alterations (Participant B2). The participants from both the public and private TVET Colleges made it clear that after the examinations were completed, they could lodge a complaint and get into a dispute with the DHET, but the bottom line is, the exam is over (Participants C1, D2).

*"This is a time-consuming process laid down in the external policy of the DHET and all public- and private colleges are subjected to it as part of the national accreditation process" (Participant D2).*

*"A private TVET College can set their own papers, but the candidates will not get any recognition for it, because it is no the official paper of the DHET" (Participant A1).*

*"Private TVET Colleges must do the official DHET theoretical and practical examinations to get recognition and for the student to get a national qualification" (Participant A1).*

A participant from a private institution referred to the institutional QMS policy which is used to complement the ETQA policy, which is more detailed and comprehensive than the official generic DHET policy (Participant B1).

The following recommendations regarding QA is a broad summary of the general opinions of the participants involved in the research. Participants were of the view that the teaching,

training and assessment system for TVET Colleges should be more streamlined engineering training (Participant D2). A participant from a public college recommended that the options of NATED theoretical training and CBMT practical training should be limited, but still kept in modules. This will be to the benefit of, for example, a student who is excellent in a specific technical skill, but will never get a full qualification, because he/she does not go through a complete learnership or apprenticeship. This is due to the regulation that a student cannot obtain a qualification with only one or two modules of a full course (Participant C1). During the same interview, another participant added:

*“In the outcomes-based system this is a skills programme, but employers have doubts about the learnership/skills programme of the outcomes-based system”* (Participant C2).

### **5.3.2.17 Problems experienced in terms of quality assurance as applied by the regulatory authorities**

A participant from a public TVET provider (Participant D1) commented on what was called a “*very poor internal moderation programme*” (basic), as the moderation of assessments rarely occurred at college and campus-level (Participant C2). It also was purported that assessments were conducted according to varying standards depending on which college was involved – some colleges maintained very high standards, while others settled for low standards (Participant D2). It was not clear how this could happen, as the regulating authorities (SETAs, QCTO, and others) have generic checklists in place to be used for more specific accreditation applications (Participant A2). It was explained that because an external examination system is used, the lecturers/instructors will never know what problems are experienced by the students because they do not have the opportunity to see students’ exam papers to identify what has gone wrong for a student who has failed. Such situations are even worse if the student has high year marks, but fails the examination (Participant C1).

Management participants from a public TVET provider interviewed were in favour of the autonomous system according to which each college sets its own examination paper like it is the case with tests. But they also admitted, on the other side, that some lecturers/instructors did not have teaching qualifications, and therefore did not have training in compiling correct, relevant and appropriate exam papers.

*“Once again the overhead control of DHET does not make provision for that”* (Participant D2).

A private TVET institution pointed out that the overriding source of their problems was that they had to comply, at the minimum, with the rules and regulations of the DHET, and more

specifically the QCTO, NAMB, Umalusi and the SETAs. What makes this situation even worse is that these bodies also differ among themselves (Participants B1, B2).

According to participants' general opinion, a policy structure was required to make things straight forward (all participants). The general comments boiled down to one opinion: too many SETAs existed, each one with its own ETQA, and therefore way too many regulating/controlling bodies with different standards and requirements, namely UMALUSI, SETA ETQAs and QCTO. Some of the participants interviewed were of the opinion that the DHET has a double-barrelled approach in their external and internal policies. The participants were adamant that the DHET should create an environment in which colleges can make the call themselves regarding internal matters, where the top-notch in the colleges can take control to serve as a benchmark for other TVET Colleges (Participants A1, B2, C1, D1).

### **5.3.2.18 *Qualifications of lecturing staff at participating TVET Colleges where research is conducted***

Regarding the extent to which lecturing staff at participating TVET Colleges was suitably qualified for the programmes they delivered at the institutions where the research was conducted, the opinion was that they were suitably qualified, as specific minimum qualifications were required to be considered for a lecturing position. This is a national DHET requirement. According to the management staff interviewed, the lecturing staff generally did well as far as theoretical training was concerned. It was more problematic to make a judgement about the practical training, as some public and private colleges did not have sufficient facilities to do practical training, therefore, management did not do class visits to determine the lecturers'/ instructors' practical teaching abilities (Participant D1). In some cases, it was more problematic to determine the lecturer's/instructor's abilities, because some did not have teaching qualifications, but at one of the private providers, it was found they all had sufficient teaching experience to teach the subject well (Participant B).

At one of the private institutions, staff members attended development sessions from time to time to keep track with new technological developments. They make sure that all the members of the training staff are at least qualified technically and are SMEs in the field they teach (Participant A1). Some lecturers/instructors do not have a teaching qualification.

*"The college lately started offering a tailor-made teacher training course to train and qualify all lecturing staff and empower them with a suitable training qualification to cover the behavioural component of their job at a private TVET institution" (Participant A1).*

A participant remarked that

*“subject matter experts (SMEs) are in shortfall” (Participant D2).*

Another issue mentioned by participants was related to the matter of a good qualification that does not necessarily make one a good leader or teacher. Most of the respondents expressed the opinion that an absolutely urgent need existed for good leadership in the TVET system.

### **5.3.2.19 Opinions about the minimum qualification of staff members in the disciplines/fields they teach**

Respondents' opinions were asked about minimum qualifications of lecturers/instructors in the disciplines/fields they taught.

All the respondents at managerial level felt very strongly (“Yes, definitely”) about instructional staff having the required qualifications for their respective tasks. The following matters were raised in this regard:

*“They (teaching/training staff) should be qualified properly in the subject and on the behavioural side. They must also stay informed of the latest technological developments and keep upskilling themselves” (Participant A1).*

*“There is much doubt about whether there is a will from DHET’s and TVET College management’s side to apply this at, more specifically, public TVET Colleges” (Participant B3).*

A common problem raised was that lecturers/instructors are subject matter experts, but do not have teaching qualifications. This was a general remark amongst the public TVET College participants. All the participants, without exception, regarded it as non-negotiable that the lecturers/instructors should be SMEs in the field they were teaching.

*“Yes, subject matter expertise is very important. It does not help if the lecturer/instructor has the minimum academic qualifications, but the SME knowledge and skills in the subject field are lacking” (Respondent A1).*

This participant (A1) felt strongly that instructors/lecturers needed at least an N3 qualification for adequate SME ability.

### **5.3.2.20 Lecturers/instructors should have a minimum qualification in teaching**

Participants strongly aired their opinions about lecturers/instructors having a minimum

qualification in teaching, and concomitant with that, they emphasised that it was essential for them to have covered the pedagogical learning and disciplinary component, offered as part of the Teachers' Education Qualification. The different pedagogical and didactical components should be made compulsory. According to the participants,

*"[t]his very important aspect is totally under-estimated in the SA education and training system"*  
(Participant D1).

Apart from subject matter expertise, they need a pedagogical knowledge background, which is a vital component for quality teaching. One participant did not share this sentiment and emphasised that subject matter expertise (SME) is most important, specifically with regard to practical training. Participants in the public TVET College group claimed that it was difficult to recruit suitably qualified staff due to the poor remuneration and salary scales of the DHET academic staff. They are unfortunately bound to the DHET TVET College salary scales. This, however, is not the case at private TVET Colleges where the institution has the freedom to determine the remuneration packages of its staff.

#### **5.3.2.21 College heads, quality assurance managers and management staff's understanding of the role and function of the Sector Education and Training Authorities (SETAs)**

QA managers and management staff at the participating colleges were generally dissatisfied with the role and function of the Sector Education and Training Authorities (SETAs) in South Africa. During the interviews, the public and private providers expressed dissatisfaction with the SETAs per se, but even more so with the government departments, such as the DHET, and QA bodies like QCTO and Umalusi. This corroborates the following statement by Connolly (2013:n.p.):

*"Each SETA was its own disciplinarian, and with no one at the top there was more concern about one's job and budget than about serving the poor who were and still are unemployed and with no hope".*

According to Connolly a general inconsistency reigned in applying standards within the SETA system. Although the SETAs all have brilliant legislation and regulations, this is regarded as rather pointless, because they are not applied and implemented appropriately. Connolly (2013:n.p.) is of the opinion that this boils down to a staffing issue, as in several instances staff has been found either unqualified or merely following bureaucratic rules and regulations to the letter of the law instead of exercising discretion and applying good judgement. The existence of a great variety of documentation and the duplication of

requirements merely serve to exacerbate the inconsistencies in the system (Connolly 2013:n.p.).

The following negative aspects mentioned during the interviews have a bearing on the poor view the participants had of the SETAs and their interaction with NAMB, the DHET, QCTO and the TVET Colleges, and confirm Connolly's (2013) argument:

It is well known that NAMB (National Artisan Moderation Body) has to verify all trade test results via the SETAs. Much confusion reigns about the roles of the above-mentioned two bodies (Participant C1). Participant A1 maintained that colleges received very little input from these bodies - which more or less was the general response of all the participants.

Participants claimed that the colleges appointed too many staff members who were not sufficiently experienced / suitably qualified, and were disgruntled about the poor salary scales of the public TVET Colleges as dictated by the DHET. A great deal of confusion reigned on the different roles of NAMB and QCTO (Participant A2).

The money the SETAs received from levy payers was believed by some of the respondents do not find its way through the correct avenues to improve and expand relevant training. One respondent from a private TVET institution wanted the SETAs to explain their roles and responsibilities - as institutions hardly ever received any support from SETAs (Participant A1). Participant A1 made his opinion clear, namely that the SETAs were a "necessary evil", and declared that if it was at all possible, it was better not to deal with them. He/she also proclaimed that there were too many SETAs. This view (of too many SETAs) represented the general opinion of the participants. One participant strongly recommended that the SETA system should be "streamlined" (Participant D1).

### **5.3.2.22 *Participants' views about a more educated population bringing benefits that affect individuals, communities and society as a whole***

The participants were asked whether they believed that a more educated population would bring benefits that affect individuals, communities and society as a whole. The participants who responded positively, assert that, according to their view, knowledge makes things much easier and populations more employable. One of the major problems in the country is the poor education system, as

*"poor education has a ripple effect that filters through to all aspects of society"* (Participant A1).

The majority of the participants responded in the affirmative with the motivation that this

was the only way citizens could better understand their role and responsibility in society. To this, all the respondents from each group clearly indicated their agreement.

*“It gives the average population a better chance of employment and also more opportunities because of better skills. As an example, one can look at highly skilled populations as compared to illiterate populations” (Participant B1).*

### **5.3.2.23 Common viewpoints that were aired during the interviews**

Research participants in every group that was interviewed emphasised the following:

Good lecturers ask questions to test the construction of knowledge based on information transfer. Every lecturer must know his/her subject field very well. Lecturers must be well qualified in their subject fields.

A participant (Participant B1) remarked on and emphasised that students should know the importance of the discipline, be well prepared and master knowledge of the subject matter. Equally important, from the side of the lecturers, were matters such as a passion for teaching and the discipline, as well as an above-average subject matter knowledge. A QA manager (Participant B2) supported these views and added that lecturers/instructors should know/realise when students (normally) are struggling with the work, on the one hand, and on the other hand they also should know their students and their abilities. Lecturers/instructors should change their instructional approach and teaching style as the situation requires. Lecturers/instructors should be adaptable in terms of their teaching style/methods, and make the most of circumstances and teaching aids and technology available.

### **5.3.2.24 Participants’ opinions on the characteristics of a cost-effective education and training system**

The participants expressed opinions and ideas on what they regarded as the characteristics of a cost-effective education and training system. These can be summarised as follows:

*“Students who pass and meet the set standards” (Participant B1). Employable students are produced” (Participant A2).*

Return on investment (ROI) for government subsidies, which are relatively easily available to government TVET Colleges (Participant A1):

*“Cut out unnecessary training that does not add value and make students lose focus” (Participant A1).*

*“Well-equipped and relevant, practical training facilities. Partnerships with industry to be kept up to date about the industry’s needs in order to ensure that students are employable. This opens the door to use employer facilities when the DHET cannot afford to supply relevant equipment for practical training at the TVET College” (Head of public TVET College B).*

Two participants at management level (Participant A1, A2) emphatically stressed the following as very important aspects of a cost-effective education and training system characterised by healthy management structures at all levels: no corruption and “zero tolerance” towards corruption. Furthermore, ownership from the classroom to the boardroom, careful management of finances and proper stewardship should be maintained.

A senior participant pointed out that cost never should be a factor. According to this participant, one cannot ‘skimp’ when education is concerned. Good education, with all the spin-offs it can bring, is priceless for any population (Participant A2).

From what has been gathered from the interviews, it could be concluded that whether a TVET College is a public or a private institution, it stays under the authority of the DHET’s rules and regulations. On a positive note, it was mentioned that private TVET Colleges were allowed to adapt their curricula to suit the needs of their customers, but they could only do that after having complied with the prescriptions and the curriculum of DHET (Participants A2, B1). This, therefore, creates a problem for private providers, because of the time constraints – anything offered to supplement the DHET curriculum put extra pressure on their students. Thus, although the content might add value, adding their own programmes created a ripple effect due to lack of time to master the DHET programme and extra content which had a negative effect on the quality of the training provided.

### **5.3.3 Aspects under scrutiny during focus group interviews with lectures/instructors at participating TVET Colleges**

The same interview schedule as used for the manager group was used for the interviews with the lecturers/instructors, but the interviews were conducted separately. It was necessary for the purpose of this research to gain the perspectives of managers as well as lecturers at the four participating colleges where the research was conducted. Overall, it appeared that participants were of the opinion that the QA systems at TVET Colleges stem from generic documents from the QCTO and various SETAs (e.g. QCTO, 2011), which must be complied with at all registered and accredited public and private institutions in South Africa, in line with DHET regulations.

Private TVET Colleges must adhere to the same rules and regulations as public TVET

Colleges. The private colleges have more flexibility in the sense that they may add to their curricula, but they are not allowed leave out or replace anything from the official national curriculum which the public providers are bound to follow. Participants from the private institutions commonly complained that they did not have time to respond to clients' needs without deviating from the prescribed curriculum. This hampered their initiative and freedom to expand on the basic curriculum - which was required if they responded to industry needs by being innovative and creative (Participants A3, A4, B3, B4, C3, C4, D3 & D4).

### **5.3.3.1 *Participants' views of the quality of the engineering programmes at their distinctive colleges***

During the interviews, the researcher explored the participants' views on the quality of the engineering programmes for artisans and technicians followed at the respective TVET institutions. It was assumed that they would respond positively as they were directly involved in presenting the programme; therefore, they were in direct control of the quality of the programme. However, two distinct views emerge: they were critical about the quality of the curriculum, but satisfied with the quality of what they were offering.

As far as the first point is concerned, participants were not positive about the quality of the curriculum that they were offering. Generally, they clearly stated that a huge part of the engineering training programmes was outdated and not on par with current technological development (Participants A3 & A4). One participant was positive about the quality of the engineering programmes (Participant C3), But, generally speaking, they merely were satisfied with the format of the course (Participant C3), a strong feeling reigned that the curriculum had to be updated to be in line with the latest developments for training and to be relevant (Participants A3, A4, D3 & D4). A participant had a counter-question to the researcher –

*"Who decides what is the correct standard?" At that stage, in their view, the standard was an opinion. "Standards must be established by a specialist" (Participant B4).*

This, in the participants' view, did not happen. Quality was not really controlled externally, but internally.

*"Quality is not really controlled by the external body. Mostly, an internal moderation takes place internally" (Participant D3).*

Regarding the quality of the training delivered, participants indicated that it was "excellent", and complemented by relevant training material, but there was a time constraint. Time to

complete the syllabus was not nearly sufficient. Students were placed with employers to gain relevant practical training in order to close the loop between theoretical learning and practical application, which have to take place for adequate engineering training (Participants A3 & A4). The participants regarded the quality of training as fair, but the teaching aids were not sufficient and up to standard. Theory training received too much emphasis and, in the process, the practical part of the training was largely neglected (Participants D3 & D4).

### **5.3.3.2 The assurance of the quality of the programmes offered at the distinctive TVET Colleges**

On the question of how they as lecturers/instructors assured the quality of the programmes offered at their respective TVET Colleges, the following responses were received. It was, however, found that participants were less positive about the quality of what they were offering (Participants C3 & C4), referring to the following:

A huge concern reigned about the lack of facilities for practical training - facilities were reported to be lacking at most of the TVET Colleges. In their perception, the purpose of TVET Colleges initially was theory training combined with relevant practical training in the workplace. Participant D3 explained that the lack of practical facilities was due to financial constraints:

*"At one provider, instead of practical work, the instructors use Google and give practical presentations in the form of video clips to students".*

The participants regarded such training as totally unacceptable because it offered absolutely no practical experience to the learners. Participant D further stressed that

*"[s]tudents must get exposure by practically executing a task in the workshop or laboratories".*

The lack of hands-on, practical experience was clearly emphasised by the public provider participants.

Two problems were emphasised by participants from private provider A.

*"On the one hand, the time is too short to complete the curriculum. On the other hand, the TVET institution, on top of the official DHET syllabus, builds in extra, relevant topics which cover new technology and up to date info, which then puts pressure on the time to complete the course" (Participant D).*

*"This really causes us a headache, because the students are examined externally on the outdated part as well. And they have to pass the exam" (Participant A4).*

Participant A3 elucidated the situation further:

*"The situation is very awkward. If they stick to the DHET's outdated syllabus, the students can pass with flying colours, but then the extra, updated part they train or want to train, cannot materialise and this handicaps the student's prospects for employment" (Participant A3).*

*"Due to the large number of students in the classes, individual attention is made more difficult" (Participant D3).*

This is a problem because some students just move on much faster than others. The respondents (Participant C3 & C4) also emphasised a large number of students per lecturer /instructor.

*"Thorough preparation for classes, both theory and practical, is non-negotiable" (Participant B3).*

### **5.3.3.3 The importance of accreditation of TVET providers**

On the aspect of how important accreditation of TVET providers was, the following came out very strongly from amongst these participants:

In general, they responded that accreditation was very important and non-negotiable. However, they particularly had a problem with the requirements for accreditation - to be more specific, with the criteria. The following remark was made by one of the interviewees:

*"Why are so many people qualified at an accredited institution, but do not get a job?" (Participant C3).*

The participants emphasised the importance of applicable accreditation criteria as pointed out by all participants. The opinion of most of the respondents was that more stakeholders should be involved in the accreditation criteria for TVET institutions' training programmes.

*"With a view to accreditation, the theory and practical training must be aligned in order to complement each other in line with industry needs" (Participant B 3). Two opinions were aired with regard to accreditation: "... on the one hand, it makes the skills the youth achieves more attractive for marketing themselves with an accredited qualification to apply for employment" (Participant A3).*

*"On the other hand, what about the student who just does not have the ability to achieve a full qualification? At the moment it is everything or nothing for an engineering/technical qualification" (Participant 4).*

*“Accreditation plays a very important role. Even if you give the best training, if it is not accredited, it means absolutely nothing” (Participant D3).*

A very strong view was expressed that SETAs should be part of the accreditation of smaller, or less complete, skills programmes to make provision for a qualification, even if it is not a full qualification (Participant D4). This idea was elucidated further by participant B4, who contended:

*“There are some people in the workplace who do a specific task better than most other, but just do not have the ability or ambition to become an artisan, technician, or even a certificated engineer. But they are excellent in, for example, doing machine overhaul work” (Respondent B4).*

The respondents in the interviews felt very strongly that the education and training system also should make provision for qualifications for such students, in order to prevent their special skills to be lost to the discipline.

#### **5.3.3.4 The regulatory environment of TVET Colleges**

Regarding the regulatory environment of TVET Colleges, the following standpoints were taken by the various groups that were interviewed at the participating TVET institutions:

Interviewees regarded the regulatory environment as very important for continuous improvement; however, as subject matter experts they noticed many and huge defects (Participant A3).

One of the most obvious and profound deficiencies mentioned by the majority of the participants was the ineffective and unsatisfactory link between industry and TVET Colleges in general. This unfortunate situation clearly bothered the interviewees, as it was mentioned during all the interviews conducted with lecturers/instructors at the distinctive colleges (Participants A3, A4, B3, B4, C3, C4, D3 & D4).

*“Quality and standards are not on par anymore”*, was a recurrent complaint. With reference to artisan training, the opinion was that these students were regarded as ‘new part fitters’. The newly qualified students did not have the ability of fault-finding anymore, and the majority of the respondents were of opinion that the system did not make provision for fault-finding and operating experience (Participants B3 & B4). A participant remarked:

*“Very good to have a national standard in place. TVET institutions must be regulated to have control over standards and best practice operations” (Respondent D).*

But, amongst all the participants interviewed, the general feeling was that

*“things do not happen like they should”* (Respondent B3).

Another remark that was made and supported was: “When a lecturer/instructor is visited by a person from a regulatory body, as SME you can quickly see if the inspector is on top of it or not. It often happens that they are not, more specifically, when substantial questions around QA come up” (Respondents A3 & A4).

A public provider lecturer asserted that,

*“In effect, the problem is too much pressure from the top on what quality training entails, notwithstanding the level of the students they allow into the programmes. The pressure from Umalusi, SETA, DHET, and QCTO for instant training is phenomenal. The top structure in the DHET expects us to offer a course in a short period of time, and in the same way put time constraints on us. In some cases, the skills they expect cannot be trained in a short period of time”* (Participants D3 & D4).

#### **5.3.3.5 The most important stakeholders in the engineering programmes**

On the aspect of whom they regarded as the most important stakeholders in the engineering programmes, all the participants in the interviews with lecturers and instructors clearly agreed. As was the case with the opinions of the heads, QA managers and HODs, the respondents indicated that the industry by far was the most important stakeholder, as industry employed the students trained by the TVET Colleges. The participants also agreed that although no doubt existed that industry, as the creator of employment opportunities, was the most important role player, the students also qualified as most important stakeholders, because without them the TVET Colleges had no reason to exist (Respondents A3 & B3).

#### **5.3.3.6 Invitation to TVET Colleges to attend stakeholder forums**

Interview participants acknowledged that they became “red under the collar” when stakeholder forums were mentioned, as they regarded these as such important meetings, but they rarely were granted the opportunity to attend. The lecturers/instructors interviewed from both public and private TVET Colleges agreed on the following:

Respondents had a huge problem with the SETAs in general, and with their way of communication with stakeholders in particular. Referring to invitations to stakeholder meetings, they once in a while accidentally (“via the grapevine”) learned about these

invitations (Respondent C3).

A participant proclaimed that lecturers and instructors were used to

*“poor involvement and [they] hardly ever liaise with SETAs, QCTO, NAMB, etc”.*  
(Respondent C4).

Referring to more specific SETAs' ETQAs the respondents confirmed that invitations to forums or other discussions were “non-existing” (Respondents B3, C3, C4, D3 & D4). Some of the participants reported that they hardly ever received an invite to SETA meetings (all respondents). Some shocking, unexpected feedback was received from one of the lecturers at a private TVET College during the interview:

*“I have to put in leave to attend exhibitions, conferences and workshops to enrich my ongoing professional development which does not get any attention at all from the TVET institution”*  
(Participant A4).

To this, another lecturer remarked:

*“As SMEs we believe the TVET institution should realise its responsibility to offer ongoing professional development to us, but this never happens”* (Participant C).

A rather bleak picture emerged from the information the lecturers and instructors shared during the interviews. It was stressed emphatically that lecturers/instructors – “*who must do the work at ground level*”, did not get invited to such forums. If such invitations did include lecturers and/or instructors, only “certain” lecturers/instructors would be nominated for specific functions, workshops and forums. On a whole, the lecturers/instructors basically are excluded from attending forums, as they made very clear during these interviews, and they were not at all pleased with the situation.

#### Responses to lecturers/instructors asking to attend forums

In the research, the researcher also tried to establish whether lectures were interested in attending stakeholder forums. The participants maintained that the response to such a request usually was something like,

*“Who’s going to look after your students”* (Participant A4)?

Other stumbling blocks keeping the lecturers/instructors from attending forums and information sessions were time constraints and the pressure put on them to finish the

syllabus. They also were involved in lecturing and/or training 80% of the day – which left no time for self-development or attending forums (Respondents A3, A4, B4, C4 & D3).

One participant further elucidated:

*“Even if you ask to go, there are many excuses”* (Participant B4),

hence their disgruntlement about not being afforded opportunities for professional development. A participant even sacrificed leave to attend a very important annual expo for ongoing professional development. They argued that

*“The wrong people get nominated because they are moving in the ‘correct circles’*  
(Participant C3);

and,

*“You can’t go, because you have classes running and there is nobody to stand in for you”*  
(Respondent D3).

#### Reaction to participants’ not attending forums when invited

Linked to the previous question, the researcher also explored lecturers’ reaction when they were invited to stakeholder forums, but failed to attend. Participants indicate that there will be no consequences if this should happen. In strong terms they said, “absolutely zero” (Participants D3 & D4). Most of the participants responded that QA control bodies hardly ever made contact with them to attend the meeting. According to the respondents, the attendance at such meetings is very poor. As a result of this lack of interaction SETAs hardly knew what happened at the TVETs, or stayed in touch with them. So lecturers were of the opinion that whether they attended the forums or not, made no difference. One respondent repeated clearly that they did not get invited. The researcher came to realise that the reason why they did not attend meetings was clear, but on the other hand, if they did get invited they refuse to accept it. It thus was concluded that discrepancies existed among institutions about how this matter was handled.

#### Incorporation of matters raised by tuition providers into policies and/or practices

Although it became clear during the study that lecturers seldom, if ever, attended stakeholder forums, they were asked, to the best of their knowledge, if any issues or matters raised by TVET providers at such forums, had eventually been incorporated into policies and/or practices at the institution. According to respondents from all the TVET institutions that were interviewed, they did not know of any of their proposals that had been accepted.

To the contrary, they were of the opinion that any suggestions they put on the table got wiped from the table. A participant from one of the private TVET Colleges interviewed, repeated that they did not get invited to meetings, neither did they attend. If they attended an exhibition or workshop, they did so in their private capacity. Another participant responded that they did not know about any proposals colleges had made that were approved, but they realised that such forums would be an excellent opportunity to deliver input (Participant D3). The participant mentioned that they had to be realistic and accept that such forums might not necessarily offer solutions to their problems,

*“[h]owever [they] must be seen as work team sessions where representatives from TVET Colleges can get insight as well as deliver inputs to their colleagues in the TVET sector”*  
(Participant D4).

Another response from a participant was that the officials or representatives of the DHET and SETAs listened to opinions or comments from the representatives of the colleges, but the impression the latter group always had, was that decisions had been made upfront already. Most of the time the colleges’ representatives knew upfront what the feedback would be, namely costs. This happened despite the fact that officials knew that students merely required more practical training to understand the skills to be mastered better (Respondent D3). From the views expressed by the participants the following two perspectives were raised most during the interviews conducted: First, in their experience, the DHET and SETAs officials had never spent time at the institutions. Secondly, there were no results from inputs they had made, but if the institutions’ staff at ground level could get opportunities to make any inputs at, for example, a focus group discussion, it would help to turn the tide towards positive change, for example, to compile everyday practical documents for the teaching of TVET programmes.

### **5.3.3.7 Problems/challenges in the presentation of engineering programmes**

During the discussion of problems/challenges in the presentation of engineering programmes, the lecturers indicated that a serious challenge the colleges were facing was to find a way to make the practical training more specific, especially where machine training was involved, as machines and other equipment are very expensive (Participant D3). Participants saw this as a very critical point in offering engineering training programme where machines and expensive laboratory equipment is needed. Participants from the public TVET Colleges in general also emphasised the shortage of highly skilled and qualified staff to do the actual training. No competitive salaries were offered for lecturing staff at TVET Colleges, specifically at public TVET Colleges where the DHET operates strictly according to the fixed salary scales. The private TVET Colleges are more flexible

and salaries are negotiated with the employees (Participant D4).

Participant C3 expressed the opinion that staff members did what they were told to do to “save” their jobs. A lecturer surmised that if it was not for his SME knowledge, he would not know what was right and what the industry wanted them to change; therefore, doing research in their own time was the only answer, as no research opportunities were offered at work (Participant A4).

Participants also complained that they could not make inputs to the DHET curriculum development processes in the various disciplines at the TVET Colleges. The curriculum had to be followed to the letter, despite the fact that it was outdated. If colleges (or individual lecturers/instructors) spend time on attending to instruction and training that are more relevant for the labour market, the students will pass the internal college examination, but not the national exams (Participant A4, B3, C3, D3 & D4). This assertion was made by both private and public TVET provider participants. Although private providers to some extent are allowed more flexibility, they still are bound to DHET national prescriptions regarding the curriculum. The private providers may do more or additional relevant, up-to-date training, but must still adhere to the national syllabus dictated by the DHET.

Participants from the public provider institutions asserted that a lack or shortage of teaching aids was a major problem, which might have a major impact on the students’ understanding of the work. More specifically, different machines as used in industry are required. On the other hand, if the teaching aids are to be made available, the groups will be way too big for practical training, that is, to control the training and to ensure individual attention (Participants D3 & D4). Throughout this study, these challenges were often mentioned as a common problem among these various TVET providers.

#### **5.3.3.8 *Positive matters related to quality assurance in the presentation of engineering programmes***

Notwithstanding the challenges mentioned above, a number of positive comments were made by lecturers regarding QA in the presentation of engineering programmes. Lecturers indicated that highly skilled and experienced training staff in the colleges largely determined their success; however, it was increasingly difficult and more of a luxury to replace them. These staff members are the ones that largely contribute to the success of the output of the college. They are trusted and students experience absolutely no fear to approach them to ask questions to enrich their knowledge (Participant D3 & D4).

A respondent, Participant A, reported that their institution has a highly successful placement office to assist students in finding employment. Students trained at that particular institution find employment easily and keep it. Their technically trained students, more specifically, are in demand even before they qualify, due to their experience during the time they have spent in placement in the industry (Participants A3 & A4). A similar remark was made by another participant, who claimed,

*“There are situations where students know more than artisans/technicians in the workplace” (Participant C3).*

To this, Participant C4 added that this made him think of the re-training the qualified person in the workplace received in the “new school”, that is, by working with well-trained students. This section aptly can be concluded with the words of a participant:

*“There is an urgent need for an upgrade of material and teaching aids. This can make an impact on the phenomenal changes in technology, more specifically, to new modern machine technology” (Participant A4).*

It was clear from the interviews that all the participants were willing and eager to be part of such a move to modern technology.

### **5.3.3.9 Suggestions to address the challenges mentioned**

As a follow-up question to the previous, participants were given the opportunity to make suggestions on how the challenges mentioned could be addressed. They were of the opinion that TVET training workshops might reach their goals of improving the quality of training, provided the colleges have the right equipment, laboratories, and more resources in place (Participants D3 & D4). One respondent suggested that the QA bodies like SETA ETQAs, NAMB and QCTO be more visible at TVET Colleges and workplace training providers (Participant A3). Another remark had a bearing on the continuing professional development of college staff, namely,

*“More attention must be given to TVET Colleges regarding SME’s ongoing professional development to attract and retain them” (Participant D4).*

This is particularly important in the light of engineering being a discipline that is going through rapid and profound development.

Participants were also of the view that certain departments required urgent upgrading, such as specifically, welding and boiler making, as well as fitting. Phenomenal changes had taken

place in technology. More emphasis needs to be put on practical training and training on modern equipment which will ensure colleges prepare the students for the world of work (Participant D3). In the conclusion of this section, the following information needs to be shared, although it was not vocalised as such during the interviews. Participants C3 and C4 never complained about training equipment in their engineering training programme. The researcher visited their workshops and was overwhelmed by the excellent training equipment installed and under construction at this public TVET College (Participant C3 & C4). This might have been the reason why no negative remarks came from this particular TVET College participants.

### **5.3.3.10 Experiences, thoughts and views about the past and current education and training environment for engineering trainees in the South African context**

Interviewees were requested to share their experiences, thoughts and views about the past and current education and training environment for engineering trainees in the SA context. In an interview a participant shared the following views:

*"The curriculum is not as good and relevant as in the 1980s and early 1990s. Then the curriculum was of an acceptable standard and we had excellent maths and science teaching. However, since the mid-1990s to date, a lack of proper maths and science training occurred, and curricula slowly but surely became outdated, sometimes even irrelevant"* (Participant A3).

In the same interview, Participant A4 fully agreed with the above opinion, as he/she confessed also to be "old school". This opinion and similar remarks were reiterated during interviews at the other participating institutions.

Another participant explicated his view of the situation as follows:

*"In the past, students in engineering studies were employed as an apprentice or learner engineering technician. They alternated in their training between theoretical work at the college and experiential learning in the workplace"* (Participant B3).

Participant B4 fully agreed with this information and confirmed that the system mentioned had been one that worked. Participant A4 declared that in the past,

*"[L]arge organizations were actively involved in the training of engineering/technical staff, such as ISCOR, ESKOM, and TRANSNET (Railways). They set very high standards"*.

Participants A3 and A4 further elaborated on this and explained that there was a link between these large organisations to establish training needs for artisan, technician and certificated engineers' training pathways.

A meaningful remark was made while the participants' views were explored, in that a participant (Participant D3) from one of the public TVET Colleges where the research was conducted, stated that the

*“'Old School' delivered better outputs to the world of work in the sense that the students spent more time in the workplace than in theory classes. Engineering studies at a TVET require theory studies at the TVET College and practical work in the workplace. Lately, the practical part is neglected to a large extent”.*

It became obvious during this research that this situation largely is due to the lack of funds to buy equipment and machinery. It thus became clear that the common problems experienced in the training of engineers currently mostly revolved around the lack of funds to recruit highly skilled training staff and to buy relevant teaching equipment.

#### **5.3.3.11 Suggestions for a future education and training environment for engineering trainees in the South African context**

This section on the thoughts and views about a future education and training environment for engineering trainees in the SA context is presented. A participant suggested that TVET Colleges need to

*“Get fully equipped workshops, labs and classrooms. Current study material needs to be updated in many cases” (Participant A3).*

One participant from a public TVET College suggested a compulsory bridging course between academic and technical engineering studies, specifically for students who came from academic schools but wished to study technical engineering. A lecturer was of opinion that specific government TVET Colleges delivered a large number of technically trained people, but that they do not comply with standards required in the industry (Participant D4). A fellow participant added:

*“There is a high demand for properly trained artisans and engineering technicians in South Africa with the relevant and updated training which industry needs” (Participant D3).*

Participants agreed that circumstances had to change. As we see rapid change in technology, it is clear that we need to keep up with changes in the TVET College sector, which currently, in the opinion of respondents, is not happening with emphasis on the “know-how” practical part.

### 5.3.3.12 Curriculum development for an engineering course: What content/skills should be taught?

The participants were requested to explain the process they usually use to compile the curriculum for an engineering course they teach and to specifically indicate how they decide on the content/skills that should be taught. To collect information in this regard, the participants' views were explored on the process through which they usually compile the curriculum they teach in their distinctive disciplines at their TVET institution. It was assumed that most participants would respond positively to the question as they are directly involved in setting up the curriculum for their particular programme and thus indirect control of the quality of the curriculum of the programme they are offering. It was, however, found that participants were less positive about their involvement in compiling the curricula of the programmes that they were offering.

In the interviews conducted, one of the participants alluded to the problems faced stating that:

*"Person from management with a technical background to buy into the process. Finances are always a very popular excuse. No pre-planning of success which can be achieved"* (Participant C3).

A participant from another TVET institution asserted that:

*"Stakeholders are not always involved in the needs analysis for training and relevant equipment that had to be obtained"* (Participant D4).

The matter was not resolved, as no reason was given for this response – how this institution compiled curricula without input from stakeholders is incomprehensible.

The following remark was made by one of the participants:

*"Any SME can see very clearly which students come from technical schools and academic schools based on their background knowledge"* (Participant C4).

Apparently, the SME then would adapt the curriculum to suit the needs of the students. A participant from a public TVET College mentioned that students

*"more and more depending on the subject matter knowledge of the lecturer/technician. The lecturers/instructors can see what it is that various students need and work according to that. If not, you lose that student along the road"* (Participant C3).

Based on own experience, a participant brought a matter to the table which is a concern in the entire TVET College technical training sector:

*"Much emphasis is on passing the trade test rather than the post-trade test through which the students enter the world of work" (Participant B4).*

During the interviews at the various TVET institutions, it was a matter of concern that nobody declared involvement in curriculum development, ensuing in the conclusion that this was a common problem which only could be addressed at a national level. At least one participant from each of the participating TVET institutions conceded that curriculum development was dictated by the DHET or the SETAs. These bodies hire expensive consultants to collect material and then the SETA's and DHET put everything together and the product is passed on to the TVET Colleges as the curriculum to be followed. This product in some cases contains many mistakes! The honest opinion of the majority of respondents was that not much really comes from SETAs.

#### **5.3.3.13 Teaching and assessing students in engineering training programmes**

Participants (lecturers and instructors) were provided with an opportunity to explain how they usually teach and assess the students in the engineering training programmes offered at their TVET institution. In general, all participants remarked on the large numbers of students in the practical training classes. Such large numbers can be taught the theory and be assessed, but practical sessions are problematic.

A participant asserted that practical training was virtually impossible, as

*"... no equipment [is available] for practical training in most of the study disciplines at the college" (Participant D3).*

He continued that at the college where he worked, they were

*"totally dependent on industry to do practical training, more specific, on machines" (Participant D3).*

This situation created further problems because quality control (QC) becomes impossible when the students are all placed in the industry by the college. The college then can no longer assure the students all receive the same standard of training, or that the training students receive meets the outcomes and/or study objectives of the curriculum.

Other concerns mentioned were:

*"... [the trainer] must be practically orientated to give insight and guidance to the student. During training the two (theory and practice) must go hand in hand" (Participant B3).*

Participant B4 added during the interview:

*"They [the students] must also be tested appropriately with relevant test questions based on the objectives".*

Participant A3 concluded that in such cases (when students do practical work in the industry):

*"The timeframe for assessments is also very important".*

Positive comments were made on the national standard practice of public and private TVET institutions to use modular-based training. According to the module system, students do a progress test after every module, and on completion of a programme, they have to go through a summative assessment on the theory and practical part of the work.

#### **5.3.3.14 Comments and suggestions pertaining to the improvement of quality assurance**

Participants made comments and suggestions pertaining to quality assurance measures they thought should be incorporated in the relevant ETQA policies and practices at their distinctive institutions. The following is a summary of such suggestions. There was a general feeling that if expensive machines for practical training cannot be obtained, DHET should at least supply equipment for the practical training, such as tools and measuring instruments (items which can be acquired at a relatively low cost), as well as the appropriate consumables needed for training, for example, steel, welding rods, oil, etc.

Participants also expressed the view that assessments must be based on learning objectives in order to ensure the assessments are relevant. Concern was uttered about too many documents for an assessment and it was suggested that paperwork be reduced. A participant from one of the private providers mentioned the trend in education to do student assessments in groups and suggested that instructors and lecturers

*"... must see to it that students can do specific practical tasks on their own and not only during a group activity. The theory must be mastered hand in hand with the practical application" (Participant A3).*

More substantial suggestions that came to the fore were:

The appropriate examination must take place related to the skills to be achieved. Students must be able to practically demonstrate tasks/skills. Relevant QA bodies must carry out more regular inspections. Inputs must be gathered from the ground level where things are happening on the frontline. The whole process of curriculum development must be consulted with all interested parties. Standard quality must be aligned with qualification requirements that are in place to satisfy the needs of the employers in the industry. Study objectives must be at the correct levels (according to SAQA's National Qualifications Framework).

Related to the latter suggestion was the following remark:

*"Trade testing standards must be set according to what industry needs and then incorporated into the ETQA policies and practices at the TVET institutions"* (Participant A3).

Another collective opinion was that the above-mentioned suggestions could be implemented at an institutional level without having to get involved with DHET policies and procedures. Therefore, small changes can be made at an institutional level to make a great difference to the engineering training at the colleges. This view mostly was held by participants from private TVET Colleges.

#### **5.3.3.15 Problems with quality assurance at the regulatory authorities**

The question about the extent to which problems regarding quality assurance could be ascribed to the regulatory authorities gave rise to another set of concerns being mentioned by lecturers. During the interview with participants from one provider, an interviewee mentioned that the biggest problem was that the institution received no feedback from the regulating authorities on issues raised. If the college received feedback, refinements could be done and monitored.

*"Lecturers/instructors would not even know about their [regulating authorities'] existence if they had not been told"* (Participant A3).

After accreditation, no visits at all occurred from QA bodies like SETA ETQA, NAMB, and QCTO (Participant B4). None of the representatives of the QA bodies whom the instructional staff met to date could be regarded as an SME (Participant B3).

*"As SMEs we can pick up something like that!"*

A participant from a private TVET institution highlighted some matters which regulating bodies seemed not to understand. The participant linked each remark to a specific QA body:

- Umalusi – Time pressure on lecturers to deliver an excellent product in a short time. Umalusi does not realise education is not 'fast food'.
- SETAs – Too many SETAs. They are not really involved as they are supposed to be.
- QCTO – The participant did not know of any problems with QCTO, because the institution never heard anything from them.
- DHET – Only consult with specific people and implement policy. No proper consultation process with all stakeholders is followed. DHET just wants education to take place fast.

#### **5.3.3.16 Qualifications of lecturing staff at participating TVET Colleges**

On the aspect of whether the lecturing staff at the participating TVET Colleges was suitably qualified for the programmes they delivered at the institutions, participants stated that many lecturers/instructors lacked a technical background. This confirms that as a group they also did not have sufficient experience of working in the industry. A participant mentioned that poor remuneration of lecturing staff at public TVET Colleges was a serious concern (Participant C3), and probably the reason for employing staff members without experience. Another bone of content was that no refreshment training or technical/technological development was offered to enable staff (especially more experienced lecturers/instructors) to stay informed of the latest technology. This was a major concern amongst most of the participants.

Participants emphasised the following aspects regarding their concern:

The lecturers/instructors must have a sound knowledge and relevant qualifications in the discipline they teach (Participant C4). It is a matter of concern that all lecturers/instructors at TVET Colleges are not relevantly qualified in the field they teach. They teach because they have "experience" in the field. This is the case at both private and public providers. In some cases, students completing N6 are appointed to lecture theory classes without any practical experience. To this a participant commented:

*"What a disaster!"* (Participant C3).

One respondent made it clear that one can pick it up easily if a lecturer/instructor is not well informed in the subject by just asking some questions (Participant C4). Sometimes lecturers/instructors do not have the necessary insight when two fields are overlapping (Participant D3).

These views of participants painted a rather bleak picture of the lecturing staff's qualifications.

### **5.3.3.17 *Minimum qualifications of lecturers/instructors in the discipline/field they teach***

Participants were asked about their opinions on the ideal minimum qualifications that lecturers/instructors in the discipline/field they teach should have. All the interview participants were in agreement that specific minimum qualifications should be a requirement. The institution should require from a lecturer to be qualified as an artisan/technician with at least a National Diploma in Engineering, as well as a teacher's diploma. According to the participants that were interviewed, not all lecturers/instructors had such qualifications. According to Participant A3, in the case of an appointment as an artisan, an institution may require at least a National Technical Certificate N3, a Teacher's Diploma, as well as a qualification as an artisan. On the other hand, some participants were of opinion that experience mattered more than qualifications (Participant D3). Participant A4 asserted that minimum requirements definitely should apply for the employment of lecturers and instructors.

*"A lecturer /instructor at a TVET institution must have a relevant qualification in the field they teach" (Participant D4).*

Notwithstanding this emphatic statement, during the study, it was found that some lecturing staff at specific private institutions did not have relevant qualifications. This also appeared to be the case in government TVET Colleges, but to a lesser extent. A participant maintained that lecturers/instructors, due to the nature of the engineering courses at a TVET College, should have a minimum of five to ten years' experience in the field they are teaching (Participant A3). Participants also strongly recommended that lecturing staff should attend refresher courses on a regular basis.

### **5.3.3.18 *A qualification in teaching to cover the pedagogical knowledge***

Regarding a qualification in teaching, the participants also were of the opinion that it should be a requirement to cover the pedagogical knowledge of teaching, learning and assessment. Participant A3 voiced his view in this regard:

*"Although they are subject matter experts, they need to know and be qualified in how to transfer information to enable students to construct knowledge".*

Some of the participants did not agree with this viewpoint and held the opinion that the

lecturers' and instructors' qualifications should be focused on the subject or discipline in which they had to teach.

*"In any training event, the correct way of transferring knowledge is non-negotiable. Irrespective of the background of the lecturer/instructor, he is a professional and must be versatile"* (Participant C4).

The following are some of the views expressed in favour of teacher qualifications for lecturers. One of the participants stated that:

*"A teaching qualification qualifies and empowers lecturers to do situational analyses of the target population they teach"* (Participant D4).

Other aspects of teaching qualifications that appealed to the participants included the ability to do curriculum planning and development, to compile relevant and appropriate assessments, how to work with people and how to ensure that information is transferred in a way that will enable students to construct knowledge, that is, to be aware of specific teaching and learning techniques.

### **5.3.3.19 Lecturers/instructors' understanding of the role and function of the SETAs in South Africa**

The lecturers/ instructors at the participating colleges were asked to comment on their understanding of the role and function of the Sector Education and Training Authorities (SETAs) in South Africa. Overall, the SETAs were regarded as very important role players, as they are the providers of the funding for training in public TVET Colleges. All the participants were of the opinion that they play a very important role in QA in certain training courses. Interaction, however, is very limited and more should be done from the SETAs' side to increase their involvement. In general, participants saw the SETA's as playing a moderating role of qualifications, they administer employers' skills levies and are responsible for the administration of completed learnership records loaded on NLRD for issuing a qualification via SAQA. A respondent expressed the opinion that the SETA had to make the relevant "calls" regarding skills levies. Private TVET College participants maintained that they should be considered for funding from SETAs too.

Some respondents inferred that the SETAs are providing funds for training, regardless of the output, and complained about them not being involved. A lecturer remarked that he did not even know who their area SETA representative was.

### **5.3.3.20 *An educated population brings benefits that affect individuals, communities and society as a whole***

The participants were asked whether they believed that a more educated population brings benefits that affect individuals, communities and society as a whole. All the participants agreed fully that this was the case and Participant A4 remarked that skilled people operated at much higher levels and added value. Another participant responded,

*"This can make a huge impact on society in a person's immediate environment, as well as the society as a whole"* (Respondent C4).

A more realistic response was,

*"Yes, if they are trained in a system that caters for relevant and appropriate training to align the skills to be achieved with what is needed in the workplace to make people more employable"* (Participant D3).

### **5.3.3.21 *Characteristics of cost-effective education and training***

Participants expressed opinions on the characteristics of cost-effective education and training and indicated that interaction between TVET Colleges and industry is absolutely important (Participant A3). Participant D1 maintained that industry also should invest in colleges in terms of funds, resources and facilities. Participants D3 and D4 admitted their college had deficiencies, but since had partnered up with the industry in their efforts to improve the situation, which then happened. Other opinions were that at private TVET Colleges, budgets must be managed effectively to attract good lecturers/instructors. In the case of public TVET Colleges, unfortunately, they have to accept the salary scales prescribed by DHET, which are not competitive at all and that has a huge impact on their ability to attract and retain good, well-trained lecturers/instructors –

*"Good education has no price"* (Participant D3).

### **5.3.3.22 *General remarks made by participants during the interviews***

The following meaningful remarks were made in the various groups during the interviews.

*"Knowledge and insight provide growth of the individual"* (Participant A4).

*"Develop an individual's self-esteem and you add complete value to the individual and the people around him/her"* (Participant B4).

Some general opinions were voiced by interview participants in different groups. The following opinions were expressed in virtually all the groups:

A person who is well trained, becomes transformed, equipped, and empowered and can adapt to change much easier. Such a person's insight and self-esteem usually are higher. We must create a sense of purpose amongst students and must not maintain a style of

“you do what I tell you to do” (Participant C3).

Trainers/lecturers must move around among the students all the time to show involvement and be visible. Assessments must be reflective to determine whether learning has occurred, and to provide students with the opportunity to display the knowledge and skills they have mastered. The lecturer/instructor must have a sound knowledge of his/her subject field. The student must master the skill to work with his/her clients. Good human relationships are important. Subject knowledge and expertise are non-negotiable.

#### **5.3.4 Document analysis – Curriculum and study material**

As was indicated in Chapter 4, document analysis is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning to a specific phenomenon (Bowen, 2009; DHET, 2013b; Ellis & Steyn, 2014; Essack, 2015). Analysing documents entails a qualitative analysis process similar to the analysis of focus group interview transcripts (Bowen, 2009). In this study the documents that were analysed mainly were public documents, that is, official policies and curricula, as well as the institutional policies and records of the TVET Colleges. The following institutional documents (cf. 4.6.3) were analysed:

- Quality Assurance Policy documents;
- Curriculum and supporting documentation for engineering studies at TVET Colleges;
- Theoretical assessments/tasks for various engineering study disciplines; and
- Practical assessments/tasks for various engineering study disciplines.

##### **5.3.4.1 Quality assurance policy document**

The National Curriculum for TVET Colleges (DHET, 2017) stipulates that public colleges must offer the following courses for engineering training:

- NATED N1 – N6 Engineering Studies;

- National Certificate Vocational Education (NCV);
- 191 NATED;
- Apprenticeship practical training; and
- Learnerships.

Private TVET Colleges are allowed to offer selected courses from the above-mentioned list but must adhere to the National curricula. In Chapters 2 and 3 the legal and policy frameworks for TVET Colleges were discussed, and I have indicated that the curricula for these colleges are determined nationally. TVET Colleges, however, need to interpret and implement these frameworks taking into account their own context and student profile. In reviewing the documents collected from private and public TVET Colleges I found that they had to complete the national curriculum in the time allocated for the duration of the particular engineering course.

#### **5.3.4.2 *Is the study material available sufficient to cover the curriculum?***

In one private college study material was perfectly aligned with the curriculum. However, the other private college used consultants to present some courses to complete some of the models of the curriculum. In the state (public) colleges textbooks are prescribed by the DHET. This does not necessarily mean they cover the whole curriculum. The material is prescribed by DHET, but whether it is controlled for relevance to industry needs by the DHET is an open question.

#### **5.3.4.3 *Is the curriculum aligned with industry needs?***

At a private college, the substantial proof was submitted that a needs analysis had been done with the clients from industry. This was stipulated in the programme management policy of the private providers. The programme management policy was found to be an excellent guiding document. At a public TVET Colleges, it was clear that the industry wanted more than what they could offer within the curriculum of the DHET – during the interviews, this was mentioned quite often. The interviewees mentioned, for example, that PLC (Programmable Logic Controller) training was high in demand but that they were not geared to offer the training.

#### **5.3.4.4 *Needs analysis for curriculum development***

Regarding the needs analysis that was done in cooperation with industry to gain industry's inputs in the development of the curriculum, the interviewees from the institution were asked

for more information. The response was that this was done according to the programme management policy of the particular private TVET College. Their argument is that to stay relevant, the college needs to respond to customers' needs. Participants also maintained that some modules for trade tests were outdated and the particular skill was no longer required by industry. In another response, the interviewee indicated that only specific people were involved in the needs analysis. This seemed to be a bone of contention.

#### **5.3.4.5 *Openness and flexibility of curriculum to address new challenges and opportunities by integrating new/emerging issues***

The minimum requirements from DHET must be complied with before a student can graduate, but private providers are allowed to add content to the curriculum to address new challenges. One participating private TVET College did this to satisfy the clients' needs but had to extend the students' time at the college (if necessary) per agreement to meet the DHET requirements (for students to get a national qualification).

At the public TVET Colleges, the staff members do not deviate from the syllabus in order for the students to qualify. The curriculum as prescribed by DHET has to be followed strictly, and much paperwork ("red tape") is involved before any changes to course or study material can take place.

#### **5.3.4.6 *Terminal objective (exit-level outcomes)***

None of the participants knew about terminal objectives. They only worked with the learning objectives in the study material presented to the researcher. Referring to enabling objectives to support the terminal objective for a particular topic. None of the participants (QA manager or person responsible for QA interviewed per TVET College) had any knowledge of this terminology. The only objectives in their frame of reference were those used for compiling the study material or for lesson preparation. Enabling objectives to define and support the skills, knowledge and behaviours required. When asked whether the enabling objectives define and support the skills, knowledge and behaviours required to successfully meet the terminal objective, the question had to be explained to the participants. The QA manager or person responsible for QA interviewed per TVET College did not know or use the concepts of terminal and enabling objectives.

#### **5.3.4.7 *The validity and relevance of material content***

The material is valid and relevant in terms of the DHET curricula, and in the case of the

private provider, the institution even goes beyond the DHET requirements to meet the needs of their customers. At the public TVET institution the SMEs see the deficiencies, but they do not get any response if they put in a request to change material. If they do receive a response, it takes too long to bring about changes due to governmental/DHET red tape. Therefore, as far as the DHET is concerned the material is relevant and valid, but when it comes to what industry needs, it stays a debatable question. The material the DHET prescribes is only useful in completing the curriculum to ensure that the students achieve the national qualification.

#### **5.3.4.8 Study material content is inclusive and consultative**

At one of the private providers, the study material was found inclusive and consultative, according to the policy on programme development. At the other private provider, the material also was found inclusive and consultative within the organisation and in terms of the client's specific needs. At one public TVET College the lecturers/instructors had an opportunity to give input regarding the curriculum, but that happened way back in 2007; since then they did not have any input.

#### **5.3.4.9 The curriculum: A continuous process of updating and improvement**

Public and private education and training institutions ought to view curriculum development as a continuous process of updating and improvement. On the aspect of the flexibility of and adjustments to the curriculum, public and private colleges operate differently.

At one private provider, the programme management policy makes provision for changes to the curriculum, but everything added must be done additionally to the DHET minimum requirements, and may not replace any DHET prescribed content. The curriculum is only flexible in that it allows for periodic large-scale re-development to be planned for with the private providers. A private provider has much more flexibility to "chop and change" the curriculum. Unfortunately, private providers must adhere to the DHET curriculum as well for candidates to achieve a formal qualification.

At the public TVET Colleges the DHET is rigid and it takes much effort and time to convince the DHET to review learning programmes. This attitude, according to the college participants, is what causes their training, in many instances, to be irrelevant. Any change to a curriculum can only be brought about in cooperation with the DHET and the relevant QA body such as the SETA ETQA, UMALUSI, QCTO, and NAMB, which, once again, entails endless red tape and a very lengthy, time-consuming process. At the public TVET

Colleges Management from the DHET is regarded rigid, and it takes much time and effort to get the department so far as to review learning programmes. This time-lapse causes the TVET Colleges' training to become irrelevant in a fast-changing technological era.

#### **5.3.4.10 *Operating experience or work-integrated learning (WIL) built into the curriculum in the distinctive topics***

As operating experience (work-based learning experience) was built into the curriculum for the distinctive topics in the engineering artisans and technicians' course, the participants were asked about this. According to the two private provider participants, students had the opportunity to do practical work (to get operating experience) but due to the limited time in which to complete the DHET curriculum, time for workplace-based learning was limited too. At the private providers, OE (operating experience) is incorporated in the curriculum by the SME who gives input when the curriculum is developed. SMEs play a decisive role in the establishment of a curriculum.

At the public TVET Colleges the lecturers and instructors explained the processes, but due to a lack of contact with industry, the students hardly ever had the opportunity for operating experience at the workplace. The lecturers and instructors merely follow the syllabus which does not make provision for operating experience. But even if it had been written into the syllabus, it would not always be possible, due to a lack of contact with the workplace and a lack of facilities at the TVET College workshops.

#### **5.3.4.11 *The content of the study material supports the objectives of the training course***

Both participants from the private provider colleges indicated that all their study material is aligned with the DHET requirement to cover the curriculum for the specific subject field. However, the private providers used their freedom to add on relevant topics over and above what the DHET curriculum required. At the public TVET providers lecturers and instructors in most cases were obliged to use prescribed material for their learnerships. This is controlled at DHET level and at TVET level.

#### **5.3.4.12 *Alignment of the cognitive levels of study material and the level descriptors (prescribed by SAQA) of the programme***

At the private provider, this definitely happened. This was obvious from the study material prescribed by the DHET, and the material analysed during the study. At the public providers,

the prescribed study material is used, but updates for new technological developments create a problem. The participants were unsure about the cognitive levels but argued that as the material was developed in conjunction with SAQA and the DHET, the levels should be appropriate.

#### **5.3.4.13 Study material approval**

The study material in use in the programmes of the institutions is accredited by a quality assurance body from DHET. However, it seemed natural that the study material would have been approved by a governing body from industry, or by a curriculum committee within the TVET sector linked up with the industry. The public TVETs assumed that it was done by the DHET. They just have to submit to DHET regarding their prescriptions from the top.

At the private providers, SMEs compiled the teaching and learning material taking cognisance of the needs of customers as well as the DHET curriculum requirements. For the add-ons to be in line with customers' needs, an internal curriculum advisory committee approves study material in the light of organisational needs.

The problem lies in there is hardly any representation from TVET College level, only at DHET level. The suggestion here is that the people at the college management level should work with those at the grassroots level (lecturers/instructors) so that a link can be established from the top (DHET level) to bottom (TVET level).

#### **5.3.4.14 Availability of lecturer/instructor guides with appropriate lesson plans to support the presentation of the curriculum – findings by researcher**

On the availability of lecturer/instructor guides with appropriate lesson plans to support the presentation of the curriculum, it was found that such guides are available to both public and private providers. At the DHET colleges the use of these guides is compulsory and this is internally moderated. Work plans for the presentation of the curriculum for the duration of the course also were available. At one of the public TVET Colleges daily, weekly and monthly planning is linked to the lesson plans in the instructor/ lecturer guide. It seemed that lecturer guides and planning were in place and used, but the question that remained was whether the training given at public colleges was relevant to the needs of the industry.

#### **5.3.4.15 PowerPoint presentation use**

On the use of PowerPoint presentations by lecturers/instructors, it was established that

none of the study guides includes terminal and enabling objectives to be used in PowerPoint presentations. Only learning objectives were found in the presentations at one of the private colleges, at the one private TVET College. At the public TVET Colleges, the venues were not even equipped with technology for the use of PowerPoint presentations. The use of PowerPoints thus was something completely new to most respondents. Regarding the content of the PowerPoint presentations at the participant TVET College where it was available, the presentations followed the sequence of the handout – that is, similar facts appeared in the same order.

#### **5.3.4.16 *Approach to the development of the programme***

The TVETs use experienced lecturers to develop their programmes, but once again, this appeared to be very rigid where the DHET gets involved. Overall, the most important driving force was to ensure that the students' needs were met. One respondent mentioned that he was not even approached to take part in the development of programmes.

#### **5.3.4.17 *Dimensions and principles of curriculum design***

When curriculum design was discussed, participants in some cases appeared unsure about the whole concept of dimensions and principles of curriculum design. During the discussion on the various aspects of curriculum design, it became clear that the participants did not have a fundamental background or knowledge about what curriculum design entails. For this reason, an urgent recommendation needs to be made to the management of the colleges to ensure that all management members and other staff members concerned should attend basic staff development courses or educational development sessions. Articulation (horizontal and vertical) - None of the participants could respond to questions on articulation. They remarked that this was "something new" to them. However, from the study, it became clear that articulation was applied, even though it was done inadvertently.

#### **5.3.5 *Theoretical assessments/tasks***

All participants maintained that they worked strictly according to the outcomes of the curriculum and aligned appropriate assessments with the learning objectives. Assessments are moderated, even if just internally. It was mentioned that lecturers acted very strictly regarding tests, more specifically the internal progress tests. The achievement of learning objectives is measured in the assessment tasks to determine whether programme outcomes are met. Assessments must be aligned with the level descriptors of the programme; if not, that will come out in moderation. Participants inferred this was prescribed

by the DHET and the relevant SETA or QA body. Some uncertainty among participants was sensed regarding this opinion. Participants stated that the assessment task(s) were approved by a panel of experts from the institution or industry or the DHET, but it was evident that this does not happen at public TVET Colleges.

Institutional programme development policies and assessment policies at the participating colleges were analysed for the purposes of the study. Although private TVET providers are subjected to the rules and regulations of DHET and the relevant QA bodies, they do have room to consult experts from industry, which they do to stay in business. These private colleges strive to meet the needs of the client from the industry. At the public colleges, assessment rules and regulations are laid down by the DHET and then given through to TVET Colleges. At the public TVET Colleges, consultation only takes place at higher levels, that is, with the management of the colleges. External assessments are conducted by the DHET, while internal assessments are the responsibility of the institution, and the SMEs deal with the assessments.

A memorandum with model answers on all assessments was available at the participating TVET Colleges, not only for record purposes at the institution but also for appeals. This is done at both public and private colleges. This is compulsory for all TVET Colleges operating under the auspices of the DHET. Assessments are moderated internally by programme managers at both private and public TVET Colleges.

Internal moderation was done by the programme manager and was experienced as very strict. This was confirmed by both the private and public TVET providers. It was further confirmed by the participants that they had internal moderations for QC. The QCTO and the SETA are supposed to do the external moderation, but that mostly does not happen. If it does happen that they turn up, they do not even take a proper look at the documentation. Both private and public TVET participants complained that the representatives of QCTO and the SETA ETQA, who are supposed to visit the colleges for external moderation do not always do what they are supposed to do - according to respondents, they hardly see them. The one private TVET provider indicated that inside the organisation it gets moderated, but not externally, with the acceptance of DHET programmes. Within the private TVET provider an SME moderates it internally.

If the assessment task(s) for practical and theoretical assessments has/have been used before, a test item analysis will be done to evaluate the suitability and effectiveness of the questions. This is to ensure the standard is maintained, but it also is done when there is an exceptionally high failure rate amongst students to determine the possible cause of the high

failure rate. If necessary, updates were done after the test item analysis had been conducted, but the public TVET providers responded that often this did not occur in terms of external examinations, due to the amount of bureaucratic paperwork involved, but internally it does get done.

### **5.3.6 Practical assessments and/or tasks**

Competencies to be achieved in the learning programme are assessed as indicated in private provider participants' policy documents, namely the Teaching and Learning Policy, and the Programme Management Policy. At one of the public TVET Colleges it was difficult to conduct relevant assessments, because of no or poor practical facilities, and more specific, the lack of machines. This college has to depend on partners from industry to allow students to do the assessments at their facilities, which was not always an easy task. At the other public college, excellent facilities were available for training and assessments, but due to poor salaries, the search for skilled lecturers/instructors hampered effective practical assessments. During the discussions, it was emphasised that assessment should be aligned with study objectives to have an impact, not only on the result but on the practical application after training and assessments.

According to a private provider, assessment tasks were aligned with the level descriptors of their programme's teaching and learning policy, programme management policy, as well as assessment documents and notes. However, at both private and public TVET Colleges assessments also complied with SAQA requirements.

Assessment tasks for the Task Performance Assessment (TPA) must be approved by the relevant subject matter expert/s from industry or the relevant authorities for the private providers. This was done internally at the TVET institution by their own SMEs. TPAs entails a step-by-step assessment by means of a live running test on, for example, a machine. At one public provider, excellent assessment instruments were in place, but no practical facilities to test the learner. The public provider representative explained that the red tape and DHET prescriptions made carrying out assessments complicated. At this institution, the assessment documents are in place, but due to the lack of appropriate testing facilities, the institution is dependent on industry partners' facilities.

The private providers had more freedom and less red tape (freedom to use their initiative). It, therefore, was easier for the private providers to establish links with industry experts to have assessments done. The expected behaviours and actions for the practical assessment tasks are clearly defined in the programme development policy at the relevant participant

TVET Colleges. One private provider participant regarded this as a given part of the assessment.

In the programme development policy it was indicated that when an assessment task had been used before, the feedback was first evaluated before the test was used again to gauge the effectiveness and suitability of the assessment task. The participants indicated that this was essential for their own continuous improvement and for improving the assessments. The practical task performance assessment makes provision for assessing the expected work practices, for example, procedure adherence, standard operating procedures, and so forth. This information could be found in the assessment policies of all the participant TVET providers.

In the programme development policy of one private provider, specifically, the details of the TPA were clearly indicated. It also was specified that they wanted to add value by training the student in a particular aspect, but in a way that enabled students to apply the same generic principles in any other environment.

The practical task performance assessment tool used, provided clear criteria for competent / not yet competent. The criteria are provided in the programme development policy in the pre-assessment section of the assessment tool of one of the private providers. This institution believed that such information added value for the purposes of remedial training in the case of a student who is not yet competent.

Public providers had to follow DHET prescriptions. The DHET red tape to a large extent created a delay when institutions require adjustments to requirements. The public providers did not have much freedom of movement, whilst the private providers had to meet the minimum requirements of the DHET, but may use initiative to adapt the requirements according to what the client expects by incorporating clients' needs in training and assessments over and above the DHET prescribed curriculum and assessments. The public providers sometimes also needed to make adjustments, because different TVET Colleges used different brands of equipment for practical training and assessments; however, the core of the training and assessments stayed the same.

#### **5.4 GENERAL OVERALL REMARKS FROM THE RESEARCH FINDINGS**

From the documents analysed it would appear that private TVET Colleges selected and presented their curricula taking into account the needs of their customers. This practice is important for the private institution to stay in business on the one hand, but on the other

hand, they must also adhere to the DHET curriculum, rules and regulations in order to keep their accreditation. Contrary to this, public TVET Colleges strictly adhere to the national curriculum, rules and regulations of the DHET, without considering the needs of the customers.

With regard to the size of providers in terms of SAQA's provider classifications, the response rate means that these findings cannot be generalised to the whole population, although the findings support the research findings of the DTI (2008:163) and Blom (2011:36), mentioned in Chapter 2 (cf. 2.3.4), which concluded that the majority of private education providers are small enterprises. The public TVET providers, on the other hand, are large colleges as a result of the merging of former technical colleges which became FET colleges after 2000. In 2012, they became TVET Colleges.

In the literature review chapter (cf. 3.2.2) it was mentioned that employers find short, tailor-made programmes more suitable for updating the skills of their staff than lengthy full-time courses. This also supports the finding of the DHET (2012:15; cf. 3.3) that there is a proliferation of unit standards and qualifications. It also may be the reason why the former Minister of Higher Education and Training, Dr Nzimande (in Polityorg.za 2011:n.p.; cf. Chapter 3) was reported to say that a whole industry of short courses with "dubious value" had come into being as a result of the establishment of the SETA system.

## **5.5 PROBLEMS WITH POLICIES, PRACTICES AND PROCESSES**

Problems were highlighted as common by most of the sample respondents in TVET providers in this research. As a starting point for this discussion I refer to the questionnaire (cf. 5.3.1) completed by students in TVET Colleges, the focus group interview guide used for interviews with Heads of Colleges and/or ETQA managers, and lectures/instructors at TVET Colleges (cf. 5.3.2 & 5.3.3), as well as the document analysis for curriculum and study material (cf. 5.3.4).

### **5.5.1 SETA and DHET Accreditation**

Participants from both the private and public TVET providers reported duplication of requirements, especially when a TVET institution wanted to get accreditation from various SETAs and other QA regulating bodies. This is one of the major problems with the current system of accreditation and quality assurance. The implication was that the focus was taken away from teaching and learning (according to the respondents).

This, in particular, is problematic for small and survivalist private providers. Developmental support was envisaged by SAQA (2004:7) when the accreditation systems were established, as mentioned in Chapter 1. The use of different templates by the various accreditation/quality assurance bodies further exacerbated the duplication of requirements (Umalusi, HEQC or the SETAs; cf. Chapter 2).

The ETQA manager of one of the institutions interviewed maintained that

*“instead of looking at what works, the regulatory authorities would rather reinvent and constantly change the whole system and in the process, we are losing what is good”.*

At the same time, when these changes take place, there often is an exodus of knowledgeable staff and a consequent “lack of knowledge retention”, which in effect means that any new person appointed has to start all over again.

Mentioning the establishment of the QCTO unleashed much criticism from an ETQA manager during one of the interviews. The ETQA managers, heads of department and also the lecturers/instructors maintained that the authorities had not considered whether their strategy would be fitting or appropriate for the majority of their stakeholders, and did not take into account the realities of the situation. From the literature review, it was found that the goalposts had been shifted since December 2012. The Minister, not long after founding the QCTO, called for a re-evaluation of the QCTO mandate to ensure the quality of the qualifications above Level 6 on the NQF (DHET 2012e:8). In the process, it just created further confusion, delaying the redesign of qualifications in terms of the QCTO model.

As public TVET providers must be accredited by the DHET as a given, the same applies to private TVET providers. This puts a lot of strain on private TVET providers who must, on the one hand, comply with DHET requirements, but on the other hand, must meet the requirements of the industry as their clients, in order to stay in business. This remark was made by a Quality Assurance team member during an interview.

### **5.5.2 Areas of concern at public and private providers**

One of the ETQA managers who was interviewed stated that sporadic related problems occurred with some private tuition providers, mainly in respect of unrealistic expectations. They anticipated simple acceptance without questioning everything they presented in terms of accreditation and quality assurance. This situation then became a case of providers “putting things together purely to get accredited”, and never implementing policies or systems, or not implementing them “in the spirit in which it was intended”.

One of the main areas of concern, probably the most important, is the qualifications of the teaching staff (cf. Findings 5.3.2 & 5.3.3). In public institutions, minimum requirements applied for performing the job of lecturer/instructor. Due to poor salaries, public institutions constantly are battling to hire and retain highly skilled lecturers/instructors.

The private providers have to their advantage the freedom to appoint lecturers of their choice at a salary scale of the institution's choice, which is beneficial, as the best person applying for the job can be appointed at a good salary, but on the other hand, appointments need to be cost-effective for the college to stay in business. One of the participating heads indicated that it was problematic getting the correctly qualified personnel to teach at the NQF level required by the SETAs.

### **5.5.3 Other key problems that came to the fore**

A highlighted cause of problems and challenges emphasised by the respondents is a lack of consultation with stakeholders (cf. 5.3.2 & 5.3.3). This also was found during the curriculum and document analysis (cf. 5.3.4).

These findings illustrate that stakeholder consultation is a somewhat awkward issue. While participation in stakeholder consultations by the providers was mentioned in the interviews with Heads and QA managers (cf. 5.3.2), as well as in the interviews with lecturers/instructors (cf. 5.3.3), it seemed that from the side of the ETQAs little effort was made to involve the providers in the decision-making or policy-making processes, as comments or suggestions made electronically or at face-to-face meetings mostly were ignored and seldom incorporated into any revisions that might take place, confirming the opinion stated in the findings of the document analysis (cf. 5.3.4).

This leaves TVET providers feeling frustrated as indicated by the following statements that were made during the interviews with heads/QA managers, and lecturers/instructors:

- “We do not receive feedback after forum meetings”.
- “You are being invited (sic) (and we always attend where circumstances allow it) but these sessions normally are there to give providers information on decisions that already had been made. If you complain or try to add, the message always is: ‘This is not the platform for you to raise your concerns’”.
- “Stakeholder forums hardly result in any improvements. They are opportunities for providers to vent their frustrations”.

- The lecturers/instructors of every sample that was interviewed made the following common statement: “As far as the invitations to the forums, it is only for the management or depends on which circles you are in”. According to the participants, it was more about lunchtimes. Usually, after lunch, these meetings were concluded and everyone left.
- “I do not know much about what happens in ETQA and stakeholder meetings. The main reason is that the level of communication with clients is very limited or hardly exists”.

These findings support the statements made in this chapter (cf. 5.3.2 & 5.3.3) concerning the stakeholder consultation interview questions.

One of the interviewed college heads criticised the QCTO model as unrealistic, that it does not take into account the reality of the industry or worked to improve on the existing paradigms, having in essence “tried to start from scratch around some idealistic model”. The college Heads, QC managers, lecturers and instructors interviewed, proclaimed that it was far more important to consider the needs of the clients and students, who are a college’s key stakeholders, while the regulatory bodies are considered stakeholders merely because they give the colleges their “licence to play”.

Another problematic matter mentioned by the students in the questionnaire survey, the ETQA managers, as well as the lecturers /instructors was the ignorance of learners regarding career choices, and the (staff) experience of frustration with learners with an external locus of control, who subscribe to a blame culture, with no internal locus of control (“blame game”, as it was called). Whenever they do not like a situation, they blame the college or staff.

One interviewed college head stated that “students do not understand, in general, the difference between accreditation and registration”, and recommended that a much broader communication campaign about the accreditation model should be conducted. This also was mentioned by the students when answering the questionnaire (cf. Questions 1 & 7; 5.3.1) after accreditation had been explained to them. This opinion is in agreement with Letseka’s (2009:91) view attributing the high dropout rate to a “lack of career guidance and misalignment of student choices and ability”, among other factors.

## **5.6 POSITIVE ASPECTS**

Up to this point, a litany of negative perceptions of current quality assurance challenges in TVET Colleges dominated the findings. However, there also are some positive findings. The

positive findings focused on the key aspect of this research, namely quality assurance (and accreditation as a complementing aspect).

### **5.6.1 Focus group**

The focus groups generally agreed that accreditation was the cornerstone of viable public and private TVET provider sector. However, some of the interviewees maintained that the kind of training demanded by employers did not always require accreditation, but definitely included the offering of a quality programme, professionally conducted by expert practitioners. All the focus groups agreed that all forms of training should be included in the quality assurance system, purely because it is an effective way of keeping out “fly-by-night” operations which were an ongoing problem. Accreditation also contributes to the maintenance of standards and ensures order within the industry. In the final analysis, the focus group members insisted that any system of quality assurance must focus on the end product, namely a fully-equipped student, ready for the world of work.

### **5.6.2 ETQA Manager / Heads, lecturers and instructors**

The TVET College management, lecturers/instructors and ETQA managers fully supported accreditation in principle, as it provides for a minimum standard against which a provider can be evaluated. A positive aspect is that tuition providers applying for accreditation have to formalise their policies and procedures. The private providers previously often had been in business, but policies and procedures were never verbalised on paper. That in itself made educational providers re-examine their business practices and brought the realisation that there were areas that could be improved. This “has strengthened their own approach”, resulting in the “giving learners a better level of tuition”, which is, after all, the objective of having a quality assurance system in place. Ongoing monitoring and QA allow for immediate remediation if any problems arise. The ETQA Managers at TVET Colleges that were interviewed realised that having solid accreditation structures in place and building good relationships with stakeholders is key to the success of quality assurance.

### **5.6.3 Importance of accreditation**

Clients and learners both regarded accreditation and quality assurance as fundamental to the provider’s recognition. Accreditation is foundational to quality assurance as one is meaningless without the other, and accreditation provides a standard against which the quality of all providers’ work can be measured. To some extent, accreditation levels the playing field, keeps unscrupulous providers at bay, and is good for competitiveness.

Accreditation also is a marketing tool because providers believe that their clients and learners value it.

## **5.7 CONCLUSION**

In this Chapter, the results of the empirical research were discussed, with a particular focus on addressing each of the research objectives stated in Chapter 1. For the analysis an intuitive, inductive approach was used that focused on the qualitative aspects of the research, namely semi-structured interviews, focus group discussions and open questions in the questionnaire surveys. Tables and figures used descriptive statistics as supporting information for the qualitative analysis. Chapter 6 will deal with conclusions and recommendations.

## CHAPTER 6

### CONCLUSIONS AND RECOMMENDATIONS

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#### 6.1 INTRODUCTION

This thesis reports on a study conducted to examine the quality assurance processes and practices in public and private TVET Colleges offering engineering training in South Africa by seeking answers to the research question: How effective are the quality assurance (QA) systems for engineering training programmes for post-school, adult learners at public TVET providers, in comparison with QA systems used for this purpose by private TVET providers who offer the same programmes; and how might these QA systems be adapted and/or enhanced in future? In Chapter 1, it was formulated that the following sub-questions be addressed in this study:

- i. What are the current local and global perspectives, needs and directives pertaining to QA in engineering training programmes for post-school, adult learners in TVET?
- ii. What are the implications of existing legislation, policies and systems on/for QA for engineering training programmes for post-school, adult learners in TVET in South Africa?
- iii. How do **public** TVET providers interpret and implement the relevant policies and systems for assuring quality in their engineering programmes for post-school, adult learners?
- iv. How do **private** TVET providers interpret relevant policies and systems for assuring quality in their engineering programmes for post-school, adult learners?
- v. Is there any feasible alternative to the current policies and systems for assuring the quality of engineering programmes for post-school, adult learners at TVET providers in SA?

#### 6.2 OBJECTIVES OF THE STUDY

In Chapter 1, five objectives were set as the focus of this research. These objectives were:

- i. To investigate what the current local and global perspectives, needs and directives are pertaining to the quality assurance of engineering training programmes for post-school, adult learners in TVET;
- ii. To investigate the implications of existing legislation, policies and systems on/for quality

assurance for engineering training programmes for post-school, adult learners in TVET in South Africa;

- iii. To investigate how public TVET providers interpret and implement the policies and systems for assuring quality in engineering programmes for post-school, adult learners;
- iv. To investigate how private TVET providers interpret and implement relevant policies and systems for assuring quality in their engineering programmes for post-school adult learners; and
- v. To compile (based on data collected in this study) and validate a preliminary QA framework that may be used by public and private TVET providers in SA to assure the quality of the engineering training programmes that they offer for post-school, adult learners.

These objectives will now be discussed with reference to the conclusions that were reached, based on the findings.

### **6.2.1 Local and global perspectives, needs and directives pertaining to quality assurance in engineering training programmes**

Regarding the local and global perspectives, needs and directives pertaining to quality assurance in engineering training programmes, the approach used to understand skills mismatches were derived from methodologies used in a number of other studies, most significantly, the techniques used for *The National Strategic Skills Audit for England 2010* (UKCES, 2010). However, there was a need to adjust these to South African conditions and to conduct analyses with available data. At the time of writing this thesis, there was no survey data available from enterprises to understand the extent or nature of skills gaps faced by employers. In other words, training takes place, but it is not necessarily always appropriate to the needs of industry, which causes skills mismatches, and specifically with regard to engineering studies/training in TVET Colleges.

Notwithstanding the limitation of a lack of survey data, a number of other data sources were available to help build a picture of mismatches in South Africa. This also became clear during the research (interviews, questionnaire and document analysis) conducted at four distinctive TVET Colleges which had been sampled to participate in this research (cf. Chapter 4). Following an analysis of skills supply and demand, three types of mismatches were identified, being demand mismatch, education supply mismatch, and qualification: job mismatch.

Outstanding among the perspectives and needs is the perspective that trainers do not meet the needs of employers and consumers concerning skills needs. Skills planning must respond to the needs of the labour market and the industry/society (Reddy *et al.*, 2016). An effective and efficient labour market requires that the skills of the workforce match those required by employers and that the type of skills produced by the different levels of the education and the TVET College (in this instance) system should respond to market demand. Skills mismatch is an encompassing term which refers to various types of imbalances between skills offered and skills needed in the world of work. **The conclusion to this chapter takes the analysis further and provides an understanding of the types of mismatches and where mismatches exist in the labour market.** This analysis will then provide policymakers with signals for interventions to tackle skills mismatches.

### 6.2.2 The implications of existing legislation, policies and systems on/for quality assurance for engineering training programmes for post-school, adult learners in TVET in South Africa

The key data source for this analysis was the *Quarterly Labour Force Survey and Labour Market Dynamics* from Statistics South Africa (2018). The researcher gained a clear understanding of skills supply, quality assurance of skills supply done was analysed in the Technical Vocational Education and Training (TVET) sector. However, this thesis focused on quality assurance of post-school engineering education and training programmes for adult learners at TVET Colleges.

With reference to the data rendered by the research, it is important to understand skills mismatches (Reddy *et al.*, 2016:17; Lindberg 2015:1), due to the large number of unpredictable variables influencing demand (Heyneman, 2016), the process of identifying skills shortages and skills mismatches is not a formulaic or algorithmic science, in that it is not possible to calculate the exact numbers of people needed in the different occupations or sectors (cf. Figure 6.1).

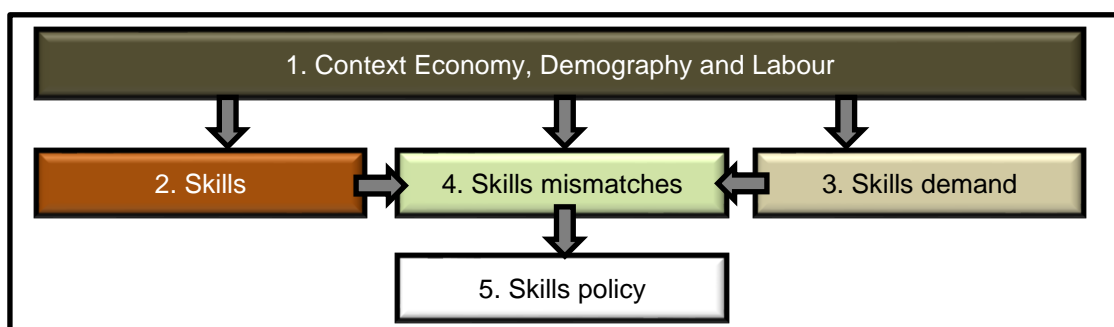


Figure 6.1: Framework for the analysis of skills supply, demand and mismatches (Source: Reddy *et al.* 2016:18)

Lindberg, further brings perspective to the phenomenon of skills mismatches (Lindberg 2015:1) Skills shortages and skills mismatch, for example in Sweden is the primary cause of youth unemployment. An educational system that equips people with the correct and necessary skills is needed. Although huge investments have been made into the system, like knowledge lift and doubling of students in tertiary education, there has to be an investigation into the effects of these investments. Since the 1990's the age of labour market entry has risen especially among those without adequate secondary schooling. There is also a rise in numbers of youth who neither work, study or are in training (NEETs). This is not only a consequence of labour market shocks. For the purpose of this study, an analysis was made of Sweden's education system, focussing on three areas, namely quality, efficiency and relevance. These are essential factors to ensure employees that are competent to business and provide opportunities at the labour market. Deficiencies are found in all three areas, for most a lack of quality at the primary and secondary level. This is evident from PISA (Program of International Student Assessment) tests. At secondary and tertiary level prevails a lack of efficiency that is visible when examination frequency and graduation age is measured. Thirdly lack of relevance which occurs in the vocational training (Lindberg 2015:1).

From the study, it became clear that the policies for quality assurance for engineering training programmes do not respond sufficiently, as lack of skills and skills mismatches occur despite the quality assurance procedures. This can be substantiated; referring to Chapter 5 (research findings) and Chapter 3 (curriculum development) that were discussed. In Chapter 5 it clearly came out in research, wherein the case of private providers, they need to do over and above the DHET syllabus to ensure students pass their National Examination on the one hand and on the other hand to satisfy the demand from the employer. More specifically it came out in research where the national syllabus requires some technological knowledge that is outdated (cf. Chapter 5).

### **6.2.2.1    *Types of skills mismatches***

A just and inclusive society requires job opportunities for all, and that workers possess the requisite skills to do the job. When workers' skills do not match what is required by employers and if the education and training system fails to produce skills needed by the labour market, a mismatch occurs (Reddy *et al.* 2016:8). When the type of skills required for a job and the skills of the working-age employees do not match a mismatch become manifest. When employees do not work in the sectors and occupations they have studied for, mismatches also occur. For purposes of the study, a comprehensive approach was adopted in order to establish mismatches, and in the process, three types of mismatches in

the South Africa context were identified (RSA, 2015), namely demand mismatch, educational supply mismatch and qualification-job mismatch (UKCES, 2010).

### Demand mismatch

The shape and trajectory of the economy, the types of jobs that are being created, and the skills set and expectations of the working-age population (Reddy *et al.*, 2016:17; Lindberg 2015:1) were examined. In this analysis, the types of skills required by the jobs in the economy (measured by the type of occupations and the sectors that are being developed) were established and the skills set of the majority of the country's population (measured by the education level).

The findings at the institutions where the research was conducted (cf. 5.3.2. & 5.3.3) that this is exactly the problem they got with outdated in many cases irrelevant curricula. Skills training industry requires and curricula offered do not match.

### Educational supply mismatch

To determine the educational supply mismatch, the researcher examined how supply responds to areas of skills demand. For this educational supply mismatch, we analysed the relationship between skills demand and the skills currently produced by the education system. For instance, if mechanical engineers were identified as being in demand, then our analysis investigated the extent to which the current post-school education and training system is producing mechanical engineers. If the supply is not producing the type of qualification identified as in demand, and educational supply mismatch is assumed to exist (Reddy *et al.*, 2016:15-17; Lindberg 2015:1).

The researcher's finding was that the qualified students delivered by the TVET College are not hundred present in line what industry requires. In many cases, retraining on the job has to take place (cf. 5.3.2. & 5.3.3) as indicated by one of the public TVET respondents. When they place the student in the workplace, they need to do training that students did not do at the TVET College or it is outdated but they got a national qualification that is supposed to be suitable for the job.

### Qualification-job mismatch

Here the qualifications for skilled jobs are examined and then the sectors and occupations are traced into which the educational qualifications are absorbed. There is an assumption

that those who studied in a particular subject area would be employed in a sector and occupation relevant to their qualification. For instance, if a person studied for an engineering TVET qualification, there is an assumption that they would be employed as an engineering technician and would probably work in the manufacturing or construction sector. When this does not occur, there is a qualification-job mismatch (Reddy *et al.*, 2016:15-17; RSA, 2015; Lindberg 2015:1-3).

It was found by the researcher that students need to be retrained in the workplace if they were placed during their studies. Alternatively, if a qualified student is employed he/she must be retrained in some skills needed for the job they are 'qualified' in.

### **6.2.2.2 Signals of skills mismatches**

Estimating the mismatch for each of the three categories identified involves different approaches and assumptions. Each of these categories is not mutually exclusive and there is a degree of interaction among the mismatches.

Regarding signals of demand mismatches, the South African developmental challenge is to both grow the economy and to create jobs for the majority of the population. The South African economy and labour market are characterised as one where there is a demand for highly skilled employees, but a surplus of low-skilled workers occurs (Bhorat & Jacobs, 2010).

The first and perhaps the most significant mismatch, the demand mismatch, is that between the trajectory and skills demand of the economy, and the skills set and expectations of the labour force. Economic growth in post-apartheid South Africa, while modest, has been driven largely by capital-intensive industries, retail trade, and financial services, rather than labour-intensive sectors such as agriculture and manufacturing. As outlined earlier, development in most middle-income countries is characterised by a move away from low-productivity agricultural sectors, towards the labour-intensive manufacturing sector, then to technologically advanced manufacturing, and eventually to the high-skilled services sector. Under such a developmental trajectory, technological advances will result in productivity improvements in the agricultural sector, and the displaced rural workers are then absorbed into the labour-intensive and semi-skilled manufacturing sector. This growth path leverages new technologies, builds a skilled labour force, and raises productivity – which together leads to higher levels of growth and employment. The researcher's findings further corroborate the following statement:

*“In the case of South Africa, signals on educational supply mismatches are derived from the analysis of skills demand. This involves identifying where immediate medium- and long-term action is required to tackle skills mismatches. Within each of these categories, there is an assumption that certain occupations are strategic to the country’s development and that there is a corresponding risk of not investing in skills, skills which are critical to supporting the economy” (Government Gazette, 2014; DHET, 2015 a, b & c).*

### **6.2.3 Research findings based on questionnaire responses**

#### **6.2.3.1 Quality assurance as a critical focal point in education**

Based on the in-depth literature review, it was concluded that quality assurance is a vexatious issue, with demand being hobbled by little agreement on how it should be done. At the time of the democratisation of the political arena in 1994, the education system was one of the first sectors that needed to be addressed to create an equitable playing field for all learners (cf. Chapter 2). A pressing need existed to address the exploitation of learners under the apartheid regime. At the same time, the quality assurance movement in education started to gather momentum across the globe, and South Africa was a pioneer in establishing a National Qualifications Framework.

Chapter 3 examined the programme development (curriculum development) concerning best practice internationally. Trends in public and private education, taking place on a global scale, discussed key constructs such as human capital theory and the macro-environment of education. It was shown that the need for quality assurance had been impacted by the massification, globalisation and marketisation of education.

In Chapter 4, the research design and methodology used for this study was discussed. The chapter commences with a description of the type of research used, then elaborates on the research design and the research methods utilised in the particular study.

The review of literature is addressed in Chapters 2 and 3, has explored certain concepts regarding quality assurance and curriculum development in TVET Colleges. From a theoretical perspective, the researcher raised several concerns about both public and private providers that emerged from the research. It would appear that not all TVET COLLEGES meet quality requirements, particularly with regard to the qualifications of facilitators and academic staff. This refers to an effort to evaluate the educational qualifications of people seeking work and opportunities across borders, regrettably with no absolute conclusions.

### **6.2.3.2 Problems with quality assurance policies, practices and processes**

Most of the criticism was aimed at the Sector Education and Training Authority (SETA) system, and not at the Department of Higher Education and Training, or the Council on Higher Education. Sector Education and Training Authority (SETA), is a vocational skills training organization in South Africa. As of March 2011, there are 21 SETAs. Each SETA is responsible for managing and creating learnerships, internships, unit-based skills programmes, and apprenticeships within its jurisdiction. Every industry and occupation in South Africa is covered by one of the 21 SETAs. A proposed new SETA landscape was announced by Mr Mashongane in April 2010 and a draft framework for the new National Skills Development Strategy for implementation between March 2011 and March 2016. Furthermore steps to deal with “non-performing SETA’s were also announced by him (Sector Education & Training Authorities, 2010).

The problem experienced by public TVET Colleges, is that they all have one national, uniform DHET curriculum quality assurance document (DHET, 2020) with criteria and measures applicable to all public TVET Colleges in their distinctive fields of study. In the case of SETA-accredited courses, the colleges have to comply with the specific criteria and measures compiled in the SETA Quality Control document.

In the research, no evidence could be found that when the curricula had been compiled, cognisance was taken of the needs of industry by the curriculum developers, appointed by the DHET. This may be derived from the research findings reported in Chapter 5. More specific, this was emphasised in the research interviews with the private TVET College respondents and to a lesser extent by the public TVET respondents.

The respondents also reported specific problems the colleges experienced with the tuition providers, but the weight of evidence pointed to the implementation of the accreditation and quality assurance policies by the Education and Training Quality Assurance bodies (ETQAs) as a major hurdle, despite the willingness of the majority of public and private providers to comply with the quality assurance regiments.

### **6.2.4 Private TVET providers’ interpretation and implementation of relevant policies and systems for quality assurance in their engineering programmes for post-school adult learners**

Private providers that had previously existed without any regulatory control, have since 2013 come under the spotlight, and are expected to meet the accreditation and quality

assurance standards established under the auspices of SAQA (DHET, 2013). Both public and private providers readily embraced these arrangements almost unanimously. They agreed that both accreditation and on-going quality assurance were essential (cf. 5.3.2 – 5.3.3). One of the problems highlighted by the focus group interview, in particular, was the continued existence of “fly-by-night” operations, an issue that was also raised in Chapter 1. Therefore, it seems that while the mainstream private providers welcomed accreditation and the concomitant quality assurance, exploitation of learners by unaccredited organisations still takes place.

Private providers readily agreed that both accreditation and on-going quality assurance were essential. Therefore, it seems that both mainstream public and private providers welcomed accreditation and concomitant QA. This again supports the need for focusing on quality assurance. Quality assurance, however, is not an easy issue to deal with, mainly because of differences in understanding what quality assurance means. The definitions provided in Chapter 1 (cf. 1.8) bring some clarity to this debate. In addition, an outline and discussion of various aspects of accreditation and quality assurance requirements at a micro-level (cf. Figure 2.2) attempted to unravel their complexity and to investigate the demands placed on private providers in this regard. It was shown that a “one-size-fits-all” approach is onerous, especially to small and survivalist providers that make up the majority in the industry (DTI, 2008:xxxiv; cf. Figure 5.2). An important aspect of the debate in Chapter 2 (cf. 2.2.1), focuses on QA System in SA, as this goes some way to clarifying the differences of opinion that exist between the regulatory bodies and private providers, as illustrated in Chapter 2 (cf. 2.3.5).

Chapter 3 was devoted to an examination and discussion of programme development (curriculum development) and basic theoretic programme design at micro-level, and comparisons with those of other First-World countries (Zaki, 2008; cf. Figure 2.2). Chapter 3 further reports on QA systems for programme planning, programme implementation, and review in TVET Colleges, as well as the trends in private education taking place on a global scale, and discussed key constructs such as the human capital theory and the macro-environment of education. It was shown that the need for QA has been impacted by the massification, globalisation and marketisation of education.

#### **6.2.4.1 *Problems with quality assurance policies, practices and processes***

Chapter 2 extensively dealt with the problems experienced with QA policies, practices and processes, and this was borne out in the empirical research in Chapter 5. Most of the criticism was aimed at the SETA system, as opposed to the systems of the Department of

Higher Education and Training or the Council on Higher Education. The main cause of problems with the SETAs was contingent upon regulations and policies put in place by the regulatory authorities that ostensibly are responsible for the SETAs. Criticisms focused on inadequate management, inappropriate staffing, poor and arrogant attitudes of the majority of SETA staff (with a few notable exceptions), and the lack of appropriate qualifications of staff tasked with accreditation and quality assurance. This suggested that a system of red tape, bureaucracy, nepotism and a “tick-box” approach to QA has become the norm. Certainly, quality assurance does not seem to be an integral part of a SETA’s self-evaluation, with some SETAs placed under administration because of high levels of mismanagement and wastage of funds. Even that did not seem to have solved the problems with those SETAs that in the survey responses were criticised heavily by both public and private provider respondents (cf. 5.3.2 & 5.3.3).

Although problems with tuition providers were mentioned too, the weight of evidence pointed to the implementation of the accreditation and quality assurance policies by the ETQAs as the major hurdle in their efforts to comply with the QA requirements demanded in the policies, as well as the way in which the policies and systems are implemented, despite the willingness of the majority of private providers to comply with the requirements.

#### **6.2.4.2    *Management of quality assurance by private providers***

Private providers who participated in the survey indicated that accreditation was essential to their success, and agreed that quality assurance also was imperative. This leads to the conclusion that these providers want to comply with the regulations and therefore have established their policies and procedures in line with those requirements. Very few providers use any other form or system of quality assurance, such as ISO 9001, preferring rather to abide by the regulatory authorities’ processes.

A problem arises when this amounts to ‘form’ rather than ‘substance’, where regulating authorities (SETA’s, QCTO’s, TVET Colleges & DHET) too simply might have adopted a tick-box approach just for the sake of accreditation, without the necessary follow-up with on-going quality assurance processes. This may partly be attributed to the sheer volume of paperwork, the duplication of requirements from different ETQAs, and the costliness of the exercise, especially for small and survivalist providers, who often need to hire consultants, as they do not have adequate human resources to conduct these processes.

Stakeholder consultation reported was limited and geared more towards information sessions than a meaningful dialogue (cf. 5.3.1-5.3.3) among main stakeholders and TVET

institutions and management where the research was conducted.

### 6.2.5 Towards a *quality assurance* framework

One of the aims of this study was to explore the development of a QA system (based on collected data) that may be used by public and private TVET providers in SA to assure the quality of the engineering training programmes that they offer for post-school, adult learners (cf. 2.2.3).

We can here refer to (cf. Figure. 2.2) where the QA aspects like Regulating authorities, Leadership, Stakeholder, Curriculum/programme, Staff profiles, Learner profiles, Policies and Practices, Resources and Institutional Design. These aspects are affected by the macro aspects are influenced /affected by macro aspects like Internationalization, Globalization, Privatization and Economics, Politics, and Marketization.

To achieve effectively, more specific curriculum/programme development (which has been addressed in Chapter 3) this outcome of QA, the ADDIE (Analysis, Design, Development, Implementation & Evaluation) system (Bamarara, 2018) can be used. The ADDIE Model to Evaluate Faculty Development Programs developed by Bamrara and Chauhan (2018) is a very stable and useful, dynamic system to ensure the Systematic Analysis to Training (SAT) when applied as described below:

- **Analysis** must be done by means of the identification of methods that respond to changes in training needs, and provision must be made to apply these methods. The results of this analysis and identification of methods will provide a basis for the design and development of training programmes.
- **Design** is to use the results of the analysis phase to compile learning objectives, develop assessment tools aligned with objectives, and to design curriculum plans.
- **Develop** refers to the actions during which the results of the design phase are being transformed to develop teaching, training, learning and assessment material for use in the implementation phase.
- **Implement** describes the actions of various parties (trainer on the job, lecturer, instructor at the TVET College, etc.), who have been involved in the curriculum development process for learning programmes, to put into practice the results of the development process.
- **Evaluate** refers to the structured appraisal or judgement of the process followed thus far and relevant documents to assess the value of the training, teaching and learning

material, assessment tools and activities, and the training programme to establish whether it is still relevant to the needs of the industry, for example, study material, content alignment with industry needs and objectives, assessment tools, and more.

### **6.3 POSSIBLE ALTERNATIVE PARADIGMS**

Most participants in the study expressed qualified support for the current system. They believed that the system should be adapted and streamlined, rather than replaced. The SETA system, however, was heavily criticised by the public and private providers and the Skills Forum focus group, indicating that this was where the greatest need for change existed.

Very few respondents provided any meaningful contributions when answering this question, except for two focus group participants and the ETQA manager by whom a centralised system of control with devolution of implementation and vested in SAQA, was mooted, although it was not indicated how this might be established. Certainly, there was poor support for the continuation of the SETA system, unless the government overhauled the SETA system. There is a regrettable dearth of positive conclusions arising out of the research. The only empathetically positive conclusion is that accreditation and quality assurance are essential. Furthermore, according to the findings in Chapter 5, it is evident that the link between DHET and TVET Colleges is not good enough to create a suitable channel of a communication link between TVET Colleges and industry to stay on the same page regarding needs of the labour market and the TVET Colleges' response to this need. This clearly came out in the interviews with both public and private TVET College respondents. This in itself causes irrelevant/inappropriate training done which is in many cases outdated. If the industry is directly involved, the clear updated needs came out with the logical consequence - appropriate training that takes place to prepare the student for the world of work. This was confirmed by the one private provider. They opened a student placement office with a waiting list for their students from industry partners.

Another matter of concern is the poor remuneration of the public colleges for lecturers and instructors which are according to the respondents in these interviews way below the market out there in the industry. This makes it further difficult to attract suitable highly skilled staff with suitable qualifications. This is where quality education starts – in the classroom and practically on the shop floor. DHET public colleges must remunerate lecturing staff within the framework of DHET salary scales. At the private colleges, they got room with salary scales that consider the adaptability of salary scales to attract suitable staff for the job.

#### 6.4 VALIDITY, RELIABILITY AND GENERALISABILITY

The theoretical framework was built by integrating different models (an adapted version of Zaki 2008:468; cf. Figure 2.2 from Nguyen Thu Le Hang 2018:72), and concepts definitions of quality assurance in Chapter 1 and Chapter 2 on QA policies and the legal context for TVET, focusing on QA bodies – UMALUSI, QCTO, SETAs and ECSA. Chapter 3 focused on programme development (curriculum development) concerning best practice internationally to contribute to educational theory, using the inductive approach whereby theory is generated from the findings based on the data collected. The main purpose was to contribute towards the theory of what QA means within the education industry. To the extent that this research relied on the lived experience of the participants, judgments were made about what works and what does not work.

The researcher further strengthens validity, reliability and generalisability of research findings by Mayer *et al.*'s (2011:27) concern about the 'dysfunctionality' of the education system, in particular at the TVET College level. Due to the lack of alignment with the skills and capabilities required by the world of work, young men and women (graduates) exit the system without being employable. The other reason is the lack of confidence that employers show for the quality and job preparedness of TVET College graduates. Unless these fundamental issues are addressed, other programmes that aim to 'fix' the problem will have limited success (Mayer *et al.*, 2011:27).

Furthermore, irrespective of the government's commitment in terms of its policy directives or initiatives to pursue equity and redress targets at TVET Colleges and/or establish quality education practices, much still has to be done, since the formal public education system has failed to fulfil its purpose of equipping young people with the relevant quality education, and skills competencies. With market-directed policies in its educational practices, the recorded successes, in the long term, may arguably be attributed to these policies. Therefore, this study took the viewpoint proposed by Allais (2012) that more basic macro-economic and political changes must be made in the national educational system, particularly as to how it will enable students to adjust to the highly competitive demands made in the world-of-work. In this regard, the researcher suggests that the quality of secondary education graduates will have to improve.

Internal validity relates to the extent to which research findings match reality, and answers the question of whether the research had the right focus. The focal point of this thesis is the QA of post-school engineering education and training programmes for adult learners in South Africa's public and private TVET sector. The literature review discussed in

Chapters 2, 3 and 4 examined this in-depth from the perspective of other researchers, while the empirical research aimed at finding the voices of both public and private providers themselves.

Cross-referencing and multiple sources served to increase internal validity (Wickberg & Zaksaitė 2002:25). It was possible to put the same questions to people with different perceptions (as in the four selected TVET College populations).

According to Yin (2013:31), the heterogeneous composition of the sample populations supports the conclusion that the study has analytical generalisability, which assumes that the results contribute to a general theory of the phenomenon, even though the findings claim no statistical generalisability.

The comparison of the different viewpoints assisted with the triangulation of the findings, which allows for a conclusion that the study is credible. This is particularly important in considering the response rate on the surveys; the literature review; the results and coded analysis, however, show a degree of similarity between the public and private TVET providers as well as the other interview participants. Even if the response rates had been higher or lower, the researcher does not believe the conclusions would have been any different.

## **6.5 SUMMARY**

My observations, based on the evidence available relating to the research question asked could be summarised as follow:

### **6.5.1 Accreditation findings**

- i. Students, both private and public, are appreciative of accreditation and so is staff and management.
- ii. Students believe that their training is of a good standard. Training staff are less convinced that it is the case. Lecturers are well aware of what the standards of the training should be.
- iii. Neither students nor staff are actively involved in stakeholder forums and staff are generally negative towards participation – without close cooperation accreditation and quality cannot be served.
- iv. Students believe that the training they receive is fit for purpose (tailor-made).
- v. Student believes that the training that they are receiving met international standards.

- vi. Students are well informed on career pathways in advance to inform their choices.
- vii. Funding reveals that some students are paid by industry – this base could be broadened in the interest of ensuring fit for purpose.

Conclusion on findings regarding accreditation: There is hiatus in what students believe they are getting and what lecturers believe they are offering and this does not serve quality purposes.

### **6.5.2 Curriculum findings**

- i. Chapter 3 revealed what the relationship between curriculum and accreditation is;
- ii. Students and staff agree that changes in the TVET sector are needed – in part it relates to closer cooperation between colleges and industry, in part better infrastructure; and in part better salaries to get best lecturing staff;
- iii. Students believe that the training that they are receiving prepares them well for future jobs, but staff are less optimistic pointing to the gap between their training and industry needs; and
- iv. TVET was a free choice on the part of students which imply a hope that their expectations would be met, but staff are less optimistic whether training can meet their expectations.

Conclusion there is a gap between the industry training needs and the training programmes offered at TVET Colleges regarding curriculum.

## **6.6 RECOMMENDATIONS**

Based on the research findings, that is, findings of the literature review and the findings of the data collected from the participants in this study by means of the questionnaire, interviews and focus group interview the following recommendations are made.

### **6.6.1 A common definition of quality assurance**

An urgent need exists for a common definition of quality assurance within the post-school TVET sector together with a standard procedure for how it should operate. In this instance, quality can be framed as 'fit for purpose' to prepare the student for the world of work in TVET by doing appropriate training as needed by industry. Until and unless this happens, it is likely that a system flawed by inconsistent interpretation and application will simply continue into the future. Quality assurance is not a nice-to-have, add-on function that occurs

at the end of a process; it should rather permeate the whole process. In Chapter 1 (cf. Figure 1.3), we saw that learners are at the bottom of the quality assurance spiral, and, normally, they pay the price for poor quality assurance. If training providers and employers do not support and implement quality assurance measures, the likelihood increases that learners will not have positive training experience and will be less employable after training, because the certificates that they have been issued with do not stand up to scrutiny. Standards must be set, for example, Lefeber and Vietorisz (2007) contended if both the government and the market are to be part of the solution, then the criteria for government efficiency and for the social efficiency of markets cannot be treated separately from each other.

The majority of respondents in all the samples agreed that quality assurance was essential but did not necessarily concur on the mechanisms available. The problems are that different quality assurance bodies use different criteria and procedures (cf. 2.3.5), and they have perceptions of the purpose of quality assurance other than to promote and protect the interests of learners. This is why a common definition and understanding of quality assurance is needed. These perceptions are the feeding ground for the misuse of quality assurance and as an instrument of power and politics. This kind of complexity creates a heavy burden on providers, especially in the survivalist (small private TVET providers with limited resources) category. They spend an inordinate amount of time and money on compliance and become distracted from their real focus, which should be on quality teaching and learning. The question of whether all these regulatory mechanisms have in fact led to improvements in teaching and learning is without any doubt an area for further research.

### **6.6.2 Streamlined organisational processes**

The processes and procedures regarding QA need to be streamlined and simplified, and for many reasons, there should be an integrated standard-setting system linked to the NQF. This is needed to make the quality assurance process more efficient and cost-effective; to promote portability of credits and qualifications between learning institutions; to promote lifelong learning, and to meet the general principles of the National Qualifications Framework. This is achievable only if an integrated National Qualifications Framework (NQF) accompanied by an integrated quality assurance framework is instituted. QCTO has already done this which is available on their website. Experience to date suggests the abandonment (or at least re-evaluation) of the QCTO model (cf. 2.3.5.4). Even in the early days of its establishment, it revealed inherent flaws in design and implementation. Because participants are not familiar with it is not sufficient grounds to make these claims. SAQA register qualifications but has no role in QA. QA is the responsibility of quality councils.

### 6.6.3 Overhaul of the SETA system

An urgent review of all SETA systems and functions is called for by respondents (cf. 5.3.2-5.3.3), as most SETAs do not seem to understand the reason for their establishment in the first place. SETAs emerged primarily to address skills shortages in the South African economy. Since SETAs represent the point where the system has faltered, largely because of a culture of ineptitude, bureaucracy and nepotism, they should not be responsible for accreditation and quality assurance. Staff within SETAs are seen to favour friends, associates and close connections, and to advantage certain providers, which counteracts competitiveness in the industry can be seen in the following statement: “Theft, fraud, extortion and forgery cost taxpayers nearly R930m in 2011-12, up from R346m in 2009-10, (Maswanganyi, 2013), while skills shortages persist. The bureaucracy in South Africa is “cumbersome and inefficient, creating inertia and inflexibility”, amid risk of the country turning into a “tender state”, with corruption being prevalent in all spheres of government” (Ensor, 2013). The focus should shift from employers and other favoured service providers to learners and eligible training providers with best practice in place. The politicisation of SETAs comes under fire for criticism from many providers, indicating that poor management and leadership are serious problems and can be substantiated with the following statement: “If the education sector in South Africa can be described as troubled, the situation is not much better in the skills area. Challenges facing SA education system (Bloch, 2009), has termed the sector a “mess”, characterised by “little co-ordination, less vision, and enormous, debilitating bureaucracy”. This is despite much work around Sector Education and Training Authorities (SETAs), qualifications frameworks, Further Education and Training college re-capitalisation and curriculum reform, learnerships and artisan training, and limited progress in workplace-based skills development. Kruss, Wildschut and Reddy (2013:422) note a tendency to assume an automatic relationship between investment in education and skills development and economic growth, without sufficient analysis of the complexity and conditionality of the relationship between qualifications and the labour market. Not only is South Africa’s post-school education and training system fragmented and uncoordinated, but formal opportunities for young people are also extremely limited with demand for education and training exceeding the capacity of the post-school public sector institutions” (Kruss, Wildshut & Reddy, 2013). Senior management positions in the SETAs should be filled by experienced and qualified business managers (cf. 2.3.5.1).

Skills development is an urgent need in South Africa that requires close monitoring and control (McIntyre, 2013). Our government thus views Technical and Vocational Educational and Training (TVET) Colleges as a priority, and allocates funds to skills development programmes, aimed at bringing further education to the people (Engelbrecht, 2017).

Logically, this is where the SETAs should be involved since this was their initial purpose, as it is stated on the SASStudy website, “SETAs facilitate training for out-of-school youth as well as anyone who needs additional skills and further training” (SASStudy, n.d.). Therefore, there should be a serious drive to educate communities, both on the SETAs’ role, and the benefits of skills development. Communities and learners, in particular, need to have a clear understanding of skills development programmes and systems, and what they are intended to do. SAQA should act as an oversight body so that skills development programmes are fit for purpose, leading to more meaningful employment for the learner.

#### **6.6.4 Accreditation of all forms of training**

The quality assurance framework should accommodate all levels and types of training – unit standards, whole qualifications, skills programmes and short courses. It is already being done and can be found on QCTO’s website and in addition, SAQA also has developed an RPL system to cover for this. Although recent developments indicate that short courses may fall outside the ambit of the quality assurance system, this would lead to a situation where training would no longer satisfy a vital part of industrial skills needs. Most employers cannot enrol their employees for learning programmes of long duration, and they need a system where their employees can accumulate credits towards a national qualification by attending short courses. On SAQA RPL and CAT documentation is available. This is already in place, but the problem lies in the implementation. Presently, in many cases at TVET providers, short courses do not generally have credits attached to them and a mechanism is required whereby learners can accumulate credits, irrespective of the form of training they undergo.

#### **6.6.5 Incentives for providers**

Quality in education and training should be determined using less of the check-box against a list of standardised criteria approach, and with more emphasis on an evaluation of the learner outcomes. Providers that consistently deliver good results could be given incentives by lightening the quality assurance requirements; for example, the number of times they are required to be audited could be extended from three years to five-year cycles. But, referring to research findings in Chapter 5 one of the problems was the lack of being audited by the SETA’s. This is if the audit by the SETA’s takes place, which is not the case according to findings of this research.

To determine which providers would be eligible for incentives, the current National Learners’ Records Database (NLRD) information technology (IT) architecture would need an overhaul. It is outdated and does not reflect true statistics (Skills Universe 2016:n.p.). All

ETQAs reports submitted to the database should be monitored, and the uploading of learner data should be standardised. This would have the positive benefit of streamlining these processes and creating a coherent database that is accessible, manageable and up to date. This would also allow for an early warning system for the regulatory authorities to detect problems within specific providers, particularly if the throughput rate consistently falls below a set benchmark.

#### **6.6.6 Consideration of alternative quality management systems**

Providers must be able to provide evidence of compliance with a standard on a universally accepted quality management system (QMS), such as the International Organization for Standardization, or ISO 9001, accompanied by regular external audits. This is common practice in businesses giving objectively verifiable evidence that their businesses are run in accordance with internationally acceptable quality benchmarks. However, running a business well does not mean that quality education is ensured. The upshot would be consistency in the assessment of quality assurance. This recommendation notes that private providers are primarily businesses, whose product and service offers are education, but primarily they are educational institutions. The small and survivalist providers, especially, have highlighted costs of accreditation and quality assurance as unreasonable in terms of the current multi-level systems. Having a one internationally benchmarked system in place would go a long way in resolving this problem, especially since the costs of ISO 9001 depending on the complexity of the business, as opposed to having a one-size-fits-all approach, as is currently the situation in South Africa. ISO certification is reissued in a three-year cycle, to ensure that the business is maintaining standards.

#### **6.6.7 Stakeholder engagement**

Stakeholder involvement is crucial to the success of any accreditation or quality assurance system. This is perhaps the most contested aspect of this research, as very little stakeholder involvement was detected (cf. 5.3), and input from stakeholders did not seem to have any impact on the policies devised by the regulatory authorities (cf. Chapter 5, findings of the research). Industry practitioners should be involved in the evaluation of material, content, delivery and assessment, and the Education and Training Quality Assurance bodies (ETQAs) should have the responsibility of external moderation and learner certification. External moderation is possible by means of evaluations and surveys such as student or learner surveys, provider surveys and related critiques, which should be fed into an efficient information system. External moderation should include the use of mechanisms to ensure that facilitators, assessors and moderators are properly qualified. The monitoring

mechanisms should allow evaluators to test the provider's Quality Management System empirically, to make sure it is compliant and above suspicion.

To summarise, several key requirements apply for a quality assurance system to work effectively and efficiently in post-school public and private TVET education and training, namely:

- A mutual understanding among all role-players of what quality assurance means and involves.
- Streamlined organisational structures with one national body (QCTO) acting in an oversight capacity, and the simplification and uniformity of policies and processes.
- An overhaul and realignment of the SETA system with apolitical appointments to leadership positions within the regulatory authorities and QA agencies, along with a focus on strong, capable business leaders taking up those posts. This is not about the staff in the organisations, but on how the roles and functions are executed.
- All courses to be accredited need to comply with certain minimum standards but in the end, without a coherent qualification that is fit for purpose accreditation is meaningless.
- The incentivisation of public and private providers who show consistently good results and throughput rates. However, we must remember that good results and good throughput rates is no guarantee of good standards. Pass one pass all will give good results and throughput rates without any fit for purpose training which is the crux of the matter, appropriate training which is fit for purpose.
- The consideration of alternative, proven, business-orientated quality management systems.
- According to this research, the researcher cannot make recommendations for the entire TVET College sector. However, the researcher suggests there is a need for further research into the entire TVET College system under the DHET.

## **6.7 AREAS FOR FURTHER RESEARCH**

Based on the findings of the research reported in this dissertation, the following areas for further research have been identified:

- A need exists to conduct research on the impact of accreditation and quality assurance on improvements in teaching and learning. After all, if such improvements are not forthcoming, the systems in place seem to be an exercise in futility. Concomitant research to determine best practice benchmarks in education could facilitate comparative studies.

- A comparative study of the various established regional protocols could be undertaken, especially with the intention of determining the success of these protocols in enhancing understanding of quality assurance in education.
- A comparative study of the quality assurance regimes for public and private providers of post-school education in other African countries or other world regions could be undertaken to determine what works and what does not work. This could be used to inform the quality assurance policies and practices in South Africa.
- A further area for research would be the application of the internationally benchmarked ISO 9000 quality assurance model, which is the common standard for businesses. This could be piloted with those providers who have already implemented the ISO 9000 model in addition to the regulatory system and compared with providers who have applied either or both models. Wilson (2010) suggests that ISO standards "elevate inspection of the correct procedures over broader aspects of quality"(e.g. educational concerns of teaching and learning), and therefore, "the workplace becomes oppressive and quality is not improved".

## **6.8 CONCLUSIONS**

The researcher concludes this thesis with the hope that engineering education and employers appointing students on completion of their studies will benefit from this study and will heed the findings and recommendations. The proposed framework (cf. 2.2.3 & 6.2.5) can be useful for lecturers and programme developers, and institutions will derive benefit from the feedback of students and staff. Employers' and society's concerns reflect demands for employees with the right and appropriate attitudes, discipline, and the skills to step into the job and start doing the work. A scarcity of work opportunities and the high unemployment rate creates major challenges for South African youth and the educational system. The technical and vocational education and training (TVET) sector in South Africa in many ways is at the intersection of these opportunities and challenges. The TVET Colleges have a mandate to build human capital, train, develop and support youth to find jobs, and to increase labour productivity - but often they are unable to live up to these expectations. The quality and relevance of vocational training are considered low; training often is expensive, not aligned with needs, and inefficient. In the light of the shortage of well-trained and experienced engineers, a review of quality assurance measures at TVET Colleges has become a necessity, and through this study, an endeavour was made to identify the areas of concern. Recently, efforts to address quality concerns in education have gained further urgency due to the country's deepening youth employment challenge and economic status.

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