

**AN ASSESSMENT OF THE PROVISION OF  
MANUFACTURING ENGINEERING AND TECHNOLOGY  
(MET) SUBJECTS IN THE FET BAND IN THE SISONKE  
DISTRICT**

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This thesis is submitted in fulfilment of the requirements for the degree of Master in Technology Education, in the Cluster of Science and Technology Education, University of KwaZulu-Natal, Durban, South Africa.

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## ABSTRACT

Technical and Vocational Education and training (TVET) is perceived as education that provides students with manpower related skills. During the Apartheid era, TVET occupied a small space in the South African education system as it was accessible to Whites only. However, after 1994, there were a lot of changes in the education system to redress the imbalances of the past. TVET in secondary schools has since been labelled as Manufacturing Engineering and Technology (MET) subjects in the Curriculum Assessment Policy Statement (CAPS).

This research sought to assess the nature of MET subject provision in secondary schools in the Sisonke district, as well as the extent to which these are provided. The study was guided by the following broad research question, namely;

- *What is the status of the provision of MET subjects in secondary schools in the Sisonke district?*

This research question was broken down into the following four sub-questions:

- *Are MET subjects offered in secondary schools in the Sisonke district?*  
*If so, are MET subjects well provided for in these schools?*
- *What is the nature of the provision with respect to:*
  - *The types of schools?*
  - *The types of subjects?*
  - *Who teaches these subjects?*
- *How effective is the provision of MET subjects in the secondary schools within the Sisonke district?*

A transformative mixed method research design was used to collect the data required to answer the above research questions of this study. Two forms of data were collected, and an analytical framework was used to guide the analysis.

The findings that were obtained indicated that:

1. Only six schools in the Sisonke district offered MET subjects out of the 86 secondary schools in this semi-urban to rural area. This reveals that, after 21 years of democracy in South Africa, there are still inequalities in the provision of education and training in basic education, which is usually found in rural areas.
2. The types of subjects being offered comprised engineering graphics and design, and civil technology and mechanical technology.
3. Out of 11 MET teachers, only two were under-qualified.
4. Curriculum implementation was generally theoretical in most of the schools, and practicals were not regularly conducted due to a lack of infrastructure, a lack of resources and equipment, a lack of machinery and tools, the fact that material is expensive, safety is a challenge, as well as the learner-teacher ratio.

For these institutions to be effective, infrastructure and equipment to conduct practicals need to be put in place. Learners need to be exposed to, and provided with skills to work in the real world of work, which should begin at secondary school level.

**Key words:** Assessment of the provision of Technical and Vocational Education and Training (TVET); Manufacturing Engineering and Technology (MET) in the FET band; TVET in rural schools.

## DECLARATION

I hereby declare that the study “*An Assessment of the provision of Manufacturing Engineering and Technology (MET) subjects in the FET band in the Sisonke district*”, is my own work and has never been submitted before to this or any other academic institution. All the resources I have used or quoted have been indicated and acknowledged by means of complete references.

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# ETHICAL CLEARANCE



30 July 2015

Ms Duduzile Carol Mbambo 210556409  
School of Education  
Edgewood Campus

Dear Ms Mbambo

Protocol reference number: HSS/0623/015M  
Project title: An assessment of the provision of Manufacturing Engineering and Technology in the further Education and Training band in the Siyoni

### Full Approval – Expedited Application

In response to your application received on 1 June 2015, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

**PLEASE NOTE:** Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Dr Shenuka Singh (Chair)  
Humanities & Social Sciences Research Ethics Committee

/pm

Cc Supervisor: Dr BP Alant  
Cc Academic Leader Research: Professor P Morojele  
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## ACRONYMS

ADB	Asian Development Bank
AU	African Union
CAPS	Curriculum Assessment Policy Statement
CEDEFOP	European Centre for the Development of Vocational Training
DBE	Department of Basic education
DOE	Department of Education
DOL	Department of Labour
DHET	Department of higher education and training
EFA	Education for All
ETF	European Training Foundation
FDI	Foreign Direct Investment
FET	Further Education and Training
GET	General Education and Training
HRD	Human Resource Development
HSRC	Human Sciences Research Council
ILO	International Labour Organisation
IQMS	Integrated Quality Management System
NQF	National Qualification Framework
ISCED	International Standard Classification of Education
MAT	Maths and Technology
MET	Manufacturing Engineering and Technology

MDG	Millennium developmental Goal
NCV	National Certificate vocational
NSDS	National Skills Development Strategy
OBE	Outcome Based Education
QA	Quality Assurance
PGP	Personal Growth Plan
SA	South Africa
SACE	South African Council for Educators
SAQA	South African Qualifications Authority
SETA	Sector Education and Training Authorities
SGB	School Governing Body
SIP	School improvement plan
SMT	School Management Team
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNEVOC	United Nations Educational, Scientific and Cultural Organisation International Project on Technical Vocational Education



## TERMINOLOGY

**Assessment** was primarily used to describe the processes of evaluating the effectiveness of instructional activities.

**Rural areas:** rural communities are dispersed, and access to basic services such as transport and communications technology is restricted. The basic level of education is low (Black, 1997).

**Technical and Vocational Education and Training (TVET):** There is no universally accepted definition of Technical and Vocational Education and Training. As a field, it is continually changing, usually in response to the demands made upon it (Maclean & Wilson, 2009). TVET is described as education that involves the knowledge and skills required for the world of work. It usually takes place in post-secondary education, offered in parallel with general education. The term TVET will be used according to the definition used by UNESCO (2014), which describes it “as those aspects of the educational process involving, in education to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic life”.

**Vocational education** is education within a vocational institution that prepares people for a specific trade, it directly develops expertise in techniques related to technology, skill and scientific technique to span all aspects of trade.

**Technical education** is understood as theoretical and practical scientific knowledge and skills that permit a person receiving such education to solve problems, like engineering and economic problems, in his speciality. It is offered in senior secondary schools parallel to academic education.

**Technology education** is an integrated, experience based instructional programme designed to prepare a population that is knowledgeable about technology, its evaluation, systems, techniques, uses and cultural significance. In South Africa, the education sector has undergone a considerable shift after 1994, which included a transition from technical to FET. Furthermore, Technology Education is the study of technology where learners learn about the processes and knowledge related to technology. As a field of study, it covers the human ability to shape and change the physical world to meet needs by manipulating tools and materials.

**Manufacturing Engineering and Technology (MET)** refers to the field of subjects in the FET band that involve a theory and practical element. This term is used in the CAPS curriculum, and it includes four subjects, namely, Engineering Graphics and Design, Mechanical technology, Civil technology and Electrical technology. For the purposes of this study, the terms ‘technical subjects’ and technical education are used interchangeably.

**General education** is education that normally prepares a learner for life in the general sense, as well as for higher education studies in which knowledge theories play a prominent role.

**Vocational education** aims to produce someone who can ‘hit the ground running’ in a particular occupation. The intention here is that the school leaver is productive in the work place immediately.

**Vocational-oriented education** normally does not deliver workers who are productive immediately in a particular work situation, but who are rather well-versed in the specific context and environment of a particular occupation. This learner requires further training before entering the workplace. Vocationally-orientated education can also prepare a learner for higher education in terms of preparing for their career.

**Mainstream secondary school** is a type of school that offers academic subjects aiming to help learners get entry into University.

**Technical high schools** have a curriculum that is 40% practice and 60% theory. Learners who matriculate with this curriculum are eligible to enter colleges or Universities.

**Comprehensive high schools**, as defined in ELRC (1996) are secondary schools with a full complement of technical or agricultural subjects. In the South African context, *secondary school*, refers to the formal category of school level that offers education to learners in Grades 10, 11 and 12. These grades are classified as the Further Education and Training (FET) Band. FET can be described as all learning and training programmes leading to qualifications from levels 2 to 4 of the National Qualification Framework (NQF) as determined by the South African Qualifications Authority Act (SAQA) of 1995.

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# **CHAPTER 1**

## **INTRODUCTION AND CONTEXT**

The aim of this study was to assess the provision of MET subjects in secondary schools in the Sisonke District. The purpose of this chapter is to outline the rationale, which is two pronged as it comprises my personal experience, and the information discovered in the literature review. This chapter also gives the background to the study with a detailed explanation of what motivated me to investigate the topic under research. The problem statement is also outlined, followed by the objectives of the study, the research questions and the orientation of the chapters in this study.

### **1.1 BACKGROUND OF THE STUDY**

According to Akoojee, Gewer and McGrath (2005), the South African government has identified skills development as a crucial issue in seeking to meet both social and economic aspirations. Furthermore, it is also highlighted in government reports that this is a critical issue in meeting both social and economic challenges in terms of delivery and equity (Green paper, 2012).

In addressing issues of skill shortages, most developing countries are engaged in a revival of TVET. Countries like Korea have invested in TVET formal education (Ngure, 2013). The aim of TVET is to contribute to equity and access to training, as well as to improve social responsibility.

Throughout the world, governments are currently engaged in promoting full TVET programmes due to their expected role in the promotion of economic growth and socio economic development of countries, which is to the benefit of individuals, society, and local communities in general. This is complementary with post-secondary school programmes, as found by McGrath (2006).

There is a high rate of unemployment in South Africa (SA), as stated in the report by the SARR (2015), as, overall, unemployment has risen from 32% in 1994 to 36% in 2014. It was mentioned that among the major difficulties faced by SA, poor education and high unemployment ranked highest. The level of education within the country has an impact on jobs and the economic status of the country. SARR (2015) further states that the rate of participation in schools is offset by poor quality at all levels within the system. However, Technical Vocational Education (TVE)

is described as poor education, and has a poor reputation, which is also experienced by SETAS (Sector Education and Training Authorities).

Moreover, most scholars involved in education research locally and internationally view TVET as an education system that has the potential to eradicate poverty. Lamb (2011) explains that in Australia, the TVET system has already been identified as a primary source of education and training provision for a wide range of people/communities, particularly for the poor.

## **1.2 FOCUS AND PURPOSE OF THE STUDY**

After reading through the literature, and coming across different perceptions of TVET provision, this study sought to determine the extent to which Technical/Vocational education is provided in rural schools. This study focused on the types of schools that provide MET subjects. This was analysed in order to assess the quality, as well as the resources that these types of schools required. The subjects being offered, and the conditions under which they were offered in relation to resources and infrastructure, were also analysed.

The purpose of this study was to discover what kind of access to technical vocational education and training was provided, and the potential that these subjects contributed to the educational and social development of the community. The extent to which TVET at school level has developed since South Africa gained independence was of great interest to me as this is relevant to the needs of individuals, as well as society at large.

## **1.3 RATIONALE FOR THE RESEARCH**

The rationale for this research study is two pronged. Firstly, it emerged from my personal experience, and secondly, the need for this research was confirmed through the literature that was reviewed.

### 1.3.1 The researcher's personal experience

This study was prompted by my personal experiences as a learner growing up, and as a teacher teaching in the rural community of Impendle in the KwaZulu-Natal province. Impendle forms part of the Umgungundlovu district, which is situated 200km from the district of Sisonke. In all of my basic education, I had never seen nor heard of a technical school before. It was only after I had passed Grade 12 and had to improve my grades that I was introduced to Technical/Vocational education. I then enrolled at one of the Technical Colleges in Umgungundlovu to study a National N3 Certificate in Electronics.

It is through this experience that I learned that students from secondary schools could exit the school system at Standard 7 (Grade 9) and enrol at an FET college to learn a particular trade or become self-employed. It also came as a surprise that there were subjects that were being offered at secondary schools that were career orientated - learning from school about the world of work by enrolling at a technical high school. In addition, I also learned about new ways of learning as I was exposed to a wide range of skills - learning by doing; and experiencing the integration of knowledge and skills that are relevant to our daily life experiences. It was exciting and motivating for me to design and make artefacts using my hands, with little help from my teachers. As females, my fellow colleagues and I performed duties that were previously associated with males, which was an eye-opener for me.

Working as a Subject Education Specialist (subject advisor) in engineering graphics and design within the Sisonke district at the time of this study, I have tried to encourage principals to offer their learners alternative career routes to the academic route by introducing Manufacturing Engineering and Technology (MET) subjects in their schools. This has been met with a variety of challenges, which range from complaints about costs; lack of infrastructure (both human and physical resources) to deliver these subjects, to the reluctance to offer these subjects since they are not credited for university entrance.

It is this experience that has prompted this research and in this regard, this study strove to determine the nature and the extent to which Technical/Vocational education was provided in the rural schools that participated in this research in the Sisonke district.

### 1.3.2 The literature explored

Maclean and Lai (2011) contend that, globally, the average enrolment of students in upper secondary schools is one in five in technical and vocational programmes. Nevertheless, in Europe and East Asia (including China), such programmes account for 50% and 33% respectively in upper secondary schools (*Ibid*).

Furthermore, Lamb (2011, p. 62) posits that in studies on TVET, the focus is rather on schools that serve poor communities. In highly disadvantaged areas, the rates for 2005 indicated that one in three secondary school students compared to one in eight students in the most advantaged municipalities. Moreover, Oketch (2007) finds that, generally, TVET occupies a small and marginal position in the school systems of most African countries. Only a small percentage of those enrolled for TVET can specifically be classified as pursuing a TVET strand. However, TVET specificity is meant to be developed at secondary school level.

Lamb (2011) explains that the poor status in most secondary schools is evident where academic programmes take priority and the focus is on preparing students for university. TVET is treated as a relegation stream, as a programme or a set of courses for students who do not display the skills needed to cope with academic programmes (*Ibid*).

## 1.4 SIGNIFICANCE

The findings of this research will contribute to the knowledge and importance of the provision of technical education in schools. It will benefit provincial and national policy makers, Department of Education officials, principals, teachers, parents of school-going learners, the private sector, the SGB, and researchers interested in the provision of technical education in rural areas. It will also assist in destigmatising vocational education. In conclusion, through this study, it is hoped that the level of unemployment will be decreased among the youth, and that the standard of living will thus be improved so that students may become qualified artisans by the time they leave school.

## **1.5 PROBLEM STATEMENT**

In the past, education and training systems have not always needed or attempted to be inclusive within the education system. In African countries, for example, TVET education has been portrayed as inferior to general education, and has been marginalised, as discussed by Oketch (2007). TVET's main objective is to reduce unemployment amongst the youth. Oketch further posits that TVET is still dominated by socio-economic factors, and those from working class families are more likely to join as compared to those from the middle class. (*ibid*). Among the socio economic rights guaranteed by the constitution, as adopted in its final form in 1996, is the right of access to education.

One of the features of the South African upper secondary school system is the priority given to academic programmes designed to prepare students for university, rather than learners being prepared to work in technical and manpower related fields as a common stage of learning for all (Lamb, 2011, p.62).

As mentioned previously, there is a high rate of unemployment in South Africa (SARR, 2015). Overall, unemployment has risen from 32% in 1994 to 36% in 2014. It was revealed that among the major difficulties faced by SA, poor education and high unemployment ranked highest. The level of education of individuals has an impact on jobs and the economic status of a country. The rate of participation in schools is offset by poor quality at all levels within the system, for example, TVE is described as a poor form of education, and has a poor reputation, as also experienced by SETAS (sector education and training authorities) (SARR, 2015, p.15)

## **1.6 OBJECTIVES OF THE STUDY**

The Aim of this study was to show the Department of Education the extent to which TVET is provided in rural secondary schools in the Sisonke district. The conditions under which MET teachers were working in secondary schools was also highlighted. The two objectives of the study were:

- To determine the extent to which MET subjects are provided in the Sisonke district; and
- To explore the nature of the provision of MET subjects in the Sisonke district.

## 1.7 RESEARCH QUESTIONS

The study was guided by the following broad research question, namely;

- *What is the status of the provision of MET subjects in secondary schools in the Sisonke district?*

This research question was broken down into the following four sub-questions:

- *Are MET subjects offered in secondary schools in the Sisonke district?  
If so, are MET subjects well provided for in these schools?*
- *What is the nature of the provision with respect to:*
  - *The types of schools?*
  - *The types of subjects?*
  - *Who teaches these subjects?*
- *How effective is the provision of MET subjects in the secondary schools within the Sisonke district?*

## 1.8 CONTEXT OF THE STUDY

The study was conducted in the Sisonke District located in the midlands region of the KwaZulu-Natal (KZN) province. It is regarded as the most rural district out of the 12 districts in the province. It consists of four circuits: Pholela, Ixopo, Umzimkhulu, and Greater Kokstad. The circuits are further divided into 15 Wards with 86 secondary schools. The Sisonke district is surrounded by a community that is affected by high levels of poverty and unemployment, and poor social and economic conditions. Most of the parents in the area work on farms; others work far away from home, which results in many child-headed households.

## 1.9 OUTLINE OF THE STUDY

This study has six chapters, which are arranged in the following sequence.



**CHAPTER 1: Introduction**

This chapter, which is an introduction to the study, provides a brief background to the study, the rationale that prompted the researcher to conduct this study, the focus and purpose of the study, and the significance and orientation of the study.

**CHAPTER 2:** presents the literature review, which focuses and explores the related literature on the provision of TVET in the past and present at a global and local level. This gives the reader more information about the nature and efficiency of TVET provision. The theoretical framework and analytical framework are also outlined.

**CHAPTER 3:** outlines the research design and methodology adopted for the study. The choice to use a transformative mixed method design as the most suitable methodology for the research study is explained in detail. A description of the data collection is then given, as well as how the data were analysed to answer the research question. The reasons for selecting the data collection instruments, the structure of the questionnaire, and sampling strategies are also discussed. The ethical clearance procedures followed and the limitations of the study are then also presented.

**CHAPTER 4:** comprises a presentation of the analysis and the findings of the first three sub-questions that were administered by using questionnaires. Tables were used to indicate the provision of MET subjects in the secondary schools within the Sisonke district. The biographical data of the participants is presented, describing them in terms of gender, working years in the present school, and highest qualification.

**CHAPTER 5:** This chapter presents the findings from the six participating schools, which included 31 participants who were involved in the research study. The biographical data of the participants was presented, describing them in terms of gender, working years in the present school, highest qualification was also included. Participants' perception was also discussed on how they view the nature of MET provision in their schools.

**CHAPTER 6:** presents a discussion of the findings and recommendations of this study. These findings from the previous two chapters are brought together and compared to give a clearer picture of the provision of MET subjects in rural schools.

## **CONCLUSION**

The purpose of this chapter was to present the rationale of the study and to provide the outline of the thesis. After reading Chapter 1, the reader will have an idea of what this study seeks to achieve. The next chapter will explore the literature review that was conducted using local and international literature.

## **CHAPTER 2**

### **LITERATURE REVIEW**

The literature covers the following six sections: firstly, a brief overview of what Technical and Vocational Education and Training (TVET) is and where it is located within the South African (SA) educational landscape is provided. Secondly, TVET's provision in SA prior to 1994 will then be discussed. Thirdly, the South African TVET landscape after 1994 will be analysed in order to compare its provision prior to 1994. Fourthly, the changes in the development of TVET in SA will be discussed. This section is then followed by the challenges faced by schools and colleges in the provision of TVET in SA. The literature review section is concluded with a discussion of the provision of TVET in rural schools.

#### **2.1 RATIONALE BEHIND THE LITERATURE REVIEWED**

Focusing on the six sections mentioned above has helped in laying the foundation for tracing the development of TVET systems in the past and present. It has also assisted the researcher to evaluate whether TVET provision in secondary schools is relevant to the needs of society or not. Knowledge about current TVET policies will help policymakers and teachers to modernise technical policies, if the need arises, in order to respond to the country's economic and social objectives. Brunette (2006) posits that the perspective gained by reviewing literature on this issue will give a better understanding of the development of TVET in the past and shed light on the changes, if any, after independence.

History can have both positive and negative implications for change, as the knowledge gained previously is vitally important for future lessons. Research on this topic has been carried out so as to enhance an understanding of the ways that technical and vocational education and training has manifested. Brunette (2006) argues that a better understanding of the past and current practice of technical education is possible as present technical education policies are built upon previous practices and policies. Terblanche (2014) concurs with Brunette that it is important to provide a brief outline of the history of the education system in South Africa because the Apartheid regime resulted in unjust treatment and the marginalisation of the majority of the populace, which as a result significantly impacted the accessibility of education, which is still being felt in post-Apartheid South Africa.

TVET in rural schools was neglected in the past. A lack of job opportunities, caused mainly by the absence of industries, has also marginalised rural communities. The introduction of TVET in these areas would be a way of providing these communities with skills that can provide the possibility of self-employment. Learners in these communities would enjoy the same rights that have mostly been easily accessible in urban areas.

## **2.2 REVIEW OF THE RELATED LITERATURE**

### **2.2.1 The definition of TVET and its location**

TVET is an acronym for Technical and Vocational Education and Training. According to Akoojee (2008), TVET is education that involves the knowledge and skills required for the world of work. It usually takes place in post-secondary education. However, if offered at secondary school level, it is offered in parallel with general education. For the purposes of this study, the term TVET will be used following the definition offered by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the International Labour Organisation (ILO) (as cited in Badawi, 2013, p.284):

A comprehensive term referring to those aspects of the educational process involving, in addition to general education the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life.

Maclean and Lai (2011) contend that in the literature, various terms have been used to classify elements of the field that are now perceived as TVET. These include: apprenticeship training, vocational education, industrial arts, technical education, technical/vocational education (TVE), occupational education (OE), vocational education and training (VET), career and technical education (CTE), amongst others.

TVET is further understood to be:

- a) An integral part of general education;*
- b) A means of exposure to occupational fields, and active participation in the world of work;*
- c) An aspect of lifelong learning and preparation towards becoming responsible citizens;*
- d) An instrument for promoting environmentally sound sustainable development;*
- e) A method of facilitating poverty alleviation.*

(UNESCO and ILO, 2002, p.7, as cited in Fawcett, Sawi & Allison, 2014)

### 2.2.2 TVET provision in SA prior to 1994

Malherbe (1932, as cited in Badroodien, 1998) finds that the history of Technical vocational education has different origins that have been informed by different contexts. The courses offered are usually developed in response to the local, industrial and commercial needs of particular areas. The HSRC (2003) confirms that the history of TVET in SA is bound to the development of the modern South African economy, initiated by the mineral discoveries in the nineteenth century.

Similarly, Badroodien and McGrath (2005) argue that Technical Education institutions evolved mainly in response to the growing needs of railways, mining, and industries for trained and skilled artisans. Furthermore, Kallaway (as cited in Badroodien, 1998) explains that from 1890, the provision of technical and industrial education in South Africa only favoured the schooling that was directly relevant to the environment and to the life chances of Whites, especially rurally (Badroodien, 2004, p. 24). This suggests that the offering of TVET was not accessible to all South African citizens.

Moreover, Badroodien (2004) states that the historical context of TVET provision in South Africa has been shaped by the nature and extent of such provision to the different social classes and groups. He further makes four observations (as cited in Ramdutt, 2007):

- *Technical vocational education provision before 1910 was regarded as only suitable for non-Whites.*
- *After 1910, the Union government reversed the policy emphasis and sought to limit the provision of technical and vocational education to predominantly White recipients.*
- *The categories of Technical and Vocational Education came to be distinguished largely based on class and race after 1910. Technical Education provision was clearly distinguished in policy from Industrial/vocational education, the latter being more focused on social welfare concerns.*

- *With regard to vocational education provision, there was a greater emphasis, historically, on the rehabilitative and ameliorative functions than on the function of training* (Badroodien 1998, cited in McGrath et al., 2004, p.20).

Badroodien and McGrath (2005) state that before 1930, the Union Government attempted to address the needs of the displaced rural White population by providing them with access to vocational education and job opportunities. The Government further reformed the vocational and technical education system to expand and respond to a particular kind of skills required by secondary industries for further growth. McGrath (2007) explains that the education and training system in South Africa during the 1960s continued to provide sufficient skills for the automotive industry, however it was racially segregated and inequitable.

### 2.2.3 De Lange's commission

According to Chisholm (1999), in 1980, after four years of Soweto uprisings, developments took place that had been moving towards a deepening economic, political, and ideological crisis since the mid-1970s. The South African economy, by that time, was sliding into recession, and so the state appointed a Human Sciences Research Council (HSRC) commission of inquiry into education. De Lange's new forms of education were explored and a full blown attempt was made to renegotiate the racial component of state ideology in education *ibid*.

The important shift was made in the state's education and training policies whereby the education Act of 1979 replaced the bantu special education act of 1964, as explained by Samuel (as cited in HSRC, 2003; and Kallaway, 1984). De Lange's report proposed reforms designed to streamline and rationalise the existing education system. The recommendations were:

- An education system that will meet the manpower needs of South Africa and provide education 'of equal quality' for the entire population.
- A recommended system of formal (academic) education running parallel and 'interfacing' with a non-formal (vocational) education system (Chisholm, 1983, p.363).

Chisholm (1999) finds that Technical education received a great deal of attention through an act of parliament that replaced Bantu education, assigning a high priority to the provision of Technical Education for Blacks. He further states that in 1982, for the first time, a Black urban

technical high school was built named Jabulani technical high school. This was followed by massive programmes for transforming Bantu education schools into Technical and commercial high schools, which were introduced as feeders for technical colleges.

#### 2.2.4 International perspective

Skilback, Conell, Lowe and Trait (1994) clarify that in the late eighteenth century in America and France, there was another revolutionary era that provided stimulus on both sides of the Atlantic for a more secular, practical, and socially orientated approach to education. Woldetsadick (2012) explains that a vocational school pattern had been created, and was found in specialised training centres established for industrial work or community activities starting from many hundreds of years ago. Technical and vocational schools were established to break up the monopoly of apprenticeship training systems over recruitment into trades *ibid*.

UNESCO (1973, as cited in Woldetsadick, 2012) further describes how Technical and Vocational Education began to develop in the first half of the 19<sup>th</sup> century when a wide range of institutes of technology, mechanical institutes, technical academies and commercial schools were founded. Germany has always been at the forefront of technological development, sustained by an excellent education system that supports technical education and training. Germany has well developed technical education policies in place, which makes it worthwhile to learn from and study them (Brunette, 2006, p.6).

King and Palmer (as cited in Tripney, Newman, Hovish & Brown, 2012) elucidate that in the mid-1990s to the mid-2000s, there was a decline of interest in Technical and Vocational Education and Training (TVET). This emanated from the withdrawal of the World Bank in financing TVET. Criticism stemmed from the rate of returns, which was not convincing as these subjects are expensive; the number of learners that attend class due to its nature; as well as the facilities and equipment required. Hence, Maclean and Lai (2011) contend that the World Bank's policies based on the rate of return favoured a decreased investment in TVET.

“Tilak (2003) notes that TVET is ‘necessarily expensive’ and cautions that ‘poor investment cannot yield returns’” (as cited in Maclean & Lai, 2011, p.8). TVET systems are relatively expensive, because, especially in the technical subject areas the training requires

investment into costly infrastructure, and as a result of the high cost to benefit ratio these courses have been criticised for their lack of efficiency. However, TVET has returned to the agenda of government and donor agencies internationally, and particularly in sub-Saharan Africa and South Asia. In many low- and middle-income countries, TVET is seen as a solution to improving skills development. It is in this sense that Lamb (2011) highlights that TVET is important for economic and personal benefit.

According to Morris (2010, p.104), “It is reasonable to believe that TVET is potentially capable of satisfying people's basic needs.” Morris (2010) further argues that TVET systems need to take into consideration the ever changing needs of the workforce, which are influenced by changes such as globalisation and technological innovation. Therefore, Luisoni (2005, p.250) finds that “TVET is the master key that can transform the world of work and the economy, alleviate poverty, save the environment, and improve the quality of life for individual citizens.” Moreover, Wallenborn (2010) finds that most successful countries, like China, Malaysia and Korea, have prioritised education and training as an investment to promote socio-economic and social objectives.

Te Velde (cited in McGrath, 2007, p.1) contends that there is a strong relationship between education and training, and globalisation. He has identified three relationships:

- “The quantity and quality of education and training existing in the country helps to determine the extent to which a country is likely to be involved in globalisation.
- The extent to which a country is engaged with Foreign Direct Investment (FDI), trade, and migration also inevitably impacts its supply of education and training.
- Focus is needed on how national development policies seek to combine attempts to engage positively with globalisation using human resource development (HRD) strategies.”

#### 2.2.5 The role of TVET

The purpose of providing TVET is that it draws more attention on a national and international level to its intrinsic nature, which is to provide education for employability, as well as its contribution to economic, social, and environmental development. It is in this regard that



Lamb (2011) highlights that TVET is important for economic and personal benefit as creating jobs is the top agenda of policy makers across the world. TVET also has a stronger purchase among the poor as research has revealed that the early school leavers and people from lower socio-economic backgrounds in Australia are involved in TVET (Lamb, 2011).

Hughes (as cited in Lamb, 2011) finds that TVET could potentially add value to society by enabling previously disadvantaged groups to attain such qualifications through education and training. In turn, this affects the human capital of a country and benefits all its citizens. Oketch (2009) notes that many scholars find that TVET is not specific to general education, but rather to job entry, which was acceptable in the past, but is no longer acceptable. Today, TVET is seen as the gateway for workers to develop vocational-specific skills that they can use for the rest of their lives. Lamb (2011) explains that as a programme in secondary school, TVET is vital to the successful training, and careers, of those who come from disadvantaged backgrounds, especially those who do not finish high school. “Given the return of the policy interest in VET for development, and the possibilities of a broader vision of education development relations beyond 2015, when the MDGs [Millennium Development Goals] end, it is time to revisit the role of VET in development from an explicitly theoretical stance: hence this special issue, which seeks to begin a reconceptualisation of VET-development linkages” (McGrath, 2012, p.2).

#### 2.2.6 SA TVET landscape after 1994

South Africa has undergone the most reform in education and training, which has sought to address the legacies of the past (McGrath, 1998). Allais (2012), observing the changes that have transpired in South Africa, argues that a new institutional landscape is on the rise, for example, instead of a single Minister of Education, there is a Minister of Basic Education and a Minister of Higher Education and Training. The Minister of the Department of Higher Education and Training (DHET) at the time of this study seemed to be more focused on building and supporting educational institutions. There also has been a shift in economic policy; the once austere policies are being replaced with policies focusing on “infrastructure rehabilitation and expansion” (Allais, 2012, p. 634). The National Skills Development Strategy (NSDS), together with the National Qualification Framework (NQF) were introduced to overcome the effects of Apartheid, which include, amongst others, a paucity of skills (DHET, 2011-2013). The system as a whole is intended to be led by demand, bringing vocational education closer to employers to improve its relevance

and quality. Sectorial Education and Training Authorities (SETAs) were set up to replace industry training boards. SETAs are constituted by employer and trade union representatives in their training boards (for quality assurance). The levy grant system replaced apprenticeship as, according to the Department of Labour (DoL) (1997, as cited in Allais, 2012, p.3), “the idea is to ensure that a regulated market of provision of training would ensure that training is responsive to employers’ needs.”

According to Chisholm (2009), the new integrated TVET system was established through the National Qualification Framework. The intention was to enable the portability of skills and qualifications to transverse different pathways informed by an outcome and competency-based system of training. As stated in the NQF Act no 67 of 2008, the new integrated TVET system is characterised by three coordinated qualification frameworks:

- General and Further Education and Training;
- Higher Education; and
- Trades and occupations (UNESCO-UNEVOC, 2014).

In other words, as Kirchberger (2008, p.8) remarks, the NQF “represents significant steps towards rendering the TVET system more coherent and responsive to the needs for competencies as expressed by enterprises and professional organisations.”

Kraak (2002) explains that the NQF was implemented to unify previously divided sectors and allow for an exchange of knowledge across the FET and Higher education and training (HET) bands, which was previously impossible. The system is designed to provide people with “Intermediate to high-level skills, lay a foundation for HE [Higher Education], facilitate the transition from school to work [and] develop autonomous citizens” (UNESCO-UNEVOC, 2014, p.6). It is in this regard that Chisholm (2007, p.4) argues that “the TVET systems were built to address inequalities in education/ learning across different racial groups in society. This system therefore provides lifelong learning that is accessible to all, prepares learners for the wider world and further promotes personal, social, civic, and economic development in the country.”

### 2.2.7 Changes in the TVET landscape after 1994

The development of the new curriculum for both the General Education and Training (GET) and Further Education and Training (FET) phases took place in 1997, responding to national goals. However, only a small aspect of technical education is seen in the new curriculum. In the GET phase, it is in the form of technology, and in the FET phase, it is in the form of Manufacturing, Engineering and Technology (MET) (UNESCO, 2010). Technology was included as part of the compulsory learning areas in the GET band, which replaced subjects like Basic Techniques and Industrial Arts, while Manufacturing, Engineering and Technology (MET) replaced all the technical subjects in the FET band (Department of Education, 2005).

The Department of Education (2001) had a vision that would enable change in the size and structure of access, delivery, governance, financing, recapitalisation, curriculum and assessment, and articulation of higher education with an effect on the labour market. “South Africa launched a major R1.9 billion 3-year programme in 2006 to recapitalise technical colleges, tackle vital and long neglected curriculum reform, and invest in staff training and development, infrastructure and equipment” (Pandor, 2008, p.1). In this regard, 152 technical colleges were merged into 50 new multi-site and multi-racial institutions of further education and training as the transformation of FET/TVET (McGrath, 2010). College programmes were also substantively modernised.

The then new Outcomes Based Education (OBE) curriculum instituted the National Certificate Vocational (NCV) in 11 occupational fields. The first FET level was instituted in 2006, Level 2 in 2007, Level 3 in 2008, and Level 4 in 2009. In terms of the Further Education and Training Colleges Amendment Act (No. 3 of 2012), colleges became part of a national competence and the responsibility of the Department of Higher Education and Training (Whitepaper for Post School Education and Training, 2013). This was a significant development because for the first time, colleges became accountable primarily to the national government rather than to each province. Additionally, this meant that learners were obliged, on top of the certification received in terms of written examinations, to also complete a trade test administered by the Institute for National Development of learnerships, Employment skills and Labour Assessment (INDLELA) (UNESCO-UNEVOC, 2014).

### 2.2.8 Challenges in the development of TVET in SA

*Funding.* Funding is a key instrument that influences the responsiveness of FET institutions in achieving national goals, enhancement of the system, broadening of participation and promotion of equity (Minister of education, 1998). According to UNESCO-UNEVOC (2014), there are four kinds of funding: the formula funding of TVET programmes, funding for special purposes, student financial aid, and private funding. Wedekind (2010) finds that the overall funding provision for TVET is still insufficient to meet the needs of the sector. Funding norms are based on learner numbers and enrolment for a particular programme, and the resources available for skills development from SETAs to supplement government's funds. Too little has been done to encourage this funding stream.

McGrath (1998) concurs that the funding of TVET is a problem, whilst the levy/learnerships grant of the Department of Labour is designed to address provision for unspecified students. "While national government needs to ensure that some parity is to be achieved, a longer term solution needs to be found to ensure national uniformity and consistency for the sector as whole in the country; especially if the new legislation is to be accompanied by a steady funding stream, necessary for sustaining college funding" (Akoojee 2008, p.310).

*Adequately qualified and trained TVET Teachers and Trainers.* In the literature, the critique of African vocational education relates to the inefficiency and ineffectiveness of vocational provision; whether it be in schools or in post-school institutions (McGrath, 2011). Such institutions are characterised by poor quality teaching staff, which results in poor student performance; working with inadequate and outdated equipment; and a lack of real engagement with the world of work. It is in this regard that Singh and Surdashaan (1996) argue that technical teachers should have and display good knowledge of their subjects, they should be interested in the whole field of education, and understand the principles of learning. This gives the teacher the necessary background for effective preparation, planning, and presentation of progressive learning activities. The good teacher, keeps his subject and industrial in good higher level. Provides guidance and inspiration and their potentiality can only be made fully effective by training and experience (Singh & Surdashaan, 1996, p.50).

Papier (2010) maintains that South African policy has changed the teacher qualifications required by raising the bar for vocational teachers' qualifications. A suite of professional qualifications across undergraduate and post-graduate levels were proposed (UNESCO, 1991). In addition, the requirement of teachers' qualifications for entry into teacher training was raised in order to assure the degree of competence required for quality education. In this regard, college lecturers needed to obtain a first academic degree in their respective discipline, as well as a pedagogic qualification, thereby integrating discipline and pedagogic competencies whether teaching general, academic or vocational subjects. Moreover, practical instructors are expected/required to hold a required qualification recognised in the workplace, and the mandatory 30 credits vocational education orientation programme (VEOP), which comprises 300 hours of learning (Papier, 2010, p.158).

#### 2.2.9 TVET in Rural schools

Historically, the focus of TVET in rural schools has been on agricultural skills, whilst the increasing demand within the rural population has been for skills that increase mobility and chances for self-employment outside of these rural areas. Although industries other than agriculture exist in rural areas, the demand and supply for associated skills is not clear. Patterson (2004) points out that there is still more emphasis on agriculture in rural school education facilities, although for various reasons, be it political, social; or economical agriculture is not seen as an acceptable route out of poverty. Jacobs and Hart (2012) make a significant point by contending that rural skills demand is highly dependent on the labour demand and skillset required by industries and economic sectors concentrated in these localities.

### **2.3 ANALYTICAL FRAMEWORK LITERATURE**

An analytical framework is a tool used to assess the education and training process, taking into account internal and external efficiency. It is used to evaluate TVET institutions/projects or general education as to whether these have successfully met their goals or objectives. Fluitman (1999) describes it as a yardstick used to measure the extent to which training systems meet their external and internal objectives. Moreover, it was mentioned that it indicates how well TVET systems correlates with the external environment within which it operates and how well it responds to related signals or challenges of the country (ETF, 2012, p.8).

Furthermore, Lai and Kai-pong (2012) argue that the objective of analytical frameworks is to find out the reasons and methods involved in reforming the training policy area and challenges that exist in training programmes, focusing on important interrelated bases of reform and measure training systems.

## **2.4 THE OBJECTIVES IN USING AN ANALYTICAL FRAMEWORK**

Fluitman (1999), in his study on the roots and the nature of TVET reform, proposes an analytical framework to analyse why and how countries address their changes and challenges in their TVET system. He further explains that to assess training systems, external and internal relevance needs to be used to gauge the constraints and success. In terms of external demand, the set out objectives add to the return on their investment in training that countries expect.

In terms of internal relevance, the supply-based objectives refer to what the training system set out to do, and how this was aimed to meet the needs of the individuals and opportunities within the world of work. He identifies three yardsticks for evaluating the training system of the training organisation: relevance, effectiveness, and efficiency, which is also used by most researchers in different the various related studies that have been conducted (ETF, 2006; ADB, 2004; ADB, 2008; IDEAS, 2008; Ngure, 2013).

Similarly, in a study conducted by the Asian Development bank on skills development in four countries, an analytical framework was used to identify and analyse problems in TVET. This analysis was focused on three broad questions, namely:

- To what extent is the system producing results relevant to economic and social needs?
- To what extent is it effective in achieving its objectives?
- To what extent is it efficient in its use of resources? (ADB, 2004, p.63).

An analytical framework was used by Infothechs IDEAS to assess the internal efficiency of government and non-government institutions in Colombo, where indicators were used to measure any inefficiency. The model was developed to assess the efficiency of TVET institutions, and the study was focused on internal efficiency (ADB, 2008).

Furthermore, in a study conducted in Jordan by the European Training Foundation in 2006, an analytical framework was used to evaluate the TVET system, covering an understanding of the nature of TVET provision, its functions, goals, and key characteristics. This study also aimed to identify the main challenges and priorities for assistance, as well as suggesting possible interventions. Three criteria were used to assess the training systems: relevance, effectiveness, and efficiency. ETF (2006) used three criteria and each criterion was divided into two elements that provide a good framework on evaluating the TVET system:

Relevance:

- Economic relevance or linkages between TVET and the labour market; and
- Social relevance or equity.

Effectiveness:

- Management effectiveness; and
- Quality of instruction.

Internal efficiency:

- Economical use of resources; and
- Sustainability ETF (2012, p. 23).

#### 2.4.1 Relevance

Fluitman (1999) finds that the relevance of training and training systems sometimes refers to their external efficiency. Training should serve a precise and useful purpose, enabling people to access certain income-earning opportunities (self-employment). National training may be considered to contribute to meeting some macro-economic and social objectives, such as income growth and equity (ADB, 2004). In most of the studies conducted, the prevalent finding was that TVET systems suffer from being obsolete, and improper orientation. For TVET systems to be effective, institutions need to consider two factors to become supply driven, which include expensive plants, equipment, and specialised staff (qualified trainers) (ADB, 2004, p.65).

Furthermore, according to Fluitman (1999), TVET systems tend to be certificate led rather than labour market led. Therefore, this perpetuates a demand for training programmes that may

not be responsive to the industry. Formal TVETs typically fail to provide appropriate training for the informal sector.

In terms of social relevance or equity, in studies conducted by ADB (2004) in many countries, equitable access to skills development is still not seen, and females tend to be underrepresented in TVET education. Inequality also comes in the form of geographical forms as children in rural areas and on farms are highly disadvantaged in gaining access to skills development (ADB, 2004, p.66).

Relevance is understood as the extent to which TVET is responsive to labour market needs and requirements, as alluded to by many scholars and groups of researchers (ETF, 2012). It reflects an assumption that the primary and key role of TVET is to raise the level of skills and to help match the skills needed at all levels. In some studies, it was found that in many institutions, TVET lacks relevance and efficiency (Daksa, 2013, p. 29). The output quality of TVET delivery is thus measured through learners' achievements.

Therefore, Fluitman, (1999 p.57) contends that training systems' relevance may be brought into question if it does not perform as anticipated or required to meet the needs of a growing need for skills that contributes to meeting macro-economic and social objectives.

#### 2.4.2 Effectiveness

In terms of the effectiveness of a training system, Fluitman (1999) describes this as "The relationship between intended and actual output". He further posits that a training system is effective when it succeeds according to a plan in imparting the required skills of a certain quantity and quality. Lauglo (2009) clarifies that internal effectiveness refers more to what is learnt in TVET, or to the learning outcome objectives, which may be further enhanced by what has happened before and after training. Furthermore, it is described as the quality of training in as demonstrated by achievement of the training objectives.

Training in and of itself will not be effective as its success depends on the range of a country's circumstances. A successful effort requires an enabling environment, because unless jobs are being created, there is a high risk that training will be ineffective (Castro, 1999, p.38).



### 2.4.3 Quality

Quality can be affected by any array of factors, which may stem from the budget of institutions, as well as their resources. The level of education of the trainee may also contribute to the quality of training (ADB, 2004). Some scholars look at quality as the degree to which a set of inherent characteristics fulfil certain requirements, as well as the needs of a particular institution or project (Cedefop, 2012, as cited in ETF, 2012).

### 2.4.4 Internal efficiency

Efficiency concerns the relationship between the input and output of the training system in achieving its objectives (ADB, 2004, p. 64). Internal efficiency in the training system refers to the best resources, staff, and facilities, which are understood as referring more to what is learned in TVET, as argued by Lauglo (2009). Additionally, efficiency is seen as the extent to which funds, time, or effort are well used for a specific objective. ADB (2004) explains that TVET is expensive in many countries as compared to general education because of the inefficient use of resources.

Weram (as cited in Murray, 2007) notes that in Jamaica, vocational education and training is efficient as they mostly train individuals in training centres, but also offer month-long internship work experience for learners during the evaluation of TVET systems. He further argues that for TVET institutions to be efficient, TVET programmes must be dynamic and responsive in order to respond to changing demand and world expectations. It is evident that the private training system is efficient, but when training is offered in public, budgetary incentives should be provided based on its performance (Murray, 2007, p.11).

## **2.5 THE METHODOLOGICAL AND ANALYTICAL FRAMEWORK**

The analytical framework employed in this study to assess the provision of MET subjects in the Sisonke district was adapted from a study undertaken in Asia on the efficiency of government and non-governmental TVET provision (Ministry of Vocational and Technical Training Report, 2008). This framework was chosen because it addresses the issues raised in this study. See figure 1 below:

Analytical framework For Assessing the provision of MET subjects: Relevance, Effectiveness and Efficiency

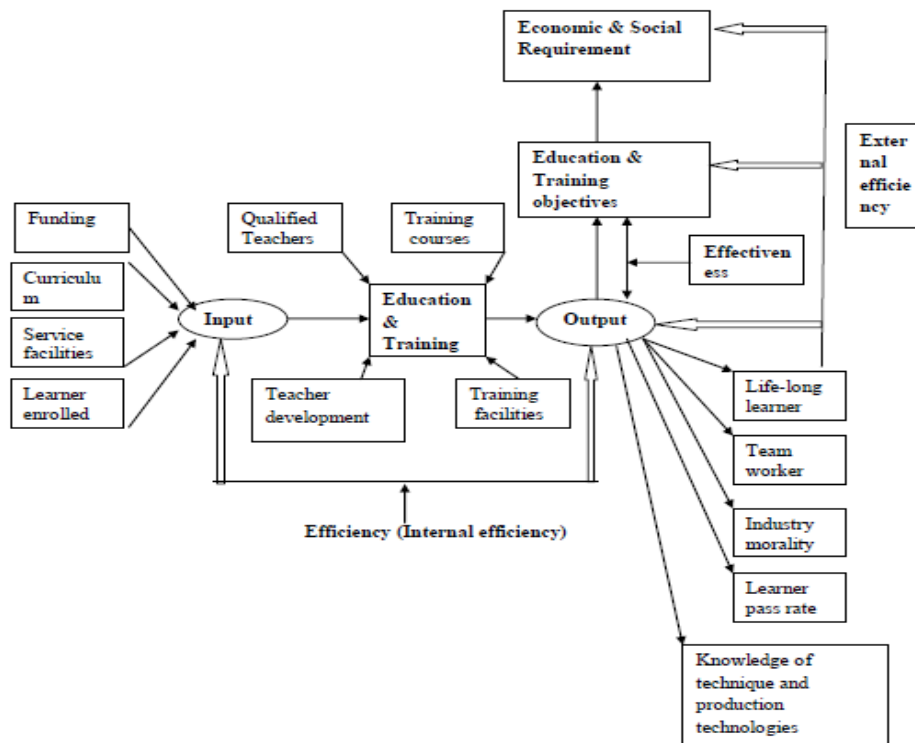


Figure 2.1 Analytical framework for assessing the provision of MET subjects

The above framework posits that TVET systems can be evaluated in terms of *relevance* (economic and social), *effectiveness* (quality of instruction and organisational and management effectiveness), and *internal efficiency*. These three broad categories are briefly described below.

**Relevance to economy and social requirements:**

- Relevance refers to assessment in terms of social relevance and equity, evaluating the extent to which an education system relates to social requirements, such as enrolment. Relevance also points to the accessibility of MET subjects in marginalised groups of people, while also achieving gender balance, flexibility of the training system, responding to the needs of the community, local industry and the demands of the country.

**Effectiveness in achieving objectives:**

- Effectiveness is evaluated in terms of two things:
  - The quality of training, which refers to qualified teachers achieving the objectives of education, training through learner performance, and quality results. The adequacy of training facilities and equipment as a function of the input process is vital.
  - Management's effectiveness, the flexibility in school budgets, which will be assessed if this reflects that there are things that are procured for MET subjects besides textbooks.

**Internal efficiencies in the use of resources:**

- Internal efficiency - quality input influences quality output (IDEAS, 2008, p. 29). The following indicators will be used to assess efficiency in the provision of MET subjects in secondary schools in the Sisonke district using a questionnaire analysing:
  - The learners that are enrolled;
  - Whether there are qualified teachers;
  - The subjects taught;
  - Infrastructure/Resource equipment;
  - Financing;
  - Teacher development; and
  - The machinery and tools available.

**2.6 CONCLUSION**

This chapter focused on a review of all the literature related to the evaluation of the TVET system nationally and internationally. The above analytical framework will be revisited in Chapter 3, which presents an in depth discussion of the research methodology and design employed in this study.

## **CHAPTER 3**

### **RESEARCH DESIGN AND METHODOLOGY**

One of the primary purposes of this research is to seek solutions to the problems that arise from existing knowledge (Cohen, Manion & Morrison., 2011). This chapter gives a detailed description of the methodology, data collection method, data analysis, and the sampling techniques that were used to gather and analyse people's views on the status of MET provision in the Sisonke district. For each data collection method, the advantages and disadvantages will be discussed. Thereafter, an explanation of the ethical issues involved in the research, the validity of the instruments used, and limitations of this study are presented.

#### **3.1 RESEARCH APPROACH**

“Research designs are the plans and procedures for research that span the decisions from broad assumptions to the detailed methods of data collection and analysis” (Creswell, 2013, p. 3). There are three types of strategies for enquiry: quantitative, qualitative, and mixed methods. The distinction between the quantitative and qualitative approach is that these are shaped/structured in terms of using numbers (quantitative) rather than words (qualitative). The types of questions asked are also used to make distinction between the quantitative and qualitative approach, for example, closed-ended questions are used in quantitative, and open-ended questions in qualitative research.

Mixed methods research is an approach to inquiry involving collecting both qualitative and quantitative data, and integrating the two forms of data. Different designs may involve philosophical assumptions and theoretical frameworks, as argued by Mertens (2010). A mixed methods approach was used to conduct this study, Clark and Creswell (2008) describe mixed methods as a procedure for collecting and analysing data that mixes both quantitative and qualitative research methods in a single study to understand a research problem.

Furthermore, Johnson, Onwuegbuzie and Turner (2007) posit that in mixed methods research, the researcher combines elements of qualitative and quantitative approaches to attain the breadth and depth of understanding, and corroboration. (Cohen et al., 2011; Tashakkori & Teddlie, 2009). Similarly, McMillan and Schumacher (2010) maintain that the mixed methods approach incorporates both quantitative and qualitative approaches, which together provide a more complete

exploration. Researchers have realised that the mixed methods research approach is the best in answering research questions in a study where individuals' or a small group's thinking differs significantly from that of the majority (McMillan & Schumacher, 2010, p. 395).

### **3.2 REASONS FOR CHOOSING THE MIXED METHODS APPROACH**

The core assumption of mixed methods is that “A combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone” (Creswell, 2013, p. 4). It was chosen as the approach of this study because of its strength in drawing from both quantitative and qualitative data, offset by the weaknesses of both approaches, as highlighted by Creswell (2003).

Reams and Twale (2008, p. 133) reinforce the significance of using mixed methods by claiming that these are necessary to uncover information and perspective, to increase the corroboration of the data, and render less biased and more accurate conclusions. This is further confirmed by Creswell (2003), who adds that the mixed methods approach provides more comprehensive evidence in studying a research problem, and it helps in answering questions that cannot be answered by qualitative /quantitative methods alone.

Comparably, McMillan and Schumacher (2010) argue that mixed methods provide comprehensive data, it allows the study of a process, as well as the countries these processes take place in. They further mention that it allows for the investigation of different types of research questions; it allows for the investigation of complex research questions; it enhances the credibility of findings much more than when only a single method is used. Similarly, some researchers have noted that it is also enhances research because it encourages the use of multiple worldviews or paradigms (Creswell, 2003).

For all the reasons and advantages mentioned above, a mixed method approach was the most suitable approach to use in this study

### 3.2.1 The disadvantages of transformative mixed methods research

Researchers' training may not be adequate to conduct both types of research in a single study, and one method may be used superficially. Transformative mixed methods research typically requires more extensive data collection, and typically requires more time and resources. There is also difficulty in writing reports and forming conclusions, and the researcher may mislead readers if this approach does not fully integrate both types of designs (McMillan & Schumacher, 2010).

## 3.3 RESEARCH METHOD

### 3.3.1 Different types of mixed methods strategies

Creswell (2009) clarifies that mixed methods research originated in 1959 when Campbell and Fisk used a multi-method strategy to study the validity of psychological traits. He further explains that mixed method strategies were developed after recognising that all methods of enquiry have their limitations, and researchers felt that using more than a single method could neutralize or cancel the bias of the other methods (Creswell, 2009, p. 14).

These days, mixed methods research has gained popularity amongst research approaches. Creswell and Clark (2007, as cited in Creswell, 2009) posits that writers around the world have developed procedures for mixed methods strategies of inquiry through which numerous terms have emerged. New related terms found in the literature include multi-method, convergence, integrated and combined (*ibid*). Furthermore, Tashakkori and Teddlie (2010) have developed numerous terms and procedures for mixed methods. Creswell (2003) discusses three potential types of mixed methods approaches: 1. Sequential mixed methods, 2. Concurrent mixed methods, and 3. Transformative mixed methods. On the same note, major types of mixed methods approaches are also discussed in depth by McMillan and Schumacher (2010), however, the concurrent triangulation method is used by some scholars, while other scholars use the transformative mixed methods approach.

The transformative mixed methods approach was used in this study to answer the critical research question, which sought to understand the nature and extent of provision of MET subjects in secondary schools in the Sisonke District. A transformative paradigm emphasises that social, political, cultural, gender and ethnic factors are significant contributors to the design and interpretations of studies (Mertens, as cited in McMillan & Schumacher, 2010).

This approach was chosen because it require less time to collect data, and allowed for both qualitative and quantitative data to be collected at same time during the same visit, as advocated by Creswell (2009).

### **3.4 THE TRANSFORMATIVE PARADIGM**

A paradigm is defined by Fossey (2002, p. 718) as "...a system of ideas, or world view, used by a community of researchers to generate knowledge". It is further described as "...a set of assumptions, research strategies and criteria for rigour that are shared, even taken for granted, by that community". Several writers briefly outline the fact that the transformative paradigm is a framework of belief that centre's around social justice and directly engaging with members of culturally diverse groups (Mertens, 2009, 2010; Mertens, Harris, & Holmes, 2009). It is further explained that axiological beliefs are of primary importance in the formulation of three belief systems.

Moreover, Mertens (2010) posits that the transformative world view holds that, the research inquiry cannot be separated from politics and a political change agenda and forms an integral part of the inquiry to aid the researcher to confront social oppression at any level. Creswell (2009) advocates the use of a worldview, which is same as a transformative worldview. He posits that it "...contains an action agenda for reform that may change the lives of the participants, the institutions in which individuals work or live, and the researcher's life". Furthermore, Creswell (2009) stresses that specific issues need to be addressed that speak to social issues, such as empowerment, inequality, oppression, domination, suppression and alienation (Creswell, 2009, p. 9).

### 3.5 TRANSFORMATIVE MIXED METHODS RESEARCH

Several definitions are available in the literature regarding the transformative mixed methods approach. Creswell (2003) argues that in the transformative research design, the researcher uses a theoretical lens as an overarching perspective within the design that contains both quantitative and qualitative data. It is further mentioned that within this lens, data collection could be sequential or concurrent. Creswell (2013) describes the concurrent transformative mixed methods approach as a design that appeals to individuals with a strong quantitative background, or from fields relatively new to qualitative approaches. This approach involves a one-phase project in which the researcher collects quantitative data and qualitative data at the same time.

It is further explained that in the concurrent transformative mixed methods approach, both quantitative and qualitative data are gathered at the same time, and the researcher seeks to compare both forms of data to search for congruent findings (Tashakkori & Teddlie, 2009). McMillan and Schumacher (2010) posit that different terms for the transformative research approach are used by different scholars, for example, they use the term ‘triangulation’, whereas others use the terms ‘integrative’ and ‘convergence’.

#### 3.5.1 Reasons for choosing the transformative mixed methods design

It is encouraged that the researcher should consider the following when choosing the type of mixed methods approach: the outcomes expected; how the data is going to be used together, and the timing for data collection (Creswell, 2003) following a theoretical framework.

Firstly, the transformative mixed methods design was chosen for this research study because of its function in developing an understanding of the changes needed by a marginalised group (Creswell, 2013). Studies seeking an understanding of the inequalities in education provision amongst rural and urban areas that were inherited in the Apartheid era are still prevailing in this democratic era. Secondly the mixing of the data consists of integrating two databases - actually merging quantitative and qualitative data. In this study I has obeyed the rules of the data combination procedure used in the transformative mixed methods approach. Qualifying the quantitative data enables me to compare quantitative results with qualitative data or vice versa, which was done during the analysis stage, as instructed by Creswell (2009).



Lastly, this approach was chosen because both quantitative and qualitative data were collected at the same time, and data collection was implemented simultaneously to save time and costs.

### 3.5.2 Advantages of using the transformative mixed methods approach

This research design has both advantages and disadvantages. Creswell and Clark (2011) contend that the researcher positions the study within a transformative framework in order to help empower individuals to bring about change and action. They further find that participants often play an active, participatory role in the research.

On the same note, McMillan and Schumacher (2010) argue that the transformative mixed methods design is easily understood, and is usually the first choice of researchers who are new to mixed methods research. It is also viewed as a popular method because of the ability to both collect data and analyse these at the same time; and it is appropriate for collaborations. Moreover, it is viewed as a method that has the ability to use a collection of methods that produces results that are both useful to community members and credible to stakeholders and policy makers (Creswell & Plano Clark, 2011, p. 99).

### 3.5.3 The disadvantages of using the transformative mixed methods approach

Additional effort and expertise may be required; the researcher may experience a situation where the results diverge, which may require additional data collection or analysis (McMillan and Schumacher 2010, p. 405). Although little literature is available on the transformative research method, it is advised that the researcher should develop a trust relationship with the participants and be able to conduct the research in a culturally sensitive way (Creswell & Plano Clark, 2011, p. 99).

## **3.6 THE RESEARCH RELATIONSHIP**

### 3.6.1 Gaining access

In gaining access to schools, the following steps were followed in this study:

- An application was sent out for permission to conduct research in the secondary schools in the Sisonke district. This was submitted to the KZN Department of Education. Permission was granted (see Appendix 1).
- The establishment of secondary schools offering MET subjects in the Sisonke district was done with the help of the Deputy Chief Education Specialist for MET and Agricultural sciences.
- The principals of these schools were identified for the research study, and were met with face-to-face to obtain permission to conduct a questionnaire survey.

### 3.6.2 The research site

This study was conducted in the Sisonke District, which is located in the midlands region of KwaZulu-Natal. It is regarded as the most rural district out of the 12 districts in the province of KZN. It consists of four circuits: Pholela, Ixopo, Umzimkhulu and Greater Kokstad. As well as 15 Wards. It is surrounded by a community that is affected by high levels of poverty and unemployment, and poor social and economic conditions. Most of the learners' parents work on a farm within the Sisonke District, while others work far away from home, which results in many child-headed households.



Figure 3.1 Map of the Sisonke district

This study set out to address the following key question: What is the status of the provision of MET subjects in secondary schools in the Sisonke district?

### 3.6.3 The sample

The full dataset that is gathered in a research project is called a research population. McMillan and Schumacher (2010) describe a population as a group of observations that could represent, people, events or objects that that conform to specific criteria, which are intended to generalise the results of the research. In order to verify a theory, the researcher utilises a group of individuals from whom data is collected, which is called a sample.

Sampling methods are classified under either probability or non-probability methods. For this research, a non-probability sampling procedure was used, as well as a number of other techniques that are unique to mixed methods studies. By doing this, quantitative and qualitative strands will occur simultaneously, as argued by Tashakkori and Teddlie (2009).

## 3.7 SAMPLING STRATEGY

### 3.7.1 Purposive sampling

Tashakkori and Teddlie (2009) explain that purposive sampling techniques involve selecting certain units or cases “based on a specific purpose rather than randomly” (Tashakkori & Teddlie, 2003a, p. 713). Purposive sampling includes the following characteristics:

- It addresses specific purposes related to the research questions, therefore the researcher selects cases that are information rich with regard to those questions;
- It is often selected using the expert judgement of researchers and informants;
- It focuses on the ‘depth’ of information that can be generated by individual cases; and
- Such sampling is typically small (usually 30 or fewer cases), but the sample size depends on the type of qualitative research being conducted, as well as the research question.

Six schools were sampled for this research study as they were suitable to sufficiently provide the required information on the provision of MET subjects in secondary schools in the Sisonke District. Both quantitative and qualitative data were collected at these schools.

### 3.7.2 Snowballing

Snowballing is a well-known purposive sampling technique that involves using informants or participants to identify additional cases that may be included in the study. Snowballing was used in this study (Patton, 2002). Furthermore, Cohen et al., (2011) posit that in snowball sampling, researchers identify a small number of individuals who have the characteristics in which they are interested.

McMillan and Schumacher (2010) further explain that this is a strategy in which each successive participant or group is named by the preceding group or individual. Participant referrals are thus the basis for choosing a sample. Each participant suggests others who are fit for the purpose of the study or have the sought after attributes. Moreover, it is defined as the process of selecting a sample using a network to start, where a few individuals in a group or organisation are selected to get the required information (Kumar, 2011).

### 3.7.3 Sample size

In parallel, an identical sample is used where the sample members participate in both the quantitative and qualitative phases of the study through the administration of a survey questionnaire. Onwuegbuzie and Collins (2007) find that sampling using a concurrent transformative mixed method is identical for both qualitative and quantitative strands. The use of this sampling strategy ensures that the results remain the same for the participants, or subset of the participants, from the initial quantitative phase to the second qualitative follow-up phase.

### 3.7.4 Who are the participants?

A total number of 31 participants were sampled for the study through snowballing. This included six principals, eight HoDs (two of whom were maths HoDs, three were only supervising MET subjects, and three were supervising both maths and MET subjects), and 17 teachers (of which 11 were MET and six were MAT teachers).

The 31 participants were sampled because they had the required knowledge and understanding in terms of what was being explored in this study. Their characteristics, however, differed according to their level of specialisation, for example, the 11 MET subject teachers were the most knowledgeable participants to assist in this research. They were qualified teachers, and most of them had many years' teaching experience, however, two out of the 11 were underqualified. Some of the participating HoDs were also MET subject teachers.

### 3.7.5 Research design

The study was divided into two parts, and was guided by the following broad research question:

- *What is the status of the provision of the MET subjects in secondary schools in the Sisonke district?*

This research question was broken down into the following four sub-questions:

- *Are MET subjects offered in secondary schools in the Sisonke district?*
- *If so, are MET subjects well provided for in these schools?*
- *What is the nature of the provision with respect to:*

- *The types of schools?*
- *The types of subjects?*
- *Who teaches these subjects?*
- *How effective is the provision of MET subjects in the secondary schools within the Sisonke district?*

The research design was guided by the instrument that was used to collect data. The phases and stages used to answer the broad research question are outlined below.

### **Phase 1:**

Phase 1 was further divided into three stages in answering the first three sub-questions.

Stage 1: A semi-structured questionnaire (see Appendix 5) was used to illicit information on the question posed in the questionnaire, which was administered to the 31 participants. At this stage, the semi-structured questionnaire was used to answer Sub-question 1, which reads as follows: *Are MET subjects offered in secondary schools in the Sisonke district?*

Stage 2: To answer the second sub-question, as mentioned above, a questionnaire was administered. An example of the questions asked is: *In your opinion, would you say MET subjects are well provided for in your school?*

Stage 3: Sub-question 3: *What is the nature of the provision?* This was also achieved through the administration of the questionnaire. In part A of the questionnaire, the participants were asked to provide information on the nature of provision, which was conceptualised in terms of the following:

- The types of schools;
- The types of subjects; and
- Who teaches these MET subjects?

In stage 3: the same questionnaires, with part B, were administered to the same participants that had answered the previous sub-questions.

## Phase 2

This phase was made up of one sub-question, with only one stage.

Stage 1: This sub-question was addressed with the use of seven facets that were further simplified into 42 indicators. A four rating Likert scale was used in a semi-structured questionnaire that was administered to the participants. This required the participants to provide a response on the rating scale that was provided in Part B of the questionnaires. This answered the fourth sub-question, which read as:

- *How effective is the provision of MET subjects in the secondary schools within the Sisonke district?*

The same participants that had participated in the first sub-question also participated in answering the fourth research question, as was mentioned earlier that in this study. This was done in accordance with the transformative mixed method, where data is collected simultaneously.

### 3.8 DATA COLLECTION (TECHNIQUES) INSTRUMENTS

#### 3.8.1 Approaches to information gathering

There are two major approaches to gathering information, which can be categorised as primary data and secondary data.

#### 3.8.2 Questionnaires

Different techniques for gathering data are used in the transformative mixed method, as discussed by Cohen et al., (2011), and McMillan and Schumacher (2009). The researcher should use a technique or instrument that is fit for the purpose of that specific research. The questionnaire used in this study was design after going through the literature; and was adapted from a study conducted by Infothecs (Ideas, 2008). The proper planning in designing a questionnaire was taken into consideration.

In order to obtain the data required, a survey questionnaire was administered to the selected teachers in the schools that offered MET subjects. The survey method has the advantage of economy in terms of designing the instruments and data collection. The method used for data

collection was reliable and cost effective as the respondents were easily accessed with the use of telephone, email and transport.

According to Cohen et al., (2011), questions should be kept short, employing simple and clear language to avoid ambiguity. The objectives of the study necessitated three different questionnaires, one for the principals of the schools offering MET subjects, one for the MAT/MET HoDs, and one for the teachers teaching MAT/MET. To avoid confusion when administering the questionnaires, it was clearly indicated on the cover pages: Teachers, HoDs and Principals.

A brief covering letter was attached to the questionnaire to inform the respondents/ participants about the objectives of the survey, and what they were asked to do. The covering letter provided an assurance of anonymity and confidentiality, which encouraged the participants to be more willing to co-operate and more open in answering the questions.

The advantages of using a questionnaire are that a questionnaire affords participants the opportunity to express themselves freely without fear of judgement or prejudice, resulting in varied information being collected (Kumar 2005). In the same light, a questionnaire is a useful instrument for collecting information, as it can be administered without the presence of the researcher (Cohen et al., 2011). Furthermore, Kumar (2011) finds that questionnaires offer greater anonymity.

Kumar (2011) argues that the disadvantages of using a questionnaire depend on a number of factors, as not all data collection using this method has disadvantages. He mentions the following:

- Application is limited to a study population that can read and write;
- The response rate depends upon a number of factors, the interest of the sample in the topic of the study, the layout and length of the questionnaire, the quality of the letter explaining the purpose (sometimes the response rate can be as low as 20%.)
- Self-selecting bias: not everyone who receives a questionnaire returns it.
- There is a lack of opportunity to clarify issues: if the responders, for any reason, do not understand a question, there is almost no opportunity for them to receive clarification.
- A response is not always supplemented with other information.



### 3.8.3 The semi-structured questionnaire

An inability to conduct interviews, and the limited literature about TVET in secondary schools necessitated the research to rely on one instrument. Constrained by time, open-ended questions were used in the questionnaire, which was made up of two parts.

According to Cohen et al., (2011), there is a wide variety of questionnaire types available to a researcher. Simply put the rule of thumb is that the bigger the sample size, the more structured, numerical and closed the questions in the questionnaire will have to be whilst if one has a smaller sample size it affords the researcher with the liberty to design a questionnaire that is less structured, more open . A semi-structured questionnaire comprises a mixture of closed and open ended questions, and the use of a semi-structured questionnaire enables a mixture of qualitative and quantitative information to be gathered.

Cohen et al. (2011) find that the semi-questionnaire sets the agenda but does not presuppose the nature of the response. The questionnaire as a research instrument was utilised and divided into two parts, part A and Part B. Part A concerned biographical data, and part B consisted of scaled responses and open ended questions. A four level Likert scale was used in drawing up the questionnaire. Seven facets of interest and 42 indicators were developed to assess the effectiveness of the provision of MET subjects in these secondary schools. The Likert scale was used to measure and analyse the extent to which the participants agreed and disagreed on the efficiency of the provision of MET subjects.

#### *Types of questions*

In open-ended questions, the possible responses are not given as the participant writes down the answers in his/her own words (Kumar, 2011). Furthermore, they are classified as questions that invite a range of responses, which are sometimes called verbatim responses. Such responses are extremely useful in obtaining a deep understanding of the respondent's view. Cohen et al., (2011) contend that open-ended questions are very attractive devices for smaller scale research or for those sections of a questionnaire that invite an honest, personal comment from the participants in addition to ticking numbers and boxes. (p. 392).

In a closed-ended question, the possible answers are set out in the questionnaire and the participant then simply ticks the category that best describes their answer (Kumar, 2011, p. 151). Closed-ended questions are the norm in quantitative surveys. It is vital to ensure that the correct response codes are designed for each question. Cohen et al. (2011) maintain that closed-ended questions prescribe the range of responses from which the participants may choose. Highly structured, closed questions are useful in that they can generate the frequencies of responses amenable to statistical treatment and analysis.

### **3.9 DATA ANALYSIS**

The first important step after gathering the data was to manage the data collected, the process of analysing the data was thus divided into two phases. Quantitative data and qualitative data analysis were carried out simultaneously. Particularly in the case of this study, the analysis of data gathered through the use of a questionnaire involves two parts. Part one further divided into two stages, while part two only comprised one stage.

The first level entailed recording the raw data into a computer SPSS software so that it could be easily accessed for further analysis and processing. The validation and verification of the data was done timeously.

The second level involved thematic analysis.

The third level involved the complementarity of the quantitative and qualitative data by juxtaposing these.

Creswell and Plano Clark (2011) explain that data analysis using a mixed methods approach consists of separately analysing the quantitative data using quantitative methods, and qualitative data using qualitative methods. Similarly, Creswell (2009) finds that an analysis of mixed methods data occurs both within the quantitative (descriptive and inferential numeric analysis) and the qualitative (description and thematic text or image analysis) approach and often between the two approaches (Creswell, 2009, p.218).

### 3.9.1 Preparing the data for analysis (quantitative data analysis)

It is significant to realise that after the researcher receives the completed copies of the questionnaire, their task is to reduce the mass of data obtained to a form suitable for analysis. This process is called data reduction (Cohen et al., 2000), which is the coding of data in preparation for analysis. Prior to coding, the completed and returned questionnaires were checked to make note of and eliminate errors made by the participants. This process is called editing.

Firstly, I started by numbering the returned and completed questionnaires. Secondly, the raw data was converted into a useful form for data analysis, which meant scoring the data by assigning numeric values to each response. Lastly, cleaning the data entry errors from the database, and creating special variables that will be needed were also carried out, as instructed by (Creswell & Plano Clark, 2011, p.204). This was done using SPSS software so that the data could be easily accessed for further analysis and processing. Frequency tables were used to analyse the quantitative data, from a global analysis to an individual analysis. Cross-case analysis was also done, comparing how the participants viewed the nature of MET provision in their schools. This was guided by seven facets of interest with 42 indicators.

### 3.9.2 Qualitative analysis

Qualitative data analysis involves organising, accounting for, explaining the data, and making sense of the data in terms of the participants' definitions of the situation, noting patterns, themes, categories and regularities (Dunn, 2007). Cohen et al. (2011) further note that there are various ways to analyse and present qualitative data. Gibbs (2007, as cited in Cohen et al., 2011) states that quantitative data analysis is distinguished by its merging of analysis and interpretation, and often by the merging of data collection with data analysis.

In the case of this study, the process by which data analysis was undertaken was fundamental to determining the credibility of the findings. I had to demonstrate an understanding of the concurrent data collection and analysis, the process of organising and retrieving data, as well as the steps in coding and thematic analysis.

Thematic analysis is a process whereby one looks across all the data to identify the common issues that recur, and identify the main themes that summarise all the views that have been

collected. This is the most common descriptive method for qualitative projects (Patton & Cochran, 2002). Furthermore it is described as a method for: “Identifying, analysing and reporting patterns (themes) within data. It minimally organizes and describes your data set in (rich) detail. However, frequently it goes further than this, and interprets various aspects of the research topic” (Braun, 2006).

The data was examined for possible patterns on which to concentrate by constantly asking questions in order to arrive at an understanding of the participants’ meaning. Codes were given to the concepts that were derived from the meaning developed during this process of interacting with the data.

### **3.10 VALIDITY**

Validity in mixed methods is defined as the ability of the researcher to draw meaningful and accurate conclusions from all of the data in the study. Creswell (as cited in Tashakkori & Teddlie, 2009) further states that validity reinforces the idea of “inference quality”. Inference quality refers to the standard for evaluating the quality of conclusions that are made on the basis of both the QUAN and QUAL findings (Tashakkori & Teddlie, 2009). In support of this view, Onwuegbuzie and Johnson (2004), as well as Tashakkori and Teddlie (1998, 2003a) define inference quality as the accuracy with which researchers draw inductive and deductive conclusions from a study.

Creswell (2013) finds that, as with all mixed methods studies, the researcher needs to establish the validity of the scores from the quantitative measures and discuss the validity of the qualitative findings. Furthermore, Creswell and Clark (2011.p. 239) define “...validity in mixed methods research as employing strategies that address potential issues in data collection, data analysis, and interpretations that might compromise the connection of the quantitative and qualitative strands of the study, and the conclusions drawn from this combination.”

In this study, all of the strategies related to the transformative mixed method were applied at all stages from the collection of data, to analysing and connecting the results in order to address the purpose of the study.

### **3.11 INTERPRETIVE RIGOR**

In sequentially mixed methods research, the researcher follows the sequencing of data analysis wherein the first quantitative and second qualitative phase results are analysed and interpreted. This is then followed by a third phase, which presents a discussion of how the qualitative results help to expand or explain the quantitative results (Creswell, 2013).

#### **3.11.1 Reliability**

Reliability, as discussed by Cohen et al. (2000), essentially means that if the same research were to be carried out with a similar group of respondents in a similar context, then similar results would be found. In this research, context issues of authenticity, accuracy and dependability were considered, and a range of actions were taken to increase the dependability of the data, as proposed by Lincoln and Guba (as cited in Cohen et al., 2000). Open ended questions were also used to increase the reliability of the collected data.

### **3.12 LIMITATIONS**

The limitations of this study relate to two areas of processing the data: instruments and sampling.

The study was limited to secondary schools that offered MET subjects in the Sisonke district. The small number of schools involved in the research study also detracted from the generalisation of the findings regarding the MET subjects. The sampling of the participants also contributed to the gaps, and limited the chance of getting learners' opinions on the effectiveness of MET subjects. This would have been useful as they are the primary consumers of these subjects, and this could have determined if similar pattern would emerge.

The instruments used for data gathering relied on the responses provided by the participants to the questionnaire, whereas if observations and interviews were conducted, this could have given more rich information regarding the provision of MET subjects, i.e. there were contradictions among the participants' responses where they disagreed that a spacious and well-equipped workshop was available. There were also contradictions regarding the training facilities, although they agreed that learners were afforded time to do practical's. The validity of these practical

assessment tasks is, however, questionable. Another discrepancy in the level of agreement concerning the availability of information on cost per learner for each subject.

### **3.13 ETHICAL CLEARANCE**

Ethics are generally concerned with the ideologies of what is right and wrong from a moral perspective. According to Cavan (as cited in Cohen et al., 2011), ethics are described as “a matter of principled sensitivity to the rights of others” and that “while the truth is good, respect for human dignity is better” (Cavan, 1977, cited in Cohen et al., 2011, p. 810). To comply with the University of KwaZulu-Natal standard of ethics, an application from the KwaZulu-Natal Department of Education to conduct research in the selected secondary schools of the Sisonke District was solicited. Ethical clearance was obtained from the faculty of the research office at the University of KwaZulu-Natal after checking the necessary issues like instruments testing and the research design to be used in the study.

Permission was also negotiated with the school principals involved. The MAT/MET HoDs and the MAT/ MET teacher were sent consent letters to complete. The participants were guaranteed that the information provided was going to be kept confidential, and that I would not identify participants from the data gathered (Cohen et al., 2000; McMillan & Schumacher, 2011). It was clearly stated in the consent letter that the participants were under no obligation to continue with the research study if they did not wish to and that they could withdraw at any time (Maree, 2007). Two of the participants that were asked to participate in the study were not available at the time that the study took place. The presentation of findings from the secondary sources of data were appropriately acknowledged by paraphrasing, summarising and quoting. The research findings and report that emerged from the data collected and analysed were presented in a precise and accurate manner.

### **3.14 CONCLUSION**

In this chapter, a mixed methods approach was discussed, with the transformative mixed methods approach, in particular, being adopted as the design of this study. The sampling and sampling procedures, data collection techniques, data collection instruments and the procedure for

data analysis were elaborated on to help the reader and other researchers to understand the context in which the data was collected. Ethical issues and issues related to the credibility of the study were also discussed. The next chapter will focus on the data analysis of the first three sub-question.

## CHAPTER 4

### QUESTIONNAIRE ANALYSIS AND RESULTS

This chapter presents the analysis and findings of the data collected through the questionnaires completed for this study. The presentation will focus on the research objectives and questions assigned to them in order to gain a full picture of the respondents' views on the nature of and the extent to which MET subjects are provided in secondary schools in the Sisonke district.

The study was guided by the following broad research question:

- *What is the status of the provision of MET subjects in secondary schools in the Sisonke district?*

This research question was broken down into the following four sub-questions:

- *Are MET subjects offered in secondary schools in the Sisonke district?*
- *If so, are MET subjects well provided for in these schools?*
- *What is the nature of the provision with respect to:*
  - *The types of schools?*
  - *The types of subjects?*
  - *Who teaches these subjects?*
- *How effective is the provision of MET subjects in the secondary schools within the Sisonke district?*

The analyses of the first three sub-questions are presented in this chapter. However, the fourth sub-question is addressed in Chapter 5.

#### 4.1 PRESENTATION OF THE RESEARCH QUESTIONS' RESULTS

##### *Sub-question 1: Are MET subjects offered in secondary schools in the Sisonke district?*

Through snowballing sampling, it was found that yes, indeed, there are secondary schools that offer MET subjects, as illustrated in the table below.



Table 4.1 Number of schools offering MET subjects in the Sisonke district

Research question	No. of Sec schools in Sisonke district	No. of schools offering MET
Are MET subjects provided for/offered in the Sisonke district?	86	6

Out of the 86 secondary schools in the whole of the Sisonke district, only six of those secondary schools offered MET subjects. The questionnaires were thus administered to only those schools that offered MET subjects. The total sample was 31, and it included the following participants from the six schools identified: Principals, HoDs, and MET teachers (inclusive of mathematics teachers.)

As mentioned in Chapter 3, this study employed a concurrent transformative mixed methods approach, which meant that both quantitative and qualitative data were collected simultaneously, and two databases were integrated by transforming the qualitative themes into counts. These counts were compared with descriptive quantitative data (Creswell, 2009, p.208). In an attempt to analyse the data, all obtained quantitative data were coded, organised, analysed and converted into tables and frequencies by using the Statistical Package for social sciences (SPSS) computer software. The qualitative data were transcribed, analysed and organised into ideas.

The categories that emerged as a result of both analyses illuminated, firstly, whether MET subjects were offered, and secondly, the nature and the extent to which MET subjects are provided in the Sisonke District. In this regard, the chapter will be divided into two parts. Part one will address the first research question and the second part will address the second research question with three sub-questions.

***Sub-question 2: If so, are MET subjects well provided for in these schools?***

As mentioned earlier, it was significant to note that out of the 86 secondary schools in the whole of the Sisonke district, only six schools offered MET subjects. It was thus data gathered from these six schools that was used to address the above research question. From the six schools, 31 teachers participated in the study to whom a semi-structured questionnaire was administered to

address this first research question (see Appendix 5). The questions posed in the questionnaire addressed two aspects, namely: the participants' biographical data and their opinions on the nature of provision of MET subjects in their schools. The analysis from the biographical data was used to address the second sub-question. In this regard, this section only provides the analysis of the participants' opinions on the provision of MET subjects.

Thus, with regard to the first part of the questionnaire question: *In your opinion would you say MET subjects are well provided for in your school*, the data was analysed starting from a global perspective, moving to an individual perspective.

#### 4.1.1 Global and individual analyses of MET subject provision in Sisonke secondary schools

In the global analysis, the research looked at the overall responses of the 31 participants, which included six principals, eight HoDs (two of whom were maths HoDs, three were supervising MET only, and three were supervising both maths and MET subjects), and 17 the teachers (of whom 11 were MET and six were MAT teachers).

The individual analysis was divided into three parts. Firstly, I looked at how teachers teaching MAT/MET responded in totality, after which a further comparison was carried out of the teachers' responses according to the subjects they offered as per their specialisation. Secondly, the HoDs' responses were analysed following the same procedure. Lastly, the responses of the school principals were analysed and compared to those of the teachers and HoDs respectively.

#### 4.1.2 Global analysis of MET Subjects provision in Sisonke secondary schools

As illustrated in Table 4.2 below, the results show that 17 (55%) out of 31 participants responded positively, and 14 (45%) out of the 31 participants responded negatively regarding MET provision in their schools.

Table 4.2 Global analysis of participants' opinions on how well MET subjects are provided for in the six secondary schools in the Sisonke district

<i>Are MET subjects well provided for in your school</i>	100%	Ts	HoDs	Ps	100%	Ts	HoDs	Ps
<b>Yes or No</b>	55%	10	3	4	45%	7	5	2

In the section below, a further analysis of these results are presented by looking at what happened at an individual case level with respect to the schools and the participants. The number six, as indicated in the cases below (Table 4.3) represent the number of schools sampled for the study.

Table 4.3 Number of schools and participants sampled for the study

<b>Secondary Schools in Sisonke district</b>							
Cases	1	2	3	4	5	6	<b>Total</b>
Participants from each school	3	8	8	3	4	5	<b>31</b>

#### 4.1.3 Individual analysis of the six schools in the Sisonke district

As can be seen in Table 4.4 below, 31 participants were involved in this study. Out of the 31 participants, 17 (55%) were MET/maths teachers, of whom 11 (65%) were MET teachers and six (35%) were mathematics teachers. With regard to the HoDs and Principals supervising the MET/maths subjects in the secondary schools that were involved in the study, the table shows that 8 (26%) HoDs participated, two of whom (25%) were maths HoDs, three (37.5%) were MET only HoDs, and three (37.5%) were HoDs in both maths and MET subjects. The six principals represented 19% of the participants.

Table 4.4 Opinion as per school on MET provision in the six secondary schools in the Sisonke district

CASES	Y/N	PARTICIPANTS					Total	
		P	HoD		T			
1-6			M A	ME	B O	MET	MATH	
5	YES					✓		1
	NO	✓			✓		✓	3
4	YES	✓		✓				2
	NO					✓		1
1	YES	✓				✓		2
	NO			✓				1
6	YES	✓			✓	✓	✓	5
	NO							
2	YES	✓					✓	3
	NO		✓	✓		✓	✓	5
3	YES		✓			✓	✓	4
	NO	✓		✓		✓	✓	4
<b>Total</b>		<b>6</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>11</b>	<b>6</b>	<b>31</b>

NB: ✓ = yes and ✓ = No

A discussion of how all the participants responded to the question on MET provision in their respective schools is now presented.

#### 4.1.4 Analysis of the teachers' responses

Out of the 11 MET teachers who participated, the analysis reveals that six (54.5%) MET teachers were negative, whilst five (45.5%) were positive about MET provision in their schools. Out of the 6 MAT teachers who participated, 5 (83%) teachers were positive and only 1 (17%) was negative about the provision of MET subjects in their schools. It is significant to note that the highest percentage of MAT teachers were positive about the MET provision as compared to MET teachers themselves. In this regard, out of a total of 17 teachers who participated, 11 (65%) were positive and six (35%) were negative about the provision of MET in their schools. This result means that the majority of participants thought that MET subjects were well provided for in their schools.

#### 4.1.5 Analysis of the HoDs' responses

Out of the 31 participants, eight (26%) HoDs participated in the study, of whom three (37.5%) were MET HoDs, 2 (25%) were MAT HoDs, and 3 (37.5%) were HoDs for both MET and MAT. Out of the three MET HoDs that participated, only one (33%) agreed that MET subjects are well provided for, whereas two (67%) HoDs were negative. With regard to the two MAT HoDs, the decision was split 50/50. With regard to the 3 HoDs who supervised both MAT and MET, only one (33%) was of the idea that it was well provided for, while two (67%) were against the idea. With regard to a global analysis, three (37.5%) out of the total eight HoDs pointed that they were satisfied with the provision. However, five (62.5%) HoDs were dissatisfied with the provision of MET subjects in their schools. This means that the majority of the HoDs were not satisfied with the MET provision in their schools.

#### 4.1.6 Analysis of Principals' responses

In the six schools that were sampled, all six principals participated in the study. Two (33%) out of the six respondents were negative about the provision of MET subjects, whilst four (67%) were positive. It is important to note that, unlike the analysis of the HoDs above, the majority of the principals were positive about the offering of MET subjects in their schools.

It is significant to note that when compared to the teachers, there are similarities and differences in the overall ratings of the participants. In terms of the global and individual analysis presented above, it shows that the majority of the MAT teachers who participated in the study were positive, while the majority of the principals felt the same about MET provision. However, when looking at the MET teachers, there is a difference as above half of the MET teachers who participated were not positive about the provision of MET. Similarly, in comparison, the majority of HoDs were not satisfied with the MET provision in their schools.

#### 4.1.7 Analysis of what informs the participants' opinion about MET provision in Sisonke secondary schools

To address the above research question, the second part of the questionnaire required the participants to elaborate on the choices provided regarding the provision of MET subjects in their schools. The data gathered was narrative, and was analysed using a thematic analysis.

The participants' responses were captured as raw data on a computer using SPSS computer software. This was done for the ease of access and processing for further analysis in the study. The data was examined for possible patterns on which to concentrate by constantly asking questions. This was done in order to arrive at an understanding of the participants' meaning. As illustrated in Table 4.5, columns 1 and 2 below, codes were given to the ideas/categories that were derived from the meaning developed during the process of interacting with the data.

Table 4.5 Perceptions of what informs participants' opinions on MET provision

<b>CODES</b>	<b>IDEAS/CATEGORIES</b>	<b>FACET</b>
A	Unqualified teachers	2
B	Lack of furniture	4
C	Not having fully MET stream	3
D	DAQ	OTHER
E	Only school offering EGD in the ward	3
F	Only few schools offer EGD	3
G	Basic equipment or infrastructure provided	4
H	Basic necessary equipment and human resource provided	4; 2
I	No infrastructure	4
J	Teacher ratio a concern	1
K	Subjects offered by qualified teachers	2
L	Does not offer these subjects	3
M	NR	OTHER
N	No sufficient equipment and relevant material in rural schools	4
O	Material is expensive	5
P	Safety is a challenge	7

The above ideas/categories were then juxtaposed against the seven facets of interest (refer to column 3 in Table 4.5. above), as provided by the analytical framework employed in this study. Furthermore, this analytical framework was used to explore the participants' justification against

the results of sub-question 2: *Are MET subjects well provided for in these school?* Table 4.6 below provides the results thereof at a global level

Table 4.6 Participants' perceptions of what informs their opinions about MET provision vs the facets of interest

	Agree						Disagree					
	1	2	3	4	5	6	1	2	3	4	5	6
<i>Are MET subjects well provided for in your school?</i>	2	3	4	2	1	5	1	5	4	1	3	0
<i>Justification in terms of FACETS</i>	1	2	3	4	5	6	1	2	3	4	5	6
1									✓✓			
2	✓	✓	✓✓			✓✓✓✓	✓				✓	
3				✓✓							✓	✓✓✓
4	✓	✓	✓			✓✓✓✓	✓✓✓✓✓	✓✓✓✓	✓✓✓		✓	
5									✓			
6												
7									✓			
<i>Other</i>	✓	✓	✓✓		✓							

✓ = HoD ✓ = P ✓ = Ts

Considering both the sides of those who agree and disagree, it is evident that their respective satisfaction and dissatisfaction was linked to the following six facets of interest:



- Facet 1: Learners;
- Facet 2: Teacher utilisation;
- Facet 3: Subjects offered;
- Facet 4: Training facilities & Utilisation;
- Facet 5: Funding; and
- Facet 7: Service facilities.

The above results imply that the participants' satisfaction and dissatisfaction were linked to six out of the seven facets of interest. It is significant to note that for both groups, facets of interest two and four were ranked high. In cases where the participants did not respond, the non-response was categorised as "other".

***Sub-question 3: What is the nature of the provision of MET subjects in secondary schools in the Sisonke district?***

The **nature of provision** was conceptualised in terms of the following:

- The types of schools;
- The types of subjects; and
- Who teaches these MET subjects?

These three aspects are elaborated upon below.

***Types of schools***

Table 4.7 below illustrates the type of school that was identified within the secondary schools in the Sisonke district.

Table 4.7 Types of schools

CASES 1-6	TYPES OF SCHOOL			
	SS	TS	CS	OTHER
1	✓			
2		✓		
3	✓			
4				✓
5	✓			
6			✓	
	3	1	1	1

Table 4.7 above reflects that a variety of secondary schools offered MET subjects within the Sisonke district. These ranged from mainstream senior secondary schools to technical high schools, colleges and comprehensive high schools. As pointed out, three out of the six schools that participated in the study were mainstream senior secondary schools, there was one technical secondary school, one comprehensive secondary school, and one college.

*Type of subjects on offer?*

Manufacturing Engineering and Technology (MET) is a field of subjects in the FET band. This name for it was introduced in the CAPS document, replacing technical subjects in the old curriculum (Report 550). The MET subjects involve theory and practical (vocational) elements; it

includes four subjects, namely: Engineering Graphics and Design (EGD), Mechanical Technology (MT), Civil Technology (CT) and Electrical Technology (ET) (Department of Education, 2005).

Table 4.8 below illustrates the type of subjects that were being offered by these six schools at the time of this study.

Table 4.8 Types of subjects

CASES 1-6	SUBJECTS ON OFFER			
	CIVIL	EGD	ELECTRICAL	MECHANICAL
1		✓		
2	✓	✓		✓
3		✓		✓
4		✓		
5		✓		
6	✓	✓		✓
	2	6	0	3

From the table above, it is evident that not all schools offered all the subjects within the MET field. However, it is interesting to note that all six (100%) schools offered Engineering Graphics and Design (EGD). Two out of six (33%) of the schools offered Civil Technology, and three out of six (50%) schools offered Mechanical Technology.

As illustrated in Table 4.8 above, Cases one, four and five offered EGD only out of four MET subjects. Cases 2 and six offered 3 out of four, that is, EGD, Civil technology and Mechanical technology. In addition, Case 3 offered two out of four MET subjects, that is, EGD and Mechanical Technology.

### ***Who teaches these MET subjects?***

The question regarding who teaches these MAT subjects was explored in terms of the following:

- The gender dispersion of the participants;
- The qualifications of the participants; and
- The number of years the participants had been working at the school.

### ***Gender dispersion of participants***

Table 4.9 below reveals the gender dispersion of the participants who participated in this study.

Table 4.9 Gender dispersion of the participants

<b>Gender of participant</b>		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	10	90.9	90.9	90.9
	Female	1	9.1	9.1	100.0
Total		11	100.0	100.0	

Out of 11 MET teachers, only one female teacher taught these subjects, while the other ten were male. Therefore, the results concur with most of the studies conducted that MET subjects/technical subjects are male dominated. These subjects are still being perceived by most people as suitable for males. It is interesting to note that the only female teaching MET subjects happened to teach both EGD and Mechanical technology, as illustrated in Table 4.10 below. It is very rare to find females that have qualifications in MET subjects, let alone Mechanical subjects

as these were only offered to males in the past. In this regard, we slowly see the redress of the imbalances of the past. This female teacher's influence can greatly shaped and promote learners' career choices and contribute to the change of people's perception of and attitude towards MET subjects.

Table 4.10 Subject on offer in relation to gender

CASES 1-6	SUBJECTS ON OFFER					
	CIVIL	EGD	ELECTRICAL		MECHANICAL	
1		M				
2	M	M				M
3		F	M		F	M
4		M				
5		M				
6	M	M				M

### *Teacher qualification*

Table 4.11 below illustrates the MET teachers' information regarding their qualifications. This information is further analysed below with frequency tables and explanations.

Table 4.11 Qualification of the MET teachers in the Sisonke District

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NPDE	1	9.1	9.1	9.1
	S qualification	1	9.1	9.1	18.2
	N qualification	1	9.1	9.1	27.3
	Bachelor	7	63.6	63.6	90.9
	ACE	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

The participants were distributed in terms of their highest qualification. The table above reflects that most of the participants had professional teaching qualifications, with the least of the participants teaching these subjects possessing a trade qualification. Out of the 11 teachers who participated in the study, two (18%) teachers were under-qualified versus nine (82%) teachers with relevant qualifications.

#### *Number of years working in these schools*

The table below illustrates the MET teachers' information regarding the number of years working in these schools.

Table 4.12 Number of years working at the school

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5	6	54.5	54.5	54.5
	6-10	3	27.3	27.3	81.8
	11-15	1	9.1	9.1	90.9
	16-20	1	9.1	9.1	100.0
	Total	11	100.0	100.0	

As illustrated in Table 4.12 above, the number of years that the participants had been teaching Technical/MET subjects varied with different percentages, for example, six (55%) participants were within the 0-5 year range, three (27%) were within the 6-10 year range, one (9%) was within the 11-15 year range, and only one (9%) participant was within the 16-20 year range. It was revealed from the table above that most of the participants had been in their schools for quite some time, they therefore had sound background knowledge and experiences within their institutions.

Looking at the participants with highest number of years spent working in these schools, it shows that most of the participants joined these schools after the implementation of the NCS, including the introduction of CAPS. Thus, we can conclude that they had background knowledge of the MET curriculum from the universities where they pursued their studies. Moreover, they had gained a little experience from their workplace. Some teachers had experience in both technical subjects and MET subjects as they ranged in the 6-10 years category, while one teacher had the highest number of years working in a school, and thus had the most exposure to technical subjects and MET subjects.

## 4.2 CONCLUSION

This chapter has presented a global analysis and an individual analysis of the data gained from the teachers, HoDs and principals' views on MET provision in schools. The global analysis displayed the positive results from the participants' ratings, which showed that the majority agreed that MET subjects are well provided in schools. Looking at the individual analysis, there were mixed feelings about the provision of MET. Of the MET teachers, who formed the majority of the total number of participants who participated in the study, above half of the MET teachers were of the opinion that MET subjects were not well provided in schools; this was supported by the majority of the HoDs that participated in the study. However, the principals of the schools and the MAT teachers were very positive regarding the provision of MET subjects as highlighted in the previous paragraphs. Chapter 5 presents a data analysis of the fourth sub-question.



## CHAPTER 5

### ANALYSIS AND RESULTS QUANTITATIVE DATA

This chapter presents an analysis of the results of the quantitative data, Part B of the questionnaire. This analysis was carried out regarding the participants' responses to the fourth, and final, research sub-question, which reads as follows:

*How effective is the provision of MET subjects in the secondary schools within the Sisonke district?*

In an attempt to address this research question, a questionnaire with closed-ended questions, consisting of seven facets of interest with 42 indicators was administered. These facets were distributed as follows: Facet 1 had six indicators; Facet 2 had eight indicators; Facet 3 had five indicators; Facet 4 had six indicators; Facet 5 had five indicators; Facet 6 had five indicators and Facet 7 had seven indicators. Thus, the analysis of each facet is presented in accordance with the number of indicators.

It is important to note that two levels of analysis were employed. The first level of analysis presents a frequency table from the SPSS software, which gives a global analysis of the rate of response from each scale - strongly agree to strongly disagree. In the second level of analysis, a global analysis table is given that merges the 'strongly agree' and 'agree' ratings. Similarly, the same procedure was applied for 'strongly disagree' and 'disagree' ratings. Furthermore, a case by case analysis was also employed. This means that the global analysis gives the overall ratings of the participants whilst comparing the ratings amongst cases at the same time. In the comparison, the similarities and differences were highlighted, and an analysis across indicators was also done where significant results occurred.

## 5.1 PRESENTATION OF THE RESULTS OF FACET 1: LEARNERS

### 5.1.1 Indicator 1.1: All learners should be taught MET subjects

As the learners are the major beneficiaries of MET subjects, the first facet of interest involves eliciting teachers' perception of learner involvement. In an attempt to answer this first facet of interest, six statements of indicators (1.1 to 1.6) under this facet were outlined in the questionnaires that were administered to 25 of the participants (i.e. the 17 teachers teaching MAT/MET and eight HoDs in the six schools that were sampled for the research).

Table 5.1 below presents the findings of the analysis of Indicator 1.1, which reads as follows: all learners should be taught MET subjects. The four level Likert-scale was used by the participants to rate their level of agreement regarding the indicators provided in the questionnaire. The participants had to choose their responses from a four Likert type scale, which was as follows:

1. Strongly disagree
2. Disagree
3. Agree
4. Strongly Agree

There were two levels of analysis. Firstly, I looked at individual ratings, and secondly, 'agree' and 'disagree' ratings were grouped. The 'strongly agree' and 'agree' ratings were also merged with the 'agree' rating. Similarly, the 'strongly disagree' and 'disagree' ratings were merged with the 'disagree' rating.

Table 5.1 All learners should be taught MET

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>6</b>	<b>19.4</b>	<b>19.4</b>	<b>19.4</b>
Strongly disagree	3	9.7	9.7	29.0
Disagree	9	29.0	29.0	58.1
Agree	6	19.4	19.4	77.4
Strongly agree	7	22.6	22.6	100.0
Total	31	100.0	100.0	

***NB: This table was SPSS generated.***

*Key: The numbers in bold represent school principals.*

*All other numbers are HoDs and teachers.*

As can be seen from the above table, six principals did not participate in this facet, only 25 participants took part, of whom 17 were teachers and eight were HoDs. It is significant to note that nine out of the 25 participants (36%) disagreed, with three (12%) participants strongly disagreeing. Seven out of the 25 participants (28%) strongly agreed, with six (24%) agreeing.

In the following table, the 'strongly agree' and 'agree' ratings were merged. The same procedure was applied for the 'strongly disagree' and 'disagree' ratings. However, in this instance, the analysis was conducted on a case by case comparison of the responses of the MAT /MET teachers. As some HoDs were also teachers, their responses could not be separated from those of the teachers.

Table 5.2 All learners should be taught MET subjects

School	Agree			Disagree			Total	
	CASE	MET	MAT	HoD	MET	MAT		HoD
1	1			1	0		2	
2			1		3	1	2	7
3			2	1	1	2	1	7
4	1						1	2
5	1	1					1	3
6	2	1	1					4
<b>Sub-Total</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>5</b>	<b>25</b>
<b>Total</b>	<b>13</b>				<b>12</b>			<b>25</b>

*NB: This table was researcher-generated*

As illustrated in the table above, if we aggregate those that agreed and disagreed, the result revealed that only 13 (52%) out of the 25 participants agreed that all learners should be taught MET subjects in their schools, as compared to 12 (48%) of the participants that disagreed. In comparing the different cases, significant results were revealed; 100% of the participants in Cases 1 and 6 agreed that all learners must be taught MET subjects. However, in Case 3, more or less the same number of participants who participated in the study were of a different opinion, three out of seven agreed with the statement, while four disagreed. In Case 4, the results were split 50/50 and in Case 5, two out of three agreed and one out of three disagreed that all learners should be taught MET subjects.

The same number of MAT/MET teachers agreed that all learners should be taught MET subjects, however, most of the HoDs did not support this notion. It is evident that most of the teachers were satisfied with the view that MET subjects should be offered to all learners, this means that these teachers saw the opportunities and the role that MET subjects could play in people's lives and in the achievement of self-employment. This is also stated by scholars like Akyeampong (2008) in Ghana, who posits that MET subjects should be incorporated in the secondary school curriculum so as to expose young people to pre-employment skills. This also promotes TVET as a viable alternative to general education.

### 5.1.2 Indicator 1.2: Is learner enrolment according to the learner ratio, as stipulated in the policy?

Table 5.3 below presents the findings of the global analysis of Indicator 1.2.

Table 5.3 Is learner enrolment according to the learner ratio, as stipulated in the policy?

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>6</b>	<b>19.4</b>	<b>19.4</b>	<b>19.4</b>
Strongly disagree	4	12.9	12.9	32.3
Disagree	7	22.6	22.6	54.8
Agree	7	22.6	22.6	77.4
Strongly agree	7	22.6	22.6	100.0
Total	31	100.0	100.0	

*NB: This table was SPSS generated*

As illustrated in the table above, seven out of 25 participants (28%) disagreed, with four (16%) strongly disagreeing. Seven out of 25 participants (28%) strongly agreed, with seven agreeing (28%). It is significant to note that the participants' views were more or less the same. This will be further analysed and interpreted in Table 5.4 below.

Table 5.4 Is learner enrolment according to the learner ratio, as stipulated in the policy?

School	Agree			Disagree			Total
CASE	MET	MAT	HoD	MET	MAT	HoD	
1	1		1	0			2
2	1	1		2	1	2	7
3	2	1	1	1	1	1	7
4	1		1				2
5		1		1		1	3
6	2	1	1				4
<b>Sub-Total</b>	<b>7</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>25</b>
<b>Total</b>	<b>15</b>			<b>10</b>			<b>25</b>

*NB: This Table was researcher-generated*

Different levels of agreement regarding the learner enrolment ratio in schools was observed, as illustrated in the table above, 15 (56%) out of 25 participants agreed that the learner ratio is according to policy, while ten (44%) disagreed. In some instances, like in Case 2, the percentage of disagreement is alarming, five (71.4%) out of seven participants disagreed versus two (29%) who agreed that the learner ratio is according to the stipulated policy. It is significant to note that in Cases 1, 4 and 6, similar results were revealed; 100% of the participants respectively fully agreed that the learner ratio is according to that stipulated in the policy. Furthermore, in Case 3, five (71.4%) participants agreed with the indicator, while two (29%) disagreed. In Case 5, one out of three participants agreed, while two disagreed; six out of 11 (55%) MET teachers agreed, while five disagreed. Alternatively, four out of seven (57%) MAT teachers agreed, while three disagreed.

Considering the responses of the MET teachers regarding the stipulated ratio of learner enrolment in MET subjects, it can be concluded that a slightly above average number of participants agreed that enrolment was according to policy, while a slightly below average number disagreed. This indicates that most teachers are happy with the learner ratio in their classrooms, while a minority is not satisfied.

This reveals that there is a possibility that in most schools, policy is violated where there are more learners enrolled than expected, as highlighted in the CAPS. In ELRC (1996), for example, it is stated that in all technical subjects, excluding technical drawing, an ideal maximum class size should be 16 learners. Moreover, in the CAPS document (DoE, 2014) it is highlighted that in an electrical technology workshop, the number of learners must not exceed 15 for health and safety reasons. In cases where the participants mostly disagreed, this might affect the teaching and learning process and compromise safety in the workshop if there were more learners than stipulated in each classroom. Alternatively, this might mean that learner enrolment is far below the stipulated ratio, which means that resources are underutilised.

### 5.1.3 Indicator 1.3: Learner progression in the last three consecutive years has been 100%

Table 5.5 below presents the findings of the global analysis of Indicator 1.3.

Table 5.5 Learner progression in last three consecutive years has been 100%-SPSS generated

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>6</b>	<b>19.4</b>	<b>19.4</b>	<b>19.4</b>
Disagree	8	25.8	25.8	45.2
Agree	8	25.8	25.8	71.0
Strongly agree	9	29.0	29.0	100.0
Total	31	100.0	100.0	

*NB: This table was generated by SPSS*

As indicated in the table above, nine out of 25 participants strongly agreed that learner progression had been 100% in the last three consecutive years. Sequentially, eight participants agreed, while eight participants disagreed. This meant that 17 participants agreed that learner progression had been 100% in the last three years. This is further analysed and interpreted in the table below.

Table 5.6 Learner progression in the last three consecutive years has been 100%

School	Agree			Disagree			Total
CASE	MET	MAT	HoD	MET	MAT	HoD	
1				1		1	2
2	3		2		2		7
3	3	2	2				7
4				1		1	2
5	1		1		1		3
6	2		1		1		4
<b>Sub-Total</b>	<b>9</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>25</b>
<b>Total</b>	<b>17</b>			<b>8</b>			<b>25</b>

*NB: This Table was researcher-generated*

As illustrated in the table above, 17 out of 25 participants agreed that learner progression had been 100% in the last three consecutive years, while eight participants disagreed. This indicates that the teaching and learning in these subjects is conducted effectively in most schools. It is significant to note that in Case 3, 100% of the participants agreed that learner progression in last three consecutive years had been 100%. To the contrary, in Cases 1 and 4, 100% of the participants disagreed. However, in Case 2, five out of seven participants agreed, while two participants disagreed that learner progression in the last three consecutive years had been 100%.



Furthermore, in Case 6, three out of four participants agreed while only one participant disagreed. Two participants in Case 5 were positive that learner progression in the last three consecutive years was at 100%, with only one participant disagreeing.

In this indicator, most of the MET teachers and HoDs were of the same view that learner progression had been 100% in the last three consecutive years. Nine out of 11 MET teachers also agreed, with only two disagreeing. Similarly, six HoDs agreed, while two disagreed that learner progression had been at 100% in the last three years, and only two MAT teachers agreed.

This means that the teachers teaching MET, and the six HoDs who were involved in the teaching and learning of these subjects felt that learner progression was at 100% over the previous three years. Furthermore, this meant that, generally, in the sampled schools, teaching and learning was conducted accordingly and a desirable output was achieved where most learners progressed in these subjects.

#### 5.1.4 Indicator 1.4: The ratio of enrolment in MET subjects is equal for both males and females

Table 5.7 below presents the global findings of indicator 1.4.

Table 5.7 The ratio of enrolment in MET subjects is equal for both males and females

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6	19.4	19.4	19.4
Strongly disagree	5	16.1	16.1	35.5
Disagree	17	54.8	54.8	90.3
Agree	3	9.7	9.7	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

Studying the table above, it can be seen that, 17 out of 25 participants disagreed that the learner enrolment ratio was equal for both females and males. Five out of 25 strongly disagreed, with only three participants agreeing. This suggests that the participants did not share the same view on the ratio of female and male learner enrolment. To give a clearer picture, this is further analysed in Table 5.8 below.

Table 5.8 The ratio of enrolment in MET subjects is equal for both Males and Females

School	Agree			Disagree			Total
CASE	MET	MAT	HoD	MET	MAT	HoD	
1				1		1	2
2				3	2	2	7
3			1	3	2	1	
4				1		1	2
5				1	1	1	3
6	1		1	1	1		4
<b>Sub-Total</b>	<b>1</b>		<b>2</b>	<b>10</b>	<b>6</b>	<b>6</b>	
<b>Total</b>	<b>3</b>			<b>22</b>			<b>25</b>

*NB: This table was researcher-generated*

As illustrated in the table above, almost all of the participants disagreed that the ratio of enrolment for males and females was equal in the MET subjects. 22 out of 25 participants disagreed that the learner enrolment for both boys and girls was equal. It is significant to note that there were similar findings regarding this indicator in Cases 1, 2, 4 and 5, 100% of the participants disagreed that the ratio of enrolment was equal for both females and males in MET subjects.

Surprisingly, in Case 6, the ratings were split down the middle regarding the level of agreement and disagreement. However, in Case 3, only one participant agreed, while six participants disagreed. In this table, it is evident that most of the participants believed that the ratio of enrolment for males and female was not equal. The following table will further show the gender that mostly enrolled for MET subjects in the six sampled schools.

In this indicator, almost all of the participants disagreed that the ratio of both males and females was equal. The MAT teachers were the participants who disagreed the most with 100%, sequentially followed by MET teachers and HoDs. It is evident that all of the participants unanimously felt that the ratio of enrolment for both males and females was unequal.

#### 5.1.5 Indicator 1.5: The enrolment of females in MET subjects is higher than that of males.

Table 5.9 below presents the global analysis of indicator 1.5.

Table 5.9 Female enrolment is higher than that of males

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>6</b>	<b>19.4</b>	<b>19.4</b>	<b>19.4</b>
Strongly disagree	8	25.8	25.8	45.2
Disagree	13	41.9	41.9	87.1
Agree	3	9.7	9.7	96.8
Strongly agree	1	3.2	3.2	100.0
<b>Total</b>	<b>31</b>	<b>100.0</b>	<b>100.0</b>	

*NB: SPSS generated*

As illustrated in the table above, the analysis is presented in the following manner: 13 out of 25 participants disagreed that female enrolment was higher than that of males, with eight participants strongly disagreeing. Three participants agreed, with only one strongly agreeing. In this indicator, it is well indicated that most of the participants thought that that female enrolment was not higher than that of males, which is further outlined in the table below.

Table 5.10 The enrolment of females in MET subjects is higher than that of males

School	Agree			Disagree			Total
CASE	MET	MAT	HoD	MET	MAT	HoD	
1				1		1	2
2				3	2	2	7
3	1		1	2	2	1	7
4				1		1	2
5		1		1		1	
6			1	2	1		4
<b>Sub-Total</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>10</b>	<b>5</b>	<b>6</b>	
<b>Total</b>	<b>4</b>			<b>21</b>			<b>25</b>

*NB: This table was researcher-generated*

As illustrated in the table above, 21 out of 25 participants disagreed, with only four participants agreeing that learner enrolment for females was greater than that of male learners. It is significant to note that in three out of six cases, 100% of the participants disagreed, while in three cases they agreed. In Case 5 and 6, similar findings were revealed as one participant in each case agreed that learner enrolment for females was higher than that of males. Furthermore, in Case three, two out of seven participants felt that learner enrolment for females was higher than that of males.

Most of the participants disagreed that female enrolment was greater than that of male learners. Thus it can be concluded that gender imbalance is still witnessed, as indicated by most of the participants' ratings. This is also evident when looking at the teacher profile and enrolment of learners in schools.

### **5.1.6 Indicator 1.6: Learner enrolment in MET subjects is on an upward trend**

The Table 5.11 below indicates the global analysis of indicator 1.6.

Table 5.11 Learner enrolment in MET is on an upward trend

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>6</b>	<b>19.4</b>	<b>19.4</b>	<b>19.4</b>
Disagree	6	19.4	19.4	38.7
Agree	12	38.7	38.7	77.4
Strongly agree	7	22.6	22.6	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

The analysis of the above table revealed that 12 out of 25 participants agreed, with seven strongly agreeing that learner enrolment was on an upward trend; only six participants disagreed. This means that most of the participants agreed that learner enrolment was on an upward trend, which is further explored in the table below.

Table 5.12 Learner enrolment in MET subjects is on an upward trend

School	Agree			Disagree			Total
CASE	MET	MAT	HoD	MET	MAT	HoD	
1				1		1	2
2	3	2	1			1	7
3	3	2	2				7
4			1	1			2
5	1				1	1	3
6	2	1	1				4
<b>Sub-Total</b>	<b>9</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>25</b>
<b>Total</b>	<b>19</b>			<b>6</b>			<b>25</b>

*NB: This Table was researcher-generated*

The table above clearly indicates that 19 (68%) out of 25 participants who participated in the study agreed that learner enrolment in MET subjects was on an upward trend, while six disagreed. It is significant to note that in Case 3 and Case 6, similar findings were obtained where all of the participants (100%) agreed. Slightly below 100% ratings were obtained in Case 2 as only one out of seven participants disagreed that learner enrolment in MET subjects was on an upward trend. To the contrary, in Case 5, two out of three participants disagreed, with only one participant agreeing. However, in Case 4, the level of agreement was split, one participant agreed while one participant disagreed.

As can be seen in the table above, 17 (68%) out of 25 respondents fully agreed that MET subjects were on an upward trend. Most of the participants who agreed were MET teachers and MAT teachers. It is thus evident that in most schools, learner enrolment is on the upward trend, which indicates that MET subjects attract learners' interest in most schools. Furthermore, this

concur with the findings of the analysis of indicator 1.3 above that learner progression had been 100% in the last three consecutive years.

## **5.2 PRESENTATION OF RESULTS OF FACET 2: TRAINING FACILITIES AND UTILISATION**

Training facilities and utilisation are the core functions for effective teaching and learning in schools. This facet includes teachers, HoDs and school principals. The aim of this facet was to gain their opinion regarding training facilities and utilisation as implementers of the MET curriculum.

It is significant to note that in the CAPS document (DoE, 2014), it is stated that the School Management Team (SMT) of each school offering one of the three MET subjects, for example, Electrical Technology or Mechanical Technology and/or Civil Technology, should take note of the implications of training facilities and utilisation for these subjects. According to the DoE (2014, p. 14), it is clearly stated that the school must possess an equipped workshop with sufficient electrical supplies i.e. three phase four wire supply; lighting and ventilation; the workshop should have multiple exits; and good housekeeping principles, which requires that all workshops be cleared regularly. The Occupational safety (OHS) Act 85 of 1993 must be complied with at all times.

I felt that it was important to include HoDs because, as immediate supervisors, they have to monitor and support teachers and learners in the delivery of the curriculum by ensuring that training facilities are available and used accordingly. School principals are also part of this facet because as the managers of schools, they have to ensure that a budget for training facilities and maintenance is available.

In order to answer this facet, eight indicators were developed in the questionnaires that were administered to the 31 participants. The 31 participants involved 17 teachers teaching MAT/MET, eight HoDs, and six principals of schools.

### 5.2.1 Indicator 2.1: Teaching and learning resources for each subject are available

Table 5.13 below presents the findings of the global analysis for indicator 2.1.

Table 5.13 Teaching and learning resources for each subject are available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.5	6.5
	Disagree	9	29.0	29.0	35.5
	Agree	14	45.2	45.2	80.6
	Strongly agree	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

As illustrated in the table above, it is significant to note that 14 out of 31 participants agreed, with six strongly agreeing. Eight out of 31 participants disagreed, with the remaining two strongly agreeing.

Table 5.14 below is a presentation of the findings of the global analysis of indicator 2.1.



Table 5.14 Teaching and learning resources for each subject are available

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1	1			1			1		3
2	1	1			2	1	2	1	8
3	2	2	1	1	1		1		8
4			1	1	1				3
5	1		1	1		1			4
6	2	1	1	1	0				5
Sub-total	<b>7</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>31</b>
Total	<b>20</b>				<b>11</b>				<b>31</b>

*NB: This table was researcher-generated*

As can be seen in the table above, 20 out of 31 participants agreed that teaching and learning resources were available in their schools, while 11 disagreed. 100% of the participants in Case 6 agreed, followed by Case 3 with six participants who agreed, and only one who disagreed. It is important to note that only one participant disagreed in Cases 1, 4 and 5 out of the total for each case. It is significant to note that in Case 2, different opinions were observed where six participants disagreed, as opposed to only two participants who agreed.

Most of the MET/MAT teachers and principals of the sampled schools agreed that teaching and learning resources were available, while the HODs' responses were divided. It is significant to note that the seven MET teachers agreed, while five disagreed. These five were the teachers teaching MET subjects, so they were better able to provide information on what resources were available in their respective classes. Furthermore, the responses of the HoDs were divided as most of them did not have a background in MET subjects.

### 5.2.2 Indicator 2.2: Physical infrastructure is remarkable

The table below presents the global analysis of the findings of indicator 2.2.

Table 5.15 Physical infrastructure is remarkable

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly disagree	4	12.9	12.9	12.9
Disagree	14	45.2	45.2	58.1
Agree	12	38.7	38.7	96.8
Strongly agree	1	3.2	3.2	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

As illustrated in the table above, 13 participants out of 31 disagreed, while 12 agreed that the physical infrastructure at their school was remarkable. Sequentially, four out of 31 participants strongly disagreed, with only one strongly agreeing. This is further outlined in Table 5.16 below, where the ratings are merged and a case analysis was done.

Table 5.16 Physical infrastructure is remarkable

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1				1	1		1		3
2	1				2	2	2	1	8
3	1	2	1		2		1	1	8
4				1	1		1		
5		1			1		1	1	4
6	2	1	1	1	0				5
<b>Sub- Total</b>	<b>4</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>7</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>31</b>
<b>Total</b>	<b>13</b>				<b>18</b>				<b>31</b>

*NB: This table was researcher-generated*

Studying the above table, 13 out of the 31 participants agreed that the physical infrastructure was remarkable at their school, while 18 participants disagreed. In Case 6, 100% of the participants agreed, followed by Case 3, which was divided in half in terms of agreement vs disagreement. A similar rating was observed in Cases 1, 2, 4 and 5, where only one participant agreed, while the remaining participants disagreed.

Most of the MET teachers and HoDs disagreed with this statement, while the principals' views were divided. As the MET teachers acted as managers of their classrooms and workshops in these subjects, their responses were used to gauge the conditions of the infrastructure available at each school.

### 5.2.3 Indicator 2.3: A spacious and well-equipped workshop exists

Table 5.17 below presents the global analysis of the findings for indicator 2.3.

Table 5.17 A spacious and well-equipped workshop exists

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	12	38.7	38.7	38.7
	Disagree	8	25.8	25.8	64.5
	Agree	7	22.6	22.6	87.1
	Strongly agree	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

As seen in the table above, 12 out of the 31 participants who participated in the study strongly disagreed, with eight participants disagreeing that a spacious well-equipped workshop existed. Seven participants out of 31 agreed, with only four strongly agreeing. This implies that most of the participants had a negative viewpoint about the workshop condition in their schools. This is further explored in Table 5.18 below.

Table 5.18 A spacious and well-equipped workshop

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1				1	1		1		3
2					3	2	2	1	8
3	1	2	1		2		1	1	8
4					1		1	1	3
5	1					1	1	1	4
6	2	1	1	1					5
<b>Sub-total</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>6</b>	<b>4</b>	<b>31</b>
<b>Total</b>	<b>11</b>				<b>20</b>				<b>31</b>

*NB: This table was researcher-generated*

Studying the above table, one is able to observe that 20 out of 31 participants disagreed that a spacious and well-equipped workshop existed at their school, while 11 participants agreed. It is significant to note that in Case 6, 100% of the participants agreed that there was a spacious and well equipped workshop. Contrariwise, in Cases 2 and 4, all of the participants disagreed that there was a spacious workshop at their schools. Surprisingly, in Case 3, 50% of the participants viewed their school as having a spacious and well-equipped workshop. Similarly, in Cases 1 and 5, some agreed that their schools had spacious and well-equipped workshops while others disagreed.

As much as there are discrepancies in the level of agreement, it is very clear that most of the schools did not have workshops. Most of the MET/MAT teachers, HoDs and principals disagreed, indicating that their schools did not have workshops.

#### 5.2.4 Indicator 2.4: Workshop facilities and consumables are adequate

Table 5.19 below presents the global analysis of the findings for indicator 2.4.

Table 5.19 Workshop facilities and consumables are adequate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	8	25.8	25.8	25.8
	Disagree	12	38.7	38.7	64.5
	Agree	8	25.8	25.8	90.3
	Strongly agree	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

The above analysis reveals that 12 of the 31 participants disagreed that workshop facilities and consumables were adequate, with eight participants strongly disagreeing. On the other side, eight participants agreed, as opposed to three participants who strongly agreed that the workshop facilities and consumables at their school were adequate. This means that most of the participants were dissatisfied with the facilities and consumables available in the workshops at their schools. This will be further explored in Table 5.10(b) below.

Table 5.20 Workshop facilities and consumables are adequate

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1				1	1		1		
2					3	2	2	1	8
3	1	2	1		2		1	1	8
4					1		1	1	3
5	1					1	1	1	4
6	2	1	1	1					5
<b>Total</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>6</b>	<b>4</b>	<b>31</b>
	<b>11</b>				<b>20</b>				<b>31</b>

*NB: This table was researcher-generated*

As illustrated in the table above, 20 out of 31 participants disagreed that the workshop facilities and consumables were adequate at their schools, while 11 participants agreed. It is significant to note that 100% of the participants in Case 6 agreed that the workshop facilities and consumables were adequate at their school. To the contrary, in Cases 2 and 4, 100% of the participants disagreed.

The level of agreement was divided among the participants in Case three as four (50%) participants agreed, while four (50%) disagreed that their workshop facilities and consumables were adequate. Surprisingly, in Cases 1 and 5, only one participant agreed that their workshop facilities and consumables were adequate, whereas in the previous research question, they stated that they only offered EGD. However, most of the participants from both Cases disagreed that the workshop facilities and consumables at their school were adequate.

An overall analysis shows that out of three schools that offered two to three MET subjects, only one school 100% agreed that the workshop facilities and consumables were adequate. It can therefore be concluded that in most of these schools, there were no adequate facilities and/or consumables in their workshops.

#### 5.2.5 Indicator 2.5: Adequate budget for consumables and maintenance provided

Table 5.21 below presents the global analysis for the findings of indicator 2.5.

Table 5.21 Adequate budgetary for consumables and maintenance provided

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	16.1	16.1	16.1
	Disagree	13	41.9	41.9	58.1
	Agree	9	29.0	29.0	87.1
	Strongly agree	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

As observed above, 13 out of 31 participants disagreed, with nine participants agreeing that an adequate budget for consumables and maintenance was provided. However, respectively, with a difference of one, five participants strongly disagreed, while four participants strongly agreed. This means that most of the participants disagreed that budget provision for consumables and maintenance was adequately provided at their schools. This is further illustrated with the use of Table 5.22 below.



Table 5.22 Adequate budget for consumables and maintenance provided

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1	1			1			1		3
2				1	3	2	2		8
3		2	1		3		1	1	8
4	1						1	1	3
5	1					1	1	1	4
6	2	1	1	1					5
Sub-total	<b>5</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>3</b>	<b>6</b>	<b>3</b>	<b>31</b>
Total	<b>13</b>				<b>18</b>				<b>31</b>

*NB: This table was researcher-generated*

In the table above, 18 out of 31 participants disagreed that an adequate budget for consumables and maintenance was provided, while 13 participants agreed. It is significant to note that in Case 6, 100% of the participants agreed. It is discouraging when looking at Case 2, where only one out of seven participants agreed that an adequate budget was provided for consumables and maintenance, while seven disagreed. Similarly, in Cases 4 and 5, only one participant agreed out of the total participants who participated in the study.

It is strange that most of the MET teachers and HoDs disagreed that a budget for consumables and maintenance was provided because they had to contribute in the drafting of the school's budget as managers of the MET subjects in their schools. Furthermore, the school principals' responses were divided, which demonstrates that these schools' budget was not planned accordingly.

### 5.2.6 Indicator 2.6: Classroom, laboratories/workshops are adequately utilised

In Table 5.23 below, the analysis of indicator 2.6 is presented.

Table 5.23 Classroom, laboratories/workshops are adequately utilised

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	16.1	16.1	16.1
	Disagree	8	25.8	25.8	41.9
	Agree	12	38.7	38.7	80.6
	Strongly agree	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

It is clearly outlined in the table above that 12 out of 31 participants who participated in the study agreed, with 8 disagreeing that facilities were adequately utilised. Six out of 31 participants strongly agreed, with five disagreeing. Thus means that the facilities were adequately utilised, although this is a contradiction to the previous indicators that addressed workshop and facilities. This is further analysed in Table 5.24 below.

Table 5.24 Classroom, laboratories/workshops are adequately utilised

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1	1			1			1		3
2	1				2	2	2	1	8
3	2	2	2	1	1				8
4			1	1	1				3
5			1		1	1		1	4
6	2	1	1	1					5
Sub-total	<b>6</b>	<b>3</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>31</b>
Total	<b>18</b>				<b>13</b>				<b>31</b>

*NB: This table was researcher-generated*

As illustrated above, 18 out of the 31 participants agreed that their classrooms and laboratory facilities were adequate, while 13 disagreed. It is important to note that 100% of the participants in Case 6 fully agreed that the laboratory and classroom facilities were adequate. In some cases, the level of agreement differed by one, for example, in Case 2, only one participant disagreed, as opposed to the seven participants who disagreed. While in Case 3, out of eight participants, seven agreed, and only one disagreed. Contrariwise, in Case 1, only one participant agreed, against three who disagreed.

Most of the MET teachers agreed that the laboratory and classrooms that they had were adequate. As the personnel using these facilities, this means that average schools have adequate laboratories and classrooms, while below average schools do not. However, most of the HoDs and principals agreed.

### 5.2.7 Indicator 2.7: Tools and equipment are adequately utilised

Table 5.25 Indicator 2.7 Tools and equipment are adequately utilised

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	16.1	16.1	16.1
	Disagree	8	25.8	25.8	41.9
	Agree	12	38.7	38.7	80.6
	Strongly agree	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

In the table above, it is clearly outlined that 12 of the 31 participants agreed that the tools and equipment at their school were adequately utilised, with eight participants disagreeing. Moreover, six participants strongly agreed, with five participants strongly disagreeing. In this regard, most of the participants agreed that in their schools, the tools and equipment were adequately used. The table below looks at the different level of variations in terms of who disagreed and agreed in each case. Table 5.26 below further outlines the findings, employing a case by case analysis.

Table 5.26 Tools and equipment are adequately utilised

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1	1			1			1		3
2	1	1			2	1	2	1	8
3	3	1	2	1		1			8
4	1						1	1	3
5			1		1	1		1	4
6	2	1	1	1					5
Sub-total	<b>8</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>31</b>
	<b>18</b>				<b>13</b>				<b>31</b>

*NB: This Table was researcher-generated*

The table above shows that 18 out of 31 participants agreed that the tools and equipment at their school were adequately used, while 13 disagreed. It is significant to note that in Case 6, 100% of the participants agreed that the tools and equipment at their school were adequately used, while in Case 3, seven out of eight participants agreed, with only one disagreeing. Similarly, with Case 1, two participants agreed and one disagreed. The opposite was true in Cases 4 and 5 as only one participant agreed out of the total in each case respectively.

Most of the MET teachers agreed, while the MAT teachers, HoDs and Principals were divided on this indicator.

### 5.2.8 Indicator 2.8: All learners are afforded time for practicals

Table 5.27 below presents the global analysis of indicator 2.8.

Table 5.27 Learners are afforded time for practicals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.5	6.5
	Disagree	7	22.6	22.6	29.0
	Agree	12	38.7	38.7	67.7
	Strongly agree	10	32.3	32.3	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

As shown above, 12 participants agreed that the learners were afforded time for practicals, with ten participants strongly agreeing. In descending order, seven participants disagreed, with only two strongly disagreeing. The analysis reflects that in most instances, the learners were afforded time for practicals. This is further illustrated in Table 5.28 below.

Table 5.28 Learners are afforded time for practicals

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1	1						1	1	3
2	1	2			2		2	1	8
3	3	1	2	1		1			8
4	1		1	1					3
5		1	1	1	1				4
6	2	1	1	1					5
Sub-total	<b>8</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>31</b>
Total	<b>22</b>				<b>9</b>				<b>31</b>

*NB: This table was researcher-generated*

The above table reveals that 22 out of 31 participants agreed that the learners were afforded time for practicals, while the remaining nine disagreed. In two cases, 100% of the participants agreed that the learners were afforded time for practicals, in some instances just one participant disagreed as in Cases 3, 4 and 5. In Case 1, only one participant agreed, as compared to two participants who disagreed.

Most of the MAT/MET teachers and principals agreed that learners were afforded time for practicals.

### 5.3 PRESENTATION OF FACET 3: SERVICE FACILITIES

Service facilities in this instance refers to buildings or structures used for teaching and learning and for non-teaching at schools, i.e. workshops, laboratories, hygienic facilities, amongst others. In all three MET subjects that involve practical activities in the workshop, CAPS (DoE, 2014) clearly states that good housekeeping principles should be adhered to by the teachers, ensuring that all workshops are cleared regularly. It is also emphasised that teachers must always comply with the Occupational Health and Safety (OHS) Act 85 of 1993 at all times.

Similar to facet two above, in this facet, teachers, as the most immediate personnel, were regarded as managers of their classrooms and workshops, and thus had to ensure that their classrooms and workshops were conducive to teaching and learning. My aim was to elicit the teachers' perceptions of the conditions of the classrooms and workshops, i.e. safety, and cleanliness. The HoDs were involved because their core duties included the same as those of the teachers, however, as managers, they had to make sure that the teaching and learning space was conducive to the MET curriculum. School principals also formed part of this facet because as the managers of their schools, they were expected to provide funding for building, purchasing, and the maintenance of resources.

In-order to answer this facet of interest, eight statements of indicators were developed and outlined in the questionnaires that were administered to the 31 participants of this study. The 31 participants involved 17 teachers teaching MAT/MET, eight HoDs, and six school principals.

#### 5.3.1 Indicator 3.1: Fire safety precautions are displayed

The table below presents the global analysis for indicator 3.1.



Table 5.29 Fire safety precautions are displayed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	22.6	22.6	22.6
	Disagree	7	22.6	22.6	45.2
	Agree	12	38.7	38.7	83.9
	Strongly agree	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

As seen in the table above, 12 participants out of 31 agreed that the fire safety precautions were displayed, while seven strongly disagreed. Respectively, seven participants disagreed, while five strongly agreed that the fire safety precautions were displayed. This is further simplified and analysed in the table below.

Table 5.30 Fire safety precautions are displayed

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1	1			1			1		3
2					3	2	2	1	8
3	1	2	2	1	2				8
4					1		1	1	3
5	1	1	1	1					4
6	2	1	1	1					5
<b>Sub-total</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>31</b>
<b>Total</b>	<b>17</b>				<b>14</b>				<b>31</b>

*NB: This table was researcher-generated*

As illustrated in the table above, 17 participants agreed that safety precautions were displayed in their schools, while 14 disagreed. 100% of the participants in Cases 4 and 5 agreed. Sequentially, slightly below 100% of the participants in Case 3 (75%) agreed, while 25% disagreed. In Case 1, 67% agreed, while 33% disagreed. However, in Cases 2 and 4, 100% of the participants totally disagreed with the given statement.

Surprisingly, in this indicator, most of the MAT teachers, HoDs and school principals agreed, while most of the MET teachers disagreed that safety precautions were displayed.

### 5.3.2 5.4.1 Indicator 3.2: Electrical safety precautions are visible in the workshop

The table below presents the global analysis for indicator 3.2.

Table 5.31 Electrical safety precautions are visible in the workshop

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	7	22.6	22.6	22.6
	Disagree	13	41.9	41.9	64.5
	Agree	9	29.0	29.0	93.5
	Strongly agree	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

An analysis of Table 5.31 above shows that 13 participants disagreed, while nine agreed that electrical safety precautions were visible in the schools' workshops. Seven out of 31 participants strongly disagreed, with only two strongly agreeing. At a glance, this clearly indicates that most of the participants disagreed that electrical safety precautions were visible in the schools' workshops. This is further analysed in the table below.

Table 5.32 Electrical safety precautions are visible in the workshop

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1	1						1	1	3
2					3	2	2	1	8
3	2	1	1	1	1	1	1		8
4					1		1	1	3
5					1	1	1	1	4
6	2	1	1	1					5
Sub-total	<b>5</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>4</b>	<b>6</b>	<b>4</b>	<b>31</b>
Total	<b>11</b>				<b>20</b>				<b>31</b>

*NB: This table was researcher-generated*

As illustrated in the table above, 20 out of 31 participants disagreed that electrical safety precautions were visible in the workshops, while 11 participants agreed. It is significant to note that all of the participants from Cases 2, 4 and 5 disagreed. To the contrary, 100% of the participants in Case 6 agreed that electrical safety precautions were visible in the workshops at their schools. However, in Case 3, five out of eight participants agreed, while three disagreed. Furthermore, in Case 1, only one participant agreed, while two participants disagreed that electrical safety precautions were visible in the workshop.

Most of the MET/ MAT teachers, HoDs and principals disagreed, and it can be observed that the participants mostly responded by disagreeing with relatively the same number of ratings.

### 5.3.3 Indicator 3.3: Health and hygienic facilities are available

The table below presents the global analysis of indicator 3.3.

Table 5.33 Health and hygienic facilities are available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	8	25.8	25.8	25.8
	Disagree	7	22.6	22.6	48.4
	Agree	11	35.5	35.5	83.9
	Strongly agree	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

The table above shows that 11 participants agreed, with eight participants strongly disagreeing about the status of facilities in their schools. Respectively, seven participants disagreed, while five strongly agreed that health and hygienic facilities were available. This is further outlined in the table below.

Table 5.34 Health and hygienic facilities are available

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1	1			1			1		3
2		1			3	1	2	1	8
3	1	1	2		2	1		1	8
4	1						1	1	3
5	1		1	1		1			4
6	2	1	1	1					5
Sub-total	<b>6</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>5</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>31</b>
Total	<b>16</b>				<b>15</b>				<b>31</b>

*NB: This table was researcher-generated*

The analysis in the table above revealed that 16 out of 31 participants agreed, while 15 disagreed that health and hygienic facilities were available. 100% of the participants in Case 6 agreed that health and hygienic facilities were available. In Case 5, only one participant disagreed, while three agreed that facilities were available and accessible. Case 1 had similar findings as only one participant disagreed, with two participants agreeing. The opposite was found in Case 4, where only one participant agreed, while two disagreed. Furthermore, in Case 3, the participants' responses were divided 50/50.

This suggests that the same number of participants differed in their level of agreement. Just above 50% of the participants (MAT/MET teachers, HoDs and principals) agreed that health and hygienic facilities were available and accessible, while 50% disagreed.

### 5.3.4 Indicator 3.4: Computer Lab available and accessible

A global analysis of the findings for indicator 3.4 is presented in Table 5.35 below.

Table 5.35 Computer Lab available and accessible

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	12.9	12.9	12.9
	Disagree	11	35.5	35.5	48.4
	Agree	12	38.7	38.7	87.1
	Strongly agree	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

As illustrated in the table above, 12 out of 31 participants agreed that a computer laboratory was available and accessible, while 11 disagreed. Four participants strongly agreed and four strongly disagreed. This was further analysed in the table below.

Table 5.36 Computer Lab available and accessible

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1	1		1	1					3
2	2	1	2	1	1	1			8
3		2			3		2	1	8
4					1		1	1	3
5					1	1	1	1	4
6	2	1	1	1					5
Sub-total	<b>5</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>31</b>
Total	<b>16</b>				<b>15</b>				<b>31</b>

*NB: This table was researcher-generated*

The analysis in the above table revealed that, globally, the level of agreement and disagreement is the same with a difference of one. 16 participants agreed that a computer lab was available and accessible, while 15 disagreed. In an individual case analysis, significant results emerged; 100% of the participants in Cases 1 and 6 agreed, while in Cases 4 and 5, 100% of the participants disagreed. However, in Case 2, six participants out of eight agreed, while two disagreed, and in Case 3, two participants agreed, while six disagreed.

Just over 50% of the participants (MAT/MET teachers, HoDs and principals) agreed that a computer lab was available and accessible, while 50% of the participants disagreed.



### 5.3.5 Indicator 3.5: Classrooms and workshops are in good condition

The table below presents the global findings for indicator 3.5.

Table 5.37 Classrooms and workshops are in good condition

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	12.9	12.9	12.9
	Disagree	9	29.0	29.0	41.9
	Agree	14	45.2	45.2	87.1
	Strongly agree	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

***NB: SPSS generated***

The analysis of the above table revealed that 14 participants agreed, with nine disagreeing that classrooms and workshops were in good condition. Sequentially, four participants strongly agreed and four participants strongly disagreed. The table below further presents a simplified analysis of the different participants' views in the six cases.

Table 5.38 Classrooms and workshops are in good condition

School	Agree				Disagree				Total
CASE	MET	MAT	HoD	P	MET	MAT	HoD	P	
1	1		1	1					3
2	1	1		1	2	1	2		8
3	2	1	1	1	1	1	1		8
4				1	1		1		3
5	1					1	1	1	4
6	2	1	1	1					5
Sub-total	7	3	3	5	4	3	5	1	31
<b>Total</b>	<b>18</b>				<b>13</b>				<b>31</b>

*NB: This table was researcher-generated*

It is clearly shown above that 18 out of 31 participants agreed, while 13 disagreed that the classrooms and workshops were in a good condition in their schools. In Case 1 and Case 2, 100% of the participants agreed that their classrooms and workshops were in good condition. In Case 3, five out of eight participants agreed, with three disagreeing. In Case 2 and Case 3, three out of eight participants agreed, while five disagreed that classrooms and workshops were in good condition. Lastly, in Cases 4 and 5, only one participant in each case agreed while the rest disagreed.

In most cases, the participants agreed that fire safety precautions were visible in their schools, most of the participants disagreed that safety precautions were displayed in school workshops. On average, the participants agreed that health and hygienic facilities were available. 18 (52%) of the participants agreed that there were computer laboratories in their schools, while 13 (48%) disagreed.

The MET teachers, and principals, mostly agreed that classrooms and workshops were in good condition. It is unusual that most HoDs, as the immediate supervisors for the MET subjects, disagree with the teachers while the principals agreed with them.

#### **5.4 PRESENTATION OF FACET 4: TEACHER UTILISATION**

It is clearly indicated in the National Education Policy Act (NEPA) 27 of 1996 (ELRC, 1996) that a teacher is any person who teaches, educates or trains other persons or who provides professional services at any public school. It is further mentioned that to be registered with the South African Council for Educators (SACE) as a professional qualified teacher, a minimum of Relative Education Qualification Value (REQV 13) is required, or 360 South African Qualifications Authority (SAQA) credits at level 5 or above (NEPA, 1998, p.60). Furthermore, it is clearly stated in the CAPS document (DoE, 2014, p. 14) that the type of teacher preferred to offer Civil Technology, Electrical Technology and Mechanical Technology should be an artisan/technician/ technical teacher trained in a specialisation of the subject.

This facet focuses on how a teacher is utilised in the MET classroom, and whether she possesses the required content knowledge, skills for the use of tools, as well as a thorough understanding of the use of space, hence these are core requirements in the teaching of MET subjects. This facet encompasses HoDs' view of teachers' performance and welfare in their schools. In order to obtain data for this facet, questionnaires were administered to eight HoDs of the schools who participated in the study as per the sampling strategy.

This facet was further simplified by six statements of indicators (4.1-4.6) used to find out the status of MET teachers in schools. The first level of analysis presents a frequency table generated in SPSS, which gives a global analysis of the rate of response from 'strongly agree' to 'strongly disagree'. In the second level of analysis, the merging of the 'strongly agree' and 'agree' ratings was utilised. The same procedure was applied for the 'strongly disagree' and 'disagree' ratings.

##### **5.4.1 Indicator 4.1: Teaching staff highly motivated and qualified**

The table below presents a global analysis of the findings for indicator 4.1.

Table 5.39 Teaching staff highly motivated and qualified

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>23</b>	<b>74.2</b>	<b>74.2</b>	<b>74.2</b>
Disagree	1	3.2	3.2	77.4
Agree	5	16.1	16.1	93.5
Strongly agree	2	6.5	6.5	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

As illustrated in the paragraph above, eight HoDs participated in this indicator. Five out of eight participants agreed that the teaching staff was highly motivated and qualified, with two strongly agreeing. However, only one participant disagreed that the teaching staff was highly motivated and qualified. When merging the ‘strongly agree’ with the ‘agree’ ratings, and a similar procedure for the ‘strongly disagree’ and ‘disagree’ ratings, the findings revealed that seven out of eight participants agreed that the teaching staff was highly motivated and qualified, while only one participant disagreed.

The analysis revealed that most of the participants agreed that most of the MET teachers were qualified and motivated.

#### 5.4.2 Indicator 4.2: Teaching resources are used appropriately

Below is a presentation of the findings of the analysis for indicator 4.2.

Table 5.40 Teaching resources are used appropriately

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>23</b>	<b>74.2</b>	<b>74.2</b>	<b>74.2</b>
Disagree	2	6.5	6.5	80.6
Agree	4	12.9	12.9	93.5
Strongly agree	2	6.5	6.5	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

It is clearly shown in the table above that four out of eight participants agreed, with two participants strongly agreeing and two participants disagreeing. The overall ratings when the ratings were merged revealed that most of the participants agreed that teaching resources were used appropriately as six out of eight participants agreed, while only two disagreed. In total, six participants agreed that teaching resources were used appropriately, while two disagreed.

#### 5.4.3 Indicator 4.3: Teaching conducted according to CAPS

An analysis of the findings of indicator 4.3 is presented in Table 5.41 below.

Table 5.41 Teaching conducted according to CAPS

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>23</b>	<b>74.2</b>	<b>74.2</b>	<b>74.2</b>
Agree	5	16.1	16.1	90.3
Strongly agree	3	9.7	9.7	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

As seen in the table above, five out of eight participants agreed that teaching was conducted according to CAPS, with three participants strongly agreeing. The overall rating shows that 100% of the participants agreed that teaching was conducted according to CAPS. Further analysis indicates that all of the participants agreed that teaching was conducted according to CAPS.

#### 5.4.4 Indicator 4.4: Assessment programme drawn and followed

The table below illustrates the findings of the analysis for indicator 4.4.

Table 5.42 Assessment programme drawn and followed

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>23</b>	<b>74.2</b>	<b>74.2</b>	<b>74.2</b>
Agree	6	19.4	19.4	93.5
Strongly agree	2	6.5	6.5	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

The table above indicates that six out of eight participants agreed that the assessment programme was drawn and followed, with two participants strongly agreeing. Therefore, 100% of the participants agreed that an assessment programme was drawn and followed.

#### 5.4.5 Indicator 4.5: Orientation workshops attended

An analysis of the findings for indicator 4.5 is presented in Table 5.43 below.

Table 5.43 Orientation workshops attended

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>23</b>	<b>74.2</b>	<b>74.2</b>	<b>74.2</b>
Agree	6	19.4	19.4	93.5
Strongly agree	2	6.5	6.5	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

It is clearly indicated in the table above that six out of eight participants agreed that orientation workshops were attended, with two participants strongly agreeing.

In totality, all eight participants agreed that orientation workshops were attended.

#### 5.4.6 Indicator 4.6: Orientation workshops attended

Table 5.44 below presents the analysis of the findings for indicator 4.6.

Table 5.44 Orientation workshops attended

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	23	74.2	74.2	74.2
Agree	6	19.4	19.4	93.5
Strongly agree	2	6.5	6.5	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

As illustrated above, six out of eight participants agreed that content workshops were regularly attended, with two participants strongly agreeing. In totality, when the participants' ratings were merged, all eight participants agreed that content workshops were regularly attended.

Table 5.45 below presents the analysis of the findings for indicators 4.1 - 4.6.

Table 5.45 Analysis of the findings for indicators 4.1 - 4.6

<b>Indicators</b>	<b>Agree</b>	<b>Disagree</b>	<b>Total</b>
4.1	7	1	8
4.2	6	2	8
4.3	8	0	8
4.4	8	0	8
4.5	8	0	8
4.6	8	0	8

*NB: This table was researcher-generated*

The table above presents six indicators under facet four. A total (100%) of the participants from all of the cases agreed that teaching was conducted according to CAPS. Similarly, to the second indicator, all of the participants agreed that a programme of assessment had been drawn and was followed. The orientation and content workshops were regularly attended. However, in some indicators, there were variations on the level of agreement. In indicator 4.1, seven participants agreed that the teaching staff was highly motivated and qualified, with only one disagreeing. However, in indicator 4.2, six out of eight agreed, with only two disagreeing that teaching resources were used appropriately.



## 5.5 PRESENTATION OF FACET 5: SUBJECTS OFFERED

Subject packages form the curriculum of a school. Decisions regarding the curriculum are made by the principal, together with the School Governing Body (SGB) and the School Management Team (SMT). Such decisions are always informed by the availability of floor space and qualified personnel, as well as the funds to buy the required resources, as in the case of MET subjects. This facet involved eliciting information regarding the type of subjects offered in the sampled schools.

Manufacturing Engineering and Technology (MET) is the field of subjects offered in the FET band in secondary schools that was introduced in curriculum 2005, and which replaced technical subjects. There are four subjects that fall under this field, namely: Civil Technology (CT), Electrical technology, Engineering Graphics and Design and Mechanical Technology (MT).

It is clearly stipulated in the CAPS document (DoE, 2014, p. 15) that a prerequisite requirement for offering one of the MET subjects is that it incorporates the practical component, and should ensure that the following is considered:

- The school should have the required resources, i.e. infrastructure;
- Human resources - a qualified teacher in a respective specialisation;
- An equipped workshop and workshop assistant; and
- Sustainable support, availability of tools, equipment and consumables materials, as well as a working budget for resourcing the workshop regularly.

In this study, I decided to divide this facet of interest into five indicators (5.1-5.5) in order to simplify this for the participants, which also ensured that I obtained sufficient information. This was administered to 14 participants, who included eight HoDs and six school principals. This facet of interest was analysed globally as shown in the table below, and the second level allows for a comparison of the findings.

### 5.5.1 Indicator 5.1: All MET subject taught at school

Table 5.46 below presents the analysis of the findings for indicator 5.1.

Table 5.46 All MET subjects taught at school

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>17</b>	<b>54.8</b>	<b>54.8</b>	<b>54.8</b>
Strongly disagree	2	6.5	6.5	61.3
Disagree	8	25.8	25.8	87.1
Agree	4	12.9	12.9	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

As seen in the table above, eight participants disagreed that all MET subjects were taught at their respective schools, with four participants agreeing. However, only two participants strongly disagreed. This is further simplified in the table below.

Table 5.47 All MET subjects are taught at school

School	Agree		Disagree		Total
CASE	HoD	P	HoD	p	
1	1			1	
2	1		1	1	
3		1	2		
4			1	1	
5			1	1	
6		1	1		
<b>Sub-Total</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>4</b>	<b>14</b>
<b>Total</b>	<b>4</b>		<b>10</b>		<b>14</b>

*NB: This table was researcher-generated*

As illustrated in the table above, when the ratings were merged, four out of 14 participants agreed that all MET subjects were taught at their school, while ten participants disagreed. The results reveal that most of the participants disagreed, with six HoDs and four principals agreeing, while, sequentially, two HoDs and principals agreed.

#### 5.5.2 Indicator 5.2: All MET subjects are designated as accredited

Table 5.48 below presents the analysis of the findings for indicator 5.2.

Table 5.48 All MET subjects are designated as accredited

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>17</b>	<b>54.8</b>	<b>54.8</b>	<b>54.8</b>
Strongly disagree	2	6.5	6.5	61.3
Disagree	5	16.1	16.1	77.4
Agree	6	19.4	19.4	96.8
Strongly agree	1	3.2	3.2	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

In the table above, it is clearly shown that six participants agreed that MET subjects are designated as accredited subjects, with five disagreeing. On the other side, two participants strongly disagreed, with only one agreeing that All MET subjects are designated as accredited subjects. In the overall ratings when merging the responses, the level of agreement is divided at 50/50, as seven participants agreed while seven disagreed. This is further analysed in Table 5.49 below.

Table 5.49 All MET subjects are designated as accredited subjects

School	Agree		Disagree		Total
CASE	HoD	P	HoD	p	
1	1				1
2		1	2		
3			2		1
4		1	1		
5	1	1			
6	1	1			
<b>Sub-Total</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>2</b>	<b>14</b>
<b>Total</b>	<b>7</b>		<b>7</b>		<b>14</b>

*NB: This table was researcher-generated*

It is clearly shown in the table above that seven out of 14 participants agreed, while the same number of participants (7) disagreed that all MET subjects were designated as accredited subjects. The overall ratings were divided, however, as HoDs were the staff members whose job it was to monitor the MET subjects, and who was involved in enrolling and allocating learners to their preferred subjects packages. The HoDs were also responsible for advising learners when choosing subjects. They therefore had to have sound knowledge of which subjects were accredited, or not, by universities.

### 5.5.3 Indicator 5.3: MET subjects are more popular than academic subjects

Table 5.50 below presents the analysis of the findings for indicator 5.3.

Table 5.50 MET subjects are more popular than academic subjects

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>17</b>	<b>54.8</b>	<b>54.8</b>	<b>54.8</b>
Disagree	6	19.4	19.4	74.2
Agree	6	19.4	19.4	93.5
Strongly agree	2	6.5	6.5	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

The table above indicates that six participants agreed, while six disagreed that MET subjects were more popular than academic subjects. Furthermore, two participants strongly agreed. This will be explored in the table below, where the responses are merged.

Table 5.51 MET subjects are more popular than academic subjects

School	Agree		Disagree		Total
CASE	HoD	P	HoD	p	
1		1	1		
2	1	1	1		
3	1	1	1		
4			1	1	
5	1				1
6	1	1			
<b>Sub-Total</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>2</b>	<b>14</b>
<b>Total</b>	<b>8</b>		<b>6</b>		<b>14</b>

*NB: This table was researcher-generated*

When the ratings were merged, most of the participants agreed that MET subjects were more popular than academic subjects as eight out of 14 participants agreed, while six participants disagreed. Most of the principals agreed.

#### 5.5.4 Indicator 5.4: MET subjects of lower status at school

Table 5.52 below presents the analysis of the findings for indicator 5.4.

Table 5.52 MET subjects of lower status at school

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>17</b>	<b>54.8</b>	<b>54.8</b>	<b>54.8</b>
Strongly disagree	3	9.7	9.7	64.5
Disagree	7	22.6	22.6	87.1
Agree	2	6.5	6.5	93.5
Strongly agree	2	6.5	6.5	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

As outlined in the table above, seven participants disagreed that MET subjects were of lower status at their school, with three participants strongly disagreeing, which means that two participants agreed and two strongly agreed that MET subjects were of a lower status. The table below further simplifies this analysis.



Table 5.53 MET subjects are accorded lower status at school

School	Agree		Disagree		Total
CASE	HoD	P	HoD	p	
1	1	1			
2	1		1	1	
3			2	1	
4			1	1	
5		1	1		
6			1	1	
<b>Sub-Total</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>4</b>	<b>14</b>
<b>Total</b>	<b>4</b>		<b>10</b>		<b>14</b>

*NB: This table was researcher-generated*

It is clearly outlined in the table above that, when the ratings are merged, the overall ratings indicate that most of the participants disagreed that these subjects were of a lower status in their schools. Ten out of 14 participants disagreed, with only four agreeing, although the level of disagreement was almost the same for both HoDs and principals.

#### 5.5.5 Indicator 5.5: All formal assessment tasks are done and recorded

The table 5.54 below presents the analysis of the findings for indicator 5.5.

Table 5.54 All formal assessment tasks are done and recorded

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Valid</b>	<b>17</b>	<b>54.8</b>	<b>54.8</b>	<b>54.8</b>
Strongly disagree	1	3.2	3.2	58.1
Agree	6	19.4	19.4	77.4
Strongly agree	7	22.6	22.6	100.0
Total	31	100.0	100.0	

*NB: SPSS generated*

As illustrated in the table above, seven participants strongly agreed that all formal assessment tasks were done and recorded, with six participants agreeing. Only one participant strongly disagreed. This is further simplified in Table 5.55 below.

Table 5.55 All formal assessment tasks are done and recorded

School	Agree		Disagree		Total
CASE	HoD	P	HoD	p	
1	1			1	
2	2	1			
3	2	1			
4	1	1			
5	1	1			
6	1	1			
<b>Sub-Total</b>	<b>8</b>	<b>5</b>		<b>1</b>	<b>14</b>
<b>Total</b>	<b>13</b>		<b>1</b>		<b>14</b>

*NB: This table was researcher-generated*

In total, when these ratings were merged, it became evident that 13 participants agreed that all formal tasks were done and recorded in their schools. Surprisingly, only one participant disagreed. However, the HoDs were the immediate supervisors whose responsibility it was to monitor and moderate the teachers' and learners' work, but the principals also monitored when there was no HoD for a specific subject.

Table 5.56 below presents an overview of the analysis of indicators 5.1 – 5.5.

Table 5.56 Presentation of the analysis for indicators 5.1 - 5.5

Indicators	Agree	Disagree	Total
5.1	4	10	14
5.2	7	7	14
5.3	8	6	14
5.4	4	10	14
5.5	13	1	14

*NB: This table was researcher-generated*

As illustrated in the table above, ten out of 14 participants disagreed that all MET subjects were taught at their schools, while four agreed. This reveals that these subjects were mostly offered by the mainstream secondary schools, which correlates with the analysis on the types of schools, which was presented in Chapter 4. The participants' responses on this indicator are divided at 50/50, as seven agreed that all MET subjects were designated as credited subjects against seven who agreed. Eight out of 14 participants agreed, while six disagreed that MET subjects were more popular than academic subjects. Ten out of 14 participants disagreed that Met subjects were accorded a lower status at school, while four agreed with this statement. 13 participants agreed that all formal assessment task were done and recorded, with only one participant disagreeing.

## **5.6 PRESENTATION OF FACET NUMBER 6: FUNDING**

Funding for schools is done according to quintile ranking, in other words, at the present moment, there is no gazette norms and standards for MET subjects as yet, so funding for these subjects relies on the overall school funds located as per the norms and standards.

Funding refers to money that is secured for the resources needed for the proper implementation of a school curriculum. Such funding may be secured from the private sector, government, and also through fundraising. It is always important for schools that wish to offer

MET subjects to ensure that there is enough funding because such subjects require expensive materials and tools.

Principals were identified for this facet due to their responsibility as managers of schools to source funding. In order to obtain data for this facet, questionnaires were administered to six school principals. To simplify this, I divided this facet into six indicators (6.1-6.5). When analysing the data obtained, all of the responses were viewed globally because of the fewer number of participants. Comparisons were done amongst the indicators, as seen below in Table 5.57.

Table 5.57 Presentation of the analysis of the findings for indicators 6.1 - 6.5

Indicators	Agree	Disagree	Total
6.1	5	1	6
6.2	6	0	6
6.3	6	0	6
6.4	4	2	6
6.5	5	1	6

*NB: This table was researcher-generated*

As illustrated in the table above, five out of six participants who participated in the study agreed that the government should fully finance schools that offer MET subjects, while only one participant disagreed. Consecutively, 100% of the participants agreed that the norms and standards for schools that offer MET subjects should not be the same as that of other schools. All of the participants also agreed that the financial budget for MET subject should be done. However, only two out of six participants agreed that information on cost per learner was available for each subject, while two disagreed. Furthermore, only one out of six participants disagreed that opportunities existed to expand financial resources, while the remaining five agreed.

## 5.7 PRESENTATION OF FACET 7: PERFORMANCE MANAGEMENT

The Department of Education has the responsibility of providing facilities and resources to support learning and teaching, as stated in the resolution collective agreement no. 8 of 2003 (ELRC, 2003). There are three programmes that need to be in place in order to enhance and monitor the performance of the education system, these are: Developmental Appraisal; Performance Measurement; and Whole School Education (*ibid*). This study concentrated on the Integrated Quality Management System (IQMS), which is based on the fundamental purposes of quality management, which are fivefold:

- To determine competence;
- To assess strengths and areas for development;
- To provide support and opportunities for development to assure continued growth;
- To promote accountability; and
- To monitor an institution's overall effectiveness. (DoE, 2003, p. 4).

The aim of this facet was to elicit information about the performance and opportunities provided for the development of teachers in their performance at school. Successful educational outcomes also depend on empowering, motivating and training teachers.

The data for this facet was gathered with the aid of a questionnaire that was administered to six school principals. The school principal, as an accounting officer, needs to have proper understanding of the running of a school; such understanding includes both physical and human resource management. Therefore, principals were approached to provide the necessary information. This facet was further simplified into seven indicators (7.1-7.7). The analysis was done globally as there were few participants who participated in these facets. Table 5.58 below presents the findings for facet 7.

Table 5.58 Presentation of the analysis of the findings for indicators 7.1 - 7.7

<b>Indicators</b>	<b>Agree</b>	<b>Disagree</b>	<b>Total</b>
7.1	6	0	6
7.2	6	0	6
7.3	6	0	6
7.4	6	0	6
7.5	6	0	6
7.6	6	0	6
7.7	5	1	6

*NB: This table was researcher-generated*

As seen in Table 5.58 above in the analysis of indicators 7.1 - 7.7, all of the participants agreed, with six indicators, that the IQMS management plan of the school had been drawn and implemented, and that all of the teachers were trained in IQMS. They also agreed that the school development team had been developed, and each teacher, their PGP, and school improvement plan were developed. They also confirmed that MET teachers received regular support. However, for indicator 7.7, there was a difference as only one out of six participant disagreed, with five agreeing that MET teachers received regular professional support.

## **5.8 CONCLUSION**

This chapter presented the analyses of seven facets of interest with 42 indicators that were outlined in the questionnaires that were administered to the schools that were sampled for this study. Two levels of analysis were used to present the findings, a global analysis and an individual analysis. Firstly, a level includes a global analysis, which was done with the use of SPSS frequency tables. These show how many participants strongly agreed, agreed, and disagreed to strongly disagreed out of the total number of participants who participated in each questionnaire. The second level of analysis involved an individual analysis, which was also presented using tables.

The individual analyses involved a case by case analysis, and were presented in a simplified form than that of the first level of analysis. Comparisons of the cases were then also done. The next chapter provides a discussion of the findings, as well as recommendations for the relevant stakeholders in education.



## CHAPTER 6

### DISCUSSION AND RECOMMENDATIONS

This study aimed to ascertain the following: What is the status of the provision of MET subjects in secondary schools in the Sisonke district?

This main research focus was addressed through the following four sub-questions:

- *Are MET subjects offered in secondary schools in the Sisonke district?*
- *If so, are MET subjects well provided for in these schools?*
- *What is the nature of the provision with respect to:*
  - *The types of schools?*
  - *The types of subjects?*
  - *Who teaches these subjects?*
- *How effective is the provision of MET subjects in the secondary schools within the Sisonke district?*

The analyses of the first three sub-questions were presented in Chapter 4. However, the fourth sub-question was addressed in Chapter 5. Thus, the aim of this chapter is briefly to summarise the main findings of the study and to discuss my interpretation of these findings. This section is followed by a discussion of the limitations of this study. Finally, the chapter is concluded by providing specific recommendations for future research in this field of study.

#### 6.1 SUMMARY OF THE FINDINGS

##### 6.1.1 Summary of Findings in terms of Sub-questions 1 and 2

- *Are MET subjects offered in secondary schools in the Sisonke district? And, If so, are MET subjects well provided for in these schools?*

According to the findings of this study, MET subjects are offered in the secondary schools of the Sisonke district as revealed in Table 4.1 (see list of tables). The six schools were classified as mainstream secondary schools, comprehensive secondary schools, a technical high school, and a college.

As presented in Chapter 4, Table 4.2 (see list of tables), it is evident that most of the participants (55%) who participated in this study were of the opinion that MET subjects were well provided for in the secondary schools of the Sisonke district.

Most of the schools that offered MET subjects within the Sisonke district had well-qualified teachers who had the relevant expertise to teach these subjects and to use tools to conduct practical tasks within these subjects. Moreover, some of the schools had well-equipped workshops.

#### 6.1.2 Summary of Findings in terms of Sub-question 3

- *What is the nature of the provision with respect to: The types of schools? The types of subjects? and Who teaches these subjects?*

As illustrated in Table 6.1 below, the types of schools that offered MET subjects were classified as mainstream secondary schools, comprehensive secondary schools, technical high schools, and colleges, which in this table is termed 'other'.

Three out of four MET subjects were offered in the secondary schools of the Sisonke district. These subjects are Civil Technology, Engineering, Graphics and Design and Mechanical Technology. Out of the six schools, none of them offered Electrical Technology. The fact that Electrical Technology is not offered in some rural districts, like Sisonke, still perpetuates the inequalities in the education system that the offering of these subjects purports to redress.

Table 6.1 below further indicates another discrepancy in the offering of MET subjects. In this age of democracy, one would expect that all genders would be equally represented in the teaching of MET subjects. It is surprising to note that there was only one (9%) female out of 11 teachers who taught MET subjects at the six sampled schools. It is therefore evident that MET subjects are mostly taught by male (91%) teachers.

With regard to the qualifications of the teachers that taught MET subjects at these schools, their qualifications ranged from N2 to Bachelor degrees. The table reveals that most of the teachers in the study were well qualified to teach MET subjects, with only a few being underqualified.

Another point of interest in this study is the teachers' experience in the subject being taught. Table 6.1 illustrates that most of the teachers' experience was 0-5 years. Only four out of 11 teachers had a teaching experience of more than five years.

Table 6.1 The nature of provision of MET subjects in the Sisonke District

TYPE OF SCHOOL	Type of subjects offered & Profile of MET teachers, in terms of:			
	<ul style="list-style-type: none"> <li>• Gender;</li> <li>• Highest Qualification; and</li> <li>• No. of years working at the school.</li> </ul>			
1-6	CIVIL	EGD	ELECTRICAL	MECHANICAL
<b>1</b> SS		M NDPE 2(6-10)		
<b>2</b> TS	M ACE 4(16-20)	M Bachelor in Tech 1(0-5)		M Bachelor in Tech 2(6-10)
<b>3</b> SS		*F Bachelor in Tech 1(0-5)	M Bachelor in Tech 1(0-5)	M N2 Motor 3(11-15) *F Bachelor 1(0-5)
<b>4</b> Other		M Bachelor 1(0-5)		
<b>5</b> SS		M S2 Diploma in CE 2(6-10)		
<b>6</b> CS	M Bachelor in Tech 1(0-5) 2	M Bachelor in Tech 1(0-5) 6	0	M Bachelor in Tech 1(0-5) 3

*NB: \* = same teacher*

#### 6.1.3 Summary of Findings in terms of Sub-question 4

- *How effective is the provision of MET subjects in the secondary schools within the Sisonke district?*

## **Findings of the facets of interest in Table 6.2 below**

### **Findings of facet 1**

It is interesting to note that the observations of most participants (76%), as illustrated in Table 6.2 below, were that learner enrolment in MET subjects was on an upward trend, and that learner progression in the last three consecutive years had been at 100%. With regard to the learner enrolment ratio, most schools seemed to adhere to policy. It is also significant to note that MET subjects were still offered mostly to male learners.

### **Findings of facet 2**

In terms of teacher utilisation in schools, it was evident that most of the participants (87.5%) viewed teachers as highly qualified and motivated, which in turn enabled them to use resources effectively. Adherence to policy was observed in the teachers' utilisation of CAPS documents as guidelines to their teaching. Furthermore, most of the participants believed that teachers regularly attended workshops.

### **Findings of facet 3**

When it comes to MET subjects being offered in schools, most of the participants (90%) believed that all formal assessment tasks were done and recorded. It is, however, clear that not all MET subjects were taught in these schools. It is interesting to note that MET subjects, unlike in the past, are no longer accorded a lower status.

### **Findings of facet 4**

The opinions of the participants regarding facet four had many contradictions. According to the table, learners were afforded time for practical assessment tasks. The validity of the practical assessment tasks was, however, questionable because most of the participants claimed that their schools did not have well equipped workshops. Most of the participants in one indicator further maintained that the tools and equipment were adequately used and managed, whereas in another indicator, they stated that workshop facilities and consumables were inadequate.

### **Findings of facet 5**

A positive relationship was observed in the participants' responses regarding funding in schools. Most of the participants (100%) believed that the norms and standards for schools that offered MET subjects should not be the same as that of other schools. However, in some indicators (see indicator 5.1 and indicator 5.5 in Table 6.2), there were contradictions as to why they needed government to fully finance these schools if opportunities for expanding financial resources existed. Furthermore, there was a discrepancy in the level of agreement as to the availability of information on cost per learner for each subject.

### **Findings of facet 6**

A common view that was expressed amongst the participants concerned performance management in schools being conducted according to policy. They agreed that the IQMS management plan was drawn and implemented. However, only one participant disagreed that MET teacher receive regular support.

### **Findings of facet 7**

In terms of the facilities at the six schools, just over 50% of the participants agreed that Fire safety precautions were displayed, health and hygienic facilities (such as learners' washrooms/toilets, First aid) were available, that a computer laboratory was available and accessible, and that housekeeping facilities (classrooms and workshops) were in good condition. Alternatively, the majority of the participants disagreed that Electrical safety precautions were visible in the workshop at their schools.

Considering the findings of the seven facets of interest presented in Table 6.2, this concludes that MET subjects provision in the secondary schools of the Sisonke district was effective. Most of the participants (87.5%) agreed that qualified educators were available, training facilities were in good condition, and that learner involvement was increasing (see Table 6.1). This is confirmed in the analytical framework used to evaluate training systems (ETF, 2012), where effectiveness is defined as management effectiveness and quality of instruction in TVET provision.

Table 6.2 Summary of analysis of the seven facets of interest

Facets of interest	Description of indicators	A				DA					
		(25)	100%	Ts	HoDs	P	100%	Ts	HoDs	P	
		<b>17Ts</b>									
		<b>8HoDs</b>									
<b>1. Learners</b>	1.1 All Learners should be taught MET subjects	52%	10	3		48%	7	5			
	1.2 Learner enrolment is according to the learner ratio as stipulated in policy	56%	11	4		44%	6	4			
	1.3 Learner progression in the last three years has been 100%	68%	11	6		32%	6	2			
	1.4 The ratio of enrolment in MET subjects is equal for both males and females	12%	1	2		88%	16	6			
	1.5 The enrolment of females in MET subjects is higher than that of males	16%	2	2		84%	15	6			
	1.6 Learners enrolment in MET subjects is on an upward trend	76%	14	5		24%	3	3			
		<b>(8)</b>									
		<b>8 HoDs</b>									
<b>2. Teacher utilisation</b>	2.1 Teaching staff is highly motivated and qualified	87.5%		7		12.5%		1			
	2.2 Teaching resources are used appropriately	75%		6		25%		2			
	2.3 Teaching is conducted according to CAPS	100%		8				0			
	2.4 Programme of assessment has been drawn and is followed	100%		8				0			
	2.5 Orientation workshops are attended	100%		8				0			
	2.6 Content workshops are regularly attended	100%		8				8			
		<b>(14)</b>									
		<b>8HoDs</b>									
		<b>6Ps</b>									
<b>3. Subjects offered</b>	3.1 All MET subjects are taught at school	29%		2	2		71%	6	4		

	3.2	All MET subjects are designated as accredited subjects	50%	3	4	50%	5	2		
	3.3	MET subjects are more popular than academic subjects	57%	4	4	43%	4	2		
	3.4	MET subjects are accorded lower status at school	29%	2	2	71%	6	4		
	3.5	All formal assessment tasks are done and recorded	90%	8	5	7%		1		
									(31)	
									17Ts	
									8HoDs	
									6Ps	
<b>4. Training facilities and utilization</b>	4.1	Teaching and learning resources for each subject are available	64%	11	4	5	36%	6	4	1
	4.2	Physical infrastructure is remarkable	42%	8	2	3	58%	9	6	3
	4.3	A spacious and well- equipped workshop exists	35%	7	2	2	65%	10	6	4
	4.4	Workshop facilities and consumables are adequate	35%	7	2	2	65%	10	6	4
	4.5	Adequate budget provisions for consumables and maintenance work	42%	8	2	3	58%	9	6	3
	4.6	Classrooms, laboratories / workshops are adequately utilised	58%	9	5	4	42%	8	3	2
	4.7	Tools and equipment are adequately used and managed	58%	11	4	3	42%	6	4	3
	4.8	Learners are afforded time for practicals	71%	13	5	4	29%	4	3	2
										(6)
										6 Ps
<b>5. Funding</b>	5.1	The government should fully finance schools that offer MET subjects	83%			5	17%			1
	5.2	The norms and standards for schools that offer MET subjects should not be the same as that of other schools	100%			6				0
	5.3	Financial budget for MET subject	100%			6				0
	5.4	Information on cost per learner is available for each subject				4				2

	5.5	Opportunities exist to expand financial resources	83%	5	17%				1	
				<b>(6)</b>						
				<b>6 Ps</b>						
<b>6. Performance management</b>	6.1	The IQMS management plan of the school has been drawn	100%	6					0	
	6.2	The IQMS management plan has been implemented	100%	6					0	
	6.3	All teachers have been trained in IQMS	100%	6					0	
	6.4	School Development Team( SDT) has been developed	100%	6					0	
	6.5	Each teacher has drawn the Personal Growth Plan (PGP)	100%	6					0	
	6.6	The School Improvement Plan (SIP) has been drawn	100%	6					0	
	6.6	MET teachers receive regular professional support.	83%	5	17%				1	
				<b>(31)</b>						
				<b>17Ts</b>						
				<b>8HoDs</b>						
				<b>6Ps</b>						
<b>7. Service facilities</b>	7.1	Fire safety precautions are displayed	55%	9	4	4	45%	8	4	2
	7.2	Electrical safety precautions are visible in the workshop	35%	7	2	2	65%	10	6	4
	7.3	Health and hygienic facilities (such as learners' washrooms/toilets, First aid) are available	52%	9	4	3	48%	8	4	3
	7.4	Computer Laboratory is available and accessible	52%	9	4	3	48%	8	4	3
	7.5	Housekeeping facilities (classrooms and workshops) are in good condition	58%	10	3	5	42%	7	5	1

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## **6.2 CONCLUDING REMARKS**

The findings of this study revealed that there was a limited number of secondary schools that provided MET subjects in the Sisonke district. Thus, it can be concluded that the provision of MET subjects was inadequate in the district. This suggests that nothing much has been done in considering technical education as a priority across secondary schools in the KZN province. King and Palmer (2012) concur with the statement above as they find that there has been insufficient attention to the marginalised groups in society in terms of their access to formal TVET or formal vocational education.

However, in the few schools that offered MET subjects, there were diverse opinions as to the level of the provision. Most of the participants (55%) were of the opinion that MET provision was good, and that the most important reasons were that the teachers were well qualified and motivated, and that training facilities, learner enrolment, and progression were on an upward trend. This means that the training system in these schools was effective, as discussed by ADB (2004).

Alternatively, some of the participants were not positive about the provision. The most significant reasons for this were the lack of equipment and materials, as well as the lack of qualified teachers in technical subjects. This was also argued by King (2011, p. 2) that TVET provision, even for the middle class, is often awful and it constitutes a disabling environment.

There are many factors that touch on the involvement of both female teachers and learners in the MET field due to the inheritance of the Apartheid education system where Black learners in rural areas were deprived of the opportunity to receive technical education. Females tend to be underrepresented in TVET education. Inequality also comes in the form of geographical regions, as children in rural areas and on farms are highly disadvantaged in gaining access to skills development (ADB, 2004, p.66).

## **6.3 RECOMMENDATIONS FOR FUTURE RESEARCH**

In view of the great shortage of skills in South Africa, there should be visible partnership between the Department of Education and the private sector through the provision of learnership/internships and in-service training. Such partnership should be part of policy, i.e. it should be compulsory for learners to complete an evaluation process in the private sector before

being awarded certificates. Teachers should also be given the opportunity to receive in-service training so that they can keep areas of new developments and technology in their respective subjects.

The Department of Education should provide schools with adequate funds and the relevant infrastructure to enhance teaching and learning in these subjects. This could improve the efficiency of the provision of these subjects in schools, and attract learner's interest in participating.

The government should look at the contribution that can be made by introducing all MET subjects in schools in the rural districts in the province as a means of transforming and empowering communities that were previously disadvantaged. This could also curb the unemployment rate in the country.

Policy makers and education stakeholders should always revise the PPN issues of schools so as to cater to the teacher-learner ratio in schools that offer MET subjects. This ratio needs to comply with the Occupational Health and Safety Act in each school's workshop. This will help school principals in allocating a budget to the respective subjects guided by the policy

More females should be encouraged to enrol for MET subjects at all levels of the education system to reduce male bias and to increase the accessibility and equality of gender.

#### **6.4 FUTURE RESEARCH**

It is evident that in South Africa, there is little research that has been conducted on TVET in secondary schools. This research thus focused on secondary schools only in the Sisonke district. In future, there should be a comparative study conducted on the provision of MET subjects in secondary schools across the districts in the KZN province.

Future research could include learners to observe their views on whether all MET subjects should be offered in schools so as to give learners a variety of choices. This would, in turn, attempt to cater to all learners' interests and career choices.

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# Appendix 1



**education**

Department:  
Education  
**PROVINCE OF KWAZULU-NATAL**

Enquiries: Nomangisi Ngubane

Tel: 033 392 1004

Ref:2/4/8/476

Miss DC Mbambo  
129 Ribbon Road  
Newlands East  
MARBLERAY  
4037

Dear Miss Mbambo

## PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: **"AN ASSESSMENT OF THE PROVISION OF MANUFACTURING ENGINEERING AND TECHNOLOGY IN THE FURTHER EDUCATION AND TRAINING BAND IN THE SISONKE DISTRICT"**, in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 20 July 2015 to 31 August 2016.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Connie Kehologile at the contact numbers below.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report / dissertation / thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

Sisonke District

**Nkosinathi S.P. Sishi, PhD**  
Head of Department: Education  
Date: 14 July 2015

**KWAZULU-NATAL DEPARTMENT OF EDUCATION**

POSTAL: Private Bag X 9137, Pietermaritzburg, 3200, KwaZulu-Natal, Republic of South Africa ...dedicated to service and performance  
PHYSICAL: 247 Burger Street, Anton Lembede House, Pietermaritzburg, 3201. Tel. 033 392 1004 beyond the call of duty  
EMAIL ADDRESS: [kehologile.connie@kzndoe.gov.za](mailto:kehologile.connie@kzndoe.gov.za) / [Nomangisi.Ngubane@kzndoe.gov.za](mailto:Nomangisi.Ngubane@kzndoe.gov.za)  
CALL CENTRE: 0860 596 363; Fax: 033 392 1203 WEBSITE: [www.kzneducation.gov.za](http://www.kzneducation.gov.za)

## Appendix 2



Science and Technology Education  
Cluster

School of Education

Edgewood Campus

Private Bag x03

Ashwood

19 May 2015

The District director

8 Main street, JY building

Kokstad

4700

Dear Sir

### **REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN YOUR DISTRICT**

My name is Duduzile Mbambo. I am a Science and Technology Education Masters candidate studying at the University of KwaZulu-Natal, Edgewood Campus.

**My research study topic is: An Assessment on the provision of MET subjects in the FET Band in the Sisonke District.** The study seeks to determine the nature and the extent to which MET subjects are provided for in the Sisonke district.

I hereby apply for permission to conduct my research at your District offices for the year 2015. Data will be collected from the district officials in the following sections: Examinations and Assessment, Teaching Learning Support Services in the Further Education and Training (TLS-FET), Circuits and in secondary schools. The district officials who decide to be the part of my study will be required to fill in the consent form. Please note that their participation is voluntary.

You are requested to kindly fill in the attached declaration and consent form which acknowledges the permission granted to me to undertake my research in your district.

I guarantee that the information gathered will be used for the purpose of the research only. District officials may withdraw from participating in the study as it is voluntary.

If you wish to discuss this further with me or wish to understand more about the research study, I can be contacted at:

Your cooperation will be highly appreciated

Yours sincerely

---

Dudzile, Carol Mbambo

**Dudzile Mbambo**

Science and Technology Education Cluster, School of Education, Edgewood campus,  
University of KwaZulu Natal.

Cell: +27 (0)83 737 3091 Email: [sathabambambo@gmail.com](mailto:sathabambambo@gmail.com)

My supervisor is **Dr. Busisiwe Alant**

Department of Science and Technology, School of Education, Edgewood campus, University of KwaZulu Natal.

Tel: +27 (0)312607606 Email: [alantb@ukzn.ac.za](mailto:alantb@ukzn.ac.za)

### **DECLARATION BY THE DISTRICT DIRECTOR**

I \_\_\_\_\_ the District Director, Sisonke district Department of Education, gives permission to Miss Duduzile Carol Mbambo to do her research study in the above mentioned District.

\_\_\_\_\_

### **SIGNATURE/STAMP OF THE DISTRICT DIRECTOR**

\_\_\_\_\_

**DATE**

## Appendix 3

### LETTER TO THE SCHOOLS OF SISONKE DISTRICT



Edgewood Campus

Private bag x03

Ashwood

3605

11 May 2015

The Principal

Dear Principal

#### **REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT YOUR SCHOOL**

My name is Duduzile Carol Mbambo. I am a student studying for Masters Degree in Technology education in the University of KwaZulu Natal, Edgewood campus, South Africa.

**My research study is titled: An assessment on the provision of Manufacturing Engineering and Technology (MET) subjects in the FET Band in the Sisonke District.** This study seeks to assess the nature and extent in which MET subjects are provided in FET Band in the Sisonke District.

I hereby ask for your permission to conduct my study in your school in 2015. The data will be collected to the teachers teaching MET subjects, HoD's supervising MET Field and the Principal of the school. The teaching staff who decides to be the part of my study will be required to fill in the consent form, their participation is voluntary, you are required to fill in the attached declaration and your consent form which acknowledges the permission granted to undertake my research in your school.

I would like to assure you that information gathered will be treated with utmost confidentiality. I am bound by ethical standard of conducting research not to reveal any information gathered, furthermore the dignity, privacy and interest of the participant will be respected .Should you wish to withdraw your school from the research project you have the option to do so.

Your co-operation will be appreciated.

Yours Sincerely

D.C Mbambo (Miss)

For further information regarding this research you may contact either me or my supervisor, Dr Busisiwe Precious Alant 031- 2607606 (0739479893) who is located at the School of Education, Edgewood campus of the University of KwaZulu-Natal. Duduzile Carol Mbambo, [sathabambambo@gmail.com](mailto:sathabambambo@gmail.com) Cell: 0837373091

Thanking you in advance for your contribution to this research.

DECLARATION

I..... (Full names of principal) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PRINCIPAL

DATE

.....



## Appendix 4

### Informed consent letter



Science and Technology Education Cluster

School of Education

College of Humanities,

University of KwaZulu-Natal,

Edgewood Campus,

11 May 2015

Dear Participant

#### **INFORMED CONSENT LETTER**

My name is Duduzile Mbambo. I am a Science and Technology Education Masters candidate studying at the University of KwaZulu-Natal, Edgewood campus, South Africa.

I am interested in assessing the provision of Manufacturing Engineering and Technology subjects in the FET band in Sisonke district. The secondary schools in the Sisonke district will be the main focus in getting the data for my study. To gather the information, I am interested in asking you some questions about the provision of Technical and Vocational Education and Training in rural schools.

Please note that:

- The research aims to explore the nature and an extent in which MET subjects are provided in FET band in secondary schools.
- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a community population member's opinion.
- If you are filling in a questionnaire, the questionnaire may last for approximately 25 minutes to the maximum of 45minutes.
- If you are interviewed, the interview may last for approximately an hour and may be split depending on your preference.
- If you are participating in the study as a TVET teacher, HoD, principal, or Deputy Chief Education Specialist (DCES) you may be asked questions, or asked to give your opinions, as part of a group meeting which may take up to 2 hours.
- Real names of the participants will not be used, but symbols such as A, B, C or X, Y, Z ... will be used to represent participants' names.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage in the Cluster of Science and Technology Education, School of Education, Edgewood campus, University of KwaZulu-Natal and destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.
- Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether or not you are willing to allow the interview to be recorded using the following equipment:

<b>Recording equipment to be used in the study</b>	<b>I am willing</b>	<b>I am not willing</b>
Audio equipment		
Photographic equipment		
Video equipment		

Yours sincerely

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Duduzile, Carol Mbambo

If you wish to discuss this further with me or wish to understand more about the research study, I can be contacted at:

**Duduzile Mbambo**

Science and Technology Education Cluster, School of Education, Edgewood campus, University of KwaZulu Natal.

Cell: +27 (0)83 737 3091 Email: [sathabambambo@gmail.com](mailto:sathabambambo@gmail.com).

My supervisor is **Dr. Busisiwe Alant**

Department of Science and Technology, School of Education, Edgewood campus, University of KwaZulu Natal.

Tel: +27 (0)312607606, Email: [Alantb@ukzn.ac.za](mailto:Alantb@ukzn.ac.za)

You may also contact the **Research Office** through:

P. Mohun

HSSREC Research Office,

Tel: 031 260 4557/4609 Email: [HssrecHumanities@ukzn.ac.za](mailto:HssrecHumanities@ukzn.ac.za) E-mail: [mohunp@ukzn.ac.za](mailto:mohunp@ukzn.ac.za)

Thank you for your contribution to this research.



## Appendix 5: Questionnaire for the research study

### QUESTIONNAIRE FOR THE RESEARCH STUDY

#### AN ASSESSMENT OF THE PROVISION OF MANUFACTURING ENGINEERING AND TECHNOLOGY IN THE FURTHER EDUCATION AND TRAINING BAND IN THE SISONKE DISTRICT

Dear respondent,

I am currently conducting a research on the above topic. The study will be conducted in two phases, phase one further divided into three stages both quantitative and qualitative data will be collected concurrently using the same instrument. Phase two only have one stage, below is the research question and the framework/design/structure in which it will be conducted:

- *What is the status of the provision of MET subjects in the Secondary School of the Sisonke district?*

In other words;

- *Are MET subjects offered in the Sisonke district?*
- *If so are MET subjects well provided for in the secondary schools in the Sisonke district?*
- *What is the nature of the provision in respect of :*
  - *Types of schools?*
  - *Types of subjects?*
  - *Who teaches these subjects?*

*How effective are MET subjects in the schools of Sisonke district?*

The structure of data collection, phases and stages are outlined below:

**Phase1:** Further divided into three stages

**Stage 1** *Are MET subjects offered in Secondary schools in the Sisonke district?* : This will be achieved by the administration of a questionnaire

**Stage 2.** *If so are MET subjects well provided for in the secondary schools in the Sisonke district?:* This will be achieved by the administration of a questionnaire

**Stage 3.** *What is the nature of the provision in respect of: 3 (a): Types of schools?, 3(b) Types of subjects?;, 3 (c) Who teaches these subjects?:* This will be achieved by the administration of a questionnaire.

**Phase 2:** *How effective are MET subjects in the schools of Sisonke district:* this will be achieved by the administration of a questionnaire.

## PART B

Use the following scale to indicate the extent to which you agree with the statements provided in the table below. Please use an X in the space provided to indicate your response. These statements are designed for you to tell us about your opinion on the status of the provision of MET subjects as it applies to you school in the Sisonke District.

**Scale: 1. Strongly disagree (SD); 2. Disagree (D); 3. Agree (A); 4. Strongly agree (SA)**

Facets of interest		Description of indicators	SD	D	A	SA
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1.Learners</b>	1.1	All Learners should be taught MET subjects				
	1.2	Learner enrolment is according to the learner ratio as stipulated in Policy				
	1.3	Learner progression in the last three years has been 100%				
	1.4	The ratio of enrolment in MET subjects is equal for both males and females				
	1.5	The enrolment of females in MET subjects is higher than that of males				
	1.6	Learners enrolment in MET subjects is on the upward trend		6	10	7
Facets of interest		Description of indicators	SD	D	A	SA
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>2.Teacher utilisation</b>	2.1	Teaching staff is highly motivated and qualified				
	2.2	Teaching resources are used appropriately				
	2.3	Teaching is conducted according to CAPS				
	2.4	Programme of assessment has been drawn and is followed				
	2.5	Orientation workshops were attended				
	2.6	Content workshops are regularly attended				
Facets of interest		Description of indicators	SD	D	A	SA
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>3.Subjects offered</b>	3.1	All MET subjects are taught and at school				
	3.2	All MET subjects are designated as accredited subjects				
	3.3	MET subjects are more popular than academic subjects				
	3.4	MET subjects are accorded lower status at school				
	3.5	All formal Assessment tasks are done and recorded				
Facets of interest		Description of indicators	SD	D	A	SA
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>4.Training facilities and utilization</b>	4.1	Teaching and learning resources for each subject are available				

	4.2	Physical infrastructure is remarkable				
	4.3	A spacious and well- equipped workshop exists				
	4.4	Workshop facilities and consumables are adequate				
	4.5	Adequate budgetary provisions for consumables and maintenance work				
	4.6	Class rooms, laboratories / workshops are adequately utilised				
	4.7	Tools & equipment are adequately used and managed				
	4.8	Learners are afforded time for practical's				
<b>Facets of interest</b>		<b>Description of indicators</b>	<b>SD</b>	<b>D</b>	<b>A</b>	<b>SA</b>
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>5. Funding</b>	5.1	The government should fully finance schools that offer MET subjects				
	5.2	The norms and standards for schools that offer MET subjects should not be the same as that of other schools				
	5.3	Financial budget for MET subject				
	5.4	Information on cost per learner is available for each subject				
	5.5	Opportunities exist to expand financial resources				
<b>Facets of interest</b>		<b>Description of indicators</b>	<b>SD</b>	<b>D</b>	<b>A</b>	<b>SA</b>
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>6. Performance management</b>	6.1	The IQMS management plan of the school has been drawn				
	6.2	The IQMS management plan has been implemented				
	6.3	All teachers have been trained on IQMS				
	6.4	School Development Team( SDT) have been drawn				
	6.5	Each teacher has drawn the Personal Growth Plan (PGP)				
<b>Facets of interest</b>		<b>Description of indicators</b>	<b>SD</b>	<b>D</b>	<b>A</b>	<b>SA</b>
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>7. Service facilities</b>	7.1	Fire safety precautions are displayed				
	7.2	Electrical safety precautions are visible in the workshop				
	7.3	Health and hygienic facilities (such as learners washrooms/toilets, First aid) are available				
	7.4	Computer Laboratory is available and accessible				
	7.5	Housekeeping facilities (classrooms and workshops) are in good condition				

8. In your opinion, what is the nature of the provision of MET subject in your school?

## **Appendix 5(a) QUESTIONNAIRE TO BE ADMINISTERED TO PRINCIPALS**

### **AN ASSESSMENT OF THE PROVISION OF MANUFACTURING ENGINEERING AND TECHNOLOGY IN THE FURTHER EDUCATION AND TRAINING BAND IN THE SISONKE DISTRICT**

Dear respondent,

I am currently conducting a research on the above topic. The study will be conducted in two phases, phase one further divided into three stages both quantitative and qualitative data will be collected concurrently using the same instrument. Phase two only have one stage, below is the research question and the framework/design/structure in which it will be conducted:

- *What is the status of the provision of the MET subjects in the secondary schools of the Sisonke district?*

This research question was broken down into the following four sub-questions:

- *Are MET subjects offered in the Secondary schools in the Sisonke district?*
- *If so, are MET subjects well provided for in the Secondary schools in the Sisonke district?*
- *What is the nature of the provision in respect of :*
  - *Types of schools?*
  - *Types of subjects?*
  - *Who teaches these subjects?*
- *How effective is the provision of MET subjects in the Secondary schools of the Sisonke district?*

The structure of data collection, phases and stages are outlined below:

**Phase1:** Further divided into three stages

**Stage 1** *Are MET subjects offered in Secondary schools in the Sisonke district?* : This will be achieved by the administration of a questionnaire

**Stage 2.** *If so are MET subjects well provided for in the secondary schools in the Sisonke district?:* This will be achieved by the administration of a questionnaire

**Stage 3.** *What is the nature of the provision in respect of: 3 (a): Types of schools? 3(b) Types of subjects?;, 3 (c) Who teaches these subjects?:* This will be achieved by the administration of a questionnaire.

**Phase 2:** *How effective are MET subjects in the schools of Sisonke district:* this will be achieved by the administration of a questionnaire.



**Part A**

Please indicate your opinion by marking X in the appropriate boxes provided below. You may wish to state your opinion in writing where what you wish to say is not represented in table below.

<b>NAME:</b>					
<b>GENDER</b>	<b>FEMALE</b>			<b>MALE</b>	
<b>NAME OF SCHOOL:</b>					
<b>TYPE OF SCHOOL</b>	<b>PRIVATE / INDEPENDENT</b>			<b>PUBLIC</b>	
If public, please indicate quintile ranking	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
If private, please specify the type, e.g. Catholic etc.					
If other, please specify the type of school					
<b>NO. OF YEARS WORKING AT THE SCHOOL</b>					
<b>QUALIFICATIONS</b> (Please include school where you matriculated)					
<b>INSTITUTIONS WHERE QUALIFICATIONS WERE OBTAINED</b>					
In your opinion, would you say that MET subjects well provided for in your school?	<b>YES</b>			<b>NO</b>	
If yes Or no, please elaborate on the response you've given above.					

**PART B**

Use the following scale to indicate the extent to which you agree with the statements provided in the table below. Please use an X in the space provided to indicate your response. These statements are designed for you to tell us about your opinion on the status of the provision of MET subjects as it applies to you school in the Sisonke District.

**Scale: 1. Strongly disagree (SD); 2. Disagree (D); 3. Agree (A); 4. Strongly agree (SA)**

<b>Facets of interest</b>		<b>Description of indicators</b>	<b>SD</b>	<b>D</b>	<b>A</b>	<b>SA</b>
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1.Subjects offered</b>	1.1	All MET subjects are taught and at school				
	1.2	All MET subjects are designated as accredited subjects				
	1.3	MET subjects are more popular than academic subjects				
	1.4	MET subjects are accorded lower status at school				
	1.5	All formal Assessment tasks are done and recorded				
<b>Facets of interest</b>		<b>Description of indicators</b>	<b>SD</b>	<b>D</b>	<b>A</b>	<b>SA</b>
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>2.Training facilities and utilization</b>	2.1	Teaching and learning resources for each subject are available				
	2.2	Physical infrastructure is adequate				
	2.3	A spacious and well- equipped workshop exists				
	2.4	Workshop facilities and consumables are adequate				
	2.5	Adequate budgetary provisions for consumables and maintenance work				
	2.6	Class rooms, laboratories / workshops are adequately utilised				
	2.7	Tools & equipment are adequately used and managed				
	2.8	Learners are afforded time for practical's				
<b>Facets of interest</b>		<b>Description of indicators</b>	<b>SD</b>	<b>D</b>	<b>A</b>	<b>SA</b>
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>3.Funding</b>	3.1	The government should fully finance schools that offer MET subjects				
	3.2	The norms and standards for schools that offer MET subjects should not be the same as that of other schools				
	3.3	Financial budget for MET subject				

	3.4	Information on cost per learner is available for each subject				
	3.5	Opportunities exist to expand financial resources				
<b>Facets of interest</b>		<b>Description of indicators</b>	<b>SD</b>	<b>D</b>	<b>A</b>	<b>SA</b>
		STATEMENT	1	2	3	4
<b>4. Performance management</b>	4.1	The IQMS management plan of the school has been drawn				
	4.2	The IQMS management plan has been implemented				
	4.3	All teachers have been trained on IQMS				
	4.4	School Development Team( SDT) have been drawn				
	4.5	Each teacher has drawn the Personal Growth Plan (PGP)				
	4.6	The School Improvement Plan (SIP) has been drawn				
	4.6	MET teachers receive regular professional support.				
<b>Facets of interest</b>		<b>Description of indicators</b>	<b>SD</b>	<b>D</b>	<b>A</b>	<b>SA</b>
		STATEMENT	1	2	3	4
<b>5. Service facilities</b>	5.1	Fire safety precautions are displayed				
	5.2	Electrical safety precautions are visible in the workshop				
	5.3	Health and hygienic facilities (such as learners washrooms/toilets, First aid) are available				
	5.4	Computer Laboratory is available and accessible				
	5.5	Housekeeping facilities (classrooms and workshops) are in good condition				

6. In your opinion, what is the nature of the provision of MET subject in your school?

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**Appendix 5 (b). QUESTIONNAIRE TO BE ADMINISTERED TO  
HEAD OF DEPARTMENTS (HoDs)  
AN ASSESSMENT OF THE PROVISION OF MANUFACTURING ENGINEERING  
AND TECHNOLOGY IN THE FURTHER EDUCATION AND TRAINING BAND IN  
THE SISONKE DISTRICT**

Dear respondent,

I am conducting a research on the above topic. The study will be conducted in two phases, phase one further divided into three stages both quantitative and qualitative data will be collected concurrently using the same instrument. Phase two only have one stage, below is the research question and the framework/design/structure in which it will be conducted:

- *What is the status of the provision of MET subjects in the Secondary School of the Sisonke district?*

In other words;

- *Are MET subjects offered in the Sisonke district?*
- *If so are MET subjects well provided for in the secondary schools in the Sisonke district?*
- *What is the nature of the provision in respect of :*
  - *Types of schools?*
  - *Types of subjects?*
  - *Who teaches these subjects?*

*How effective are MET subjects in the schools of Sisonke district?*

The structure of data collection, phases and stages are outlined below:

**Phase1:** Further divided into three stages

**Stage 1** *Are MET subjects offered in Secondary schools in the Sisonke district?* : This will be achieved by the administration of a questionnaire

**Stage 2.** *If so are MET subjects well provided for in the secondary schools in the Sisonke district?* : This will be achieved by the administration of a questionnaire

**Stage 3.** *What is the nature of the provision in respect of: 3 (a): Types of schools?, 3(b) Types of subjects?;, 3 (c) Who teaches these subjects?:* This will be achieved by the administration of a questionnaire.

**Phase 2, Stage1:** *How effective are MET subjects in the schools of Sisonke district:* this will be achieved by the administration of a questionnaire.

**AN ASSESSMENT OF THE PROVISION OF MANUFACTURING ENGINEERING  
AND TECHNOLOGY IN THE FURTHER EDUCATION AND TRAINING BAND IN  
THE SISONKE DISTRICT**

**Part A**

Please indicate your opinion by marking X in the appropriate boxes provided below. You may wish to state your opinion in writing where what you wish to say is not represented in table below.

<b>NAME:</b>					
<b>GENDER</b>	<b>FEMALE</b>			<b>MALE</b>	
<b>NAME OF SCHOOL:</b>					
<b>TYPE OF SCHOOL</b>	<b>PRIVATE / INDEPENDENT</b>			<b>PUBLIC</b>	
If public, please indicate quintile ranking	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
If private, please specify the type, e.g. Catholic etc.					
If other, please specify the type of school					
<b>NO. OF YEARS WORKING AT THE SCHOOL</b>					
<b>QUALIFICATIONS</b> (Please include school where you matriculated)					
<b>INSTITUTIONS WHERE QUALIFICATIONS WERE OBTAINED</b>					
In your opinion, would you say that MET subjects well provided for in your school?	<b>YES</b>			<b>NO</b>	
If yes Or no, please elaborate on the response you've given above.					

## PART B

Use the following scale to indicate the extent to which you agree with the statements provided in the table below. Please use an X in the space provided to indicate your response. These statements are designed for you to tell us about your opinion on the status of the provision of MET subjects as it applies to you school in the Sisonke District.

**Scale: 1. Strongly disagree (SD); 2. Disagree (D); 3. Agree (A); 4. Strongly agree (SA)**

Facets of interest		Description of indicators	SD	D	A	SA
		STATEMENT	1	2	3	4
<b>1.Learners</b>	1.1	All Learners should be taught MET subjects				
	1.2	Learner enrolment is according to the learner ratio as stipulated in Policy				
	1.3	Learner progression in the last three years has been 100%				
	1.4	The ratio of enrolment in MET subjects is equal for both males and females				
	1.5	The enrolment of females in MET subjects is higher than that of males				
	1.6	Learner enrolment in MET subjects is on the upward trend.				
Facets of interest		Description of indicators	SD	D	A	SA
		STATEMENT	1	2	3	4
<b>2.Teacher utilisation</b>	2.1	Teaching staff is highly motivated and qualified				
	2.2	Teaching resources are used appropriately				
	2.3	Teaching is conducted according to CAPS				
	2.4	Programme of assessment has been drawn and is followed				
	2.5	Orientation workshops were attended				
	2.6	Content workshops are regularly attended				
Facets of interest		Description of indicators	SD	D	A	SA
		STATEMENT	1	2	3	4
<b>3.Subjects offered</b>	3.1	All MET subjects are taught and offered at school				
	3.2	All MET subjects are designated as accredited subjects				
	3.3	MET subjects are more popular than academic subjects				
	3.4	MET subjects are accorded lower status at school				
	3.5	All formal Assessment tasks are done and recorded				

Facets of interest		Description of indicators	SD	D	A	SA
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		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>4. Training facilities and utilization</b>	4.1	Teaching and learning resources for each subject are available				
	4.2	Physical infrastructure is remarkable				
	4.3	A spacious and well- equipped workshop exists				
	4.4	Workshop facilities and consumables are adequate				
	4.5	Adequate budgetary provisions for consumables and maintenance work				
	4.6	Class rooms, laboratories / workshops are adequately utilised				
	4.7	Tools & equipment are adequately used and managed				
	4.8	Learners are afforded time for practical's				
<b>Facets of interest</b>		<b>Description of indicators</b>	<b>SD</b>	<b>D</b>	<b>A</b>	<b>SA</b>
<b>5. Service facilities</b>		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	5.1	Fire safety precautions are displayed				
	5.2	Electrical safety precautions are visible in the workshop				
	5.3	Health and hygienic facilities (such as learners washrooms/toilets, First aid) are available				
	5.4	Computer Laboratory is available and accessible				
	5.5	Housekeeping facilities (classrooms and workshops) are in good condition				

6. In your opinion, what is the nature of the provision of MET subject in your school?

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## **Appendix5 (c) QUESTIONNAIRE TO BE ADMINISTERED TO TEACHERS**

### **AN ASSESSMENT OF THE PROVISION OF MANUFACTURING ENGINEERING AND TECHNOLOGY IN THE FURTHER EDUCATION AND TRAINING BAND IN THE SISONKE DISTRICT**

Dear respondent,

I am currently conducting a research on the above topic. The study will be conducted in two phases, phase one further divided into three stages both quantitative and qualitative data will be collected concurrently using the same instrument. Phase two only have one stage, below is the research question and the framework/design/structure in which it will be conducted:

- *What is the status of the provision of the MET subjects in the secondary schools of the Sisonke district?*

This research question was broken down into the following four sub-questions:

- *Are MET subjects offered in the Secondary schools in the Sisonke district?*
- *If so, are MET subjects well provided for in the Secondary schools in the Sisonke district?*
- *What is the nature of the provision in respect of :*
  - *Types of schools?*
  - *Types of subjects?*
  - *Who teaches these subjects?*
- *How effective is the provision of MET subjects in the Secondary schools of the Sisonke district?*

The structure of data collection, phases and stages are outlined below:

**Phase1:** Further divided into three stages

**Stage 1** *Are MET subjects offered in Secondary schools in the Sisonke district?* : This will be achieved by the administration of a questionnaire

**Stage 2.** *If so are MET subjects well provided for in the secondary schools in the Sisonke district?:* This will be achieved by the administration of a questionnaire

**Stage 3.** *What is the nature of the provision in respect of : 3 (a): Types of schools?, 3(b) Types of subjects?;, 3 (c) Who teaches these subjects?:* This will be achieved by the administration of a questionnaire.

**Phase 2:** *How effective are MET subjects in the schools of Sisonke district:* this will be achieved by the administration of a questionnaire



**AN ASSESSMENT OF THE PROVISION OF MANUFACTURING ENGINEERING  
AND TECHNOLOGY IN THE FURTHER EDUCATION AND TRAINING BAND IN  
THE SISONKE DISTRICT**

**Part A**

Please indicate your opinion by marking X in the appropriate boxes provided below. You may wish to state your opinion in writing where what you wish to say is not represented in table below.

<b>NAME:</b>					
<b>GENDER</b>	<b>FEMALE</b>			<b>MALE</b>	
<b>NAME OF SCHOOL:</b>					
<b>TYPE OF SCHOOL</b>	<b>PRIVATE / INDEPENDENT</b>			<b>PUBLIC</b>	
If public, please indicate quintile ranking	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
If private, please specify the type, e.g. Catholic etc.					
If other, please specify the type of school					
<b>NO. OF YEARS WORKING AT THE SCHOOL</b>					
<b>QUALIFICATIONS</b> (Please include school where you matriculated)					
<b>INSTITUTIONS WHERE QUALIFICATIONS WERE OBTAINED</b>					
In your opinion, would you say that MET subjects well provided for in your school?	<b>YES</b>			<b>NO</b>	
If yes Or no, please elaborate on the response you've given above.					

**PART B**

Use the following scale to indicate the extent to which you agree with the statements provided in the table below. Please use an X in the space provided to indicate your response. These statements are designed for you to tell us about your opinion on the status of the provision of MET subjects as it applies to you school in the Sisonke District.

**Scale: 1. Strongly disagree (SD); 2. Disagree (D); 3. Agree (A); 4. Strongly agree (SA)**

Facets of interest		Description of indicators	SD	D	A	SA
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>1.Learners</b>	1.1	All Learners should be taught MET subjects				
	1.1	Learner enrolment is according to the learner ratio as stipulated in Policy				
	1.2	Learner progression in the last three years has been 100%				
	1.3	The ratio of enrolment in MET subjects is equal for both males and females				
	1.4	The enrolment of females in MET subjects is higher than that of males				
	1.5	Learner enrolment in MET subjects is on the upward trend.				
Facets of interest		Description of indicators	SD	D	A	SA
		<b>STATEMENT</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>2.Training facilities and utilization</b>	2.1	Teaching and learning resources for each subject are available				
	2.2	Physical infrastructure is remarkable				
	2.3	A spacious and well- equipped workshop exists				
	2.4	Workshop facilities and consumables are adequate				
	2.5	Adequate budgetary provisions for consumables and maintenance work				
	2.6	Class rooms, laboratories / workshops are adequately utilised				
	2.7	Tools & equipment are adequately used and managed				
	2.8	Learners are afforded time for practical's				
Facets of interest		Description of indicators	SD	D	A	SA



## Appendix 6. Certificate from the editor



To whom it may concern

The thesis entitled “An assessment on the provision of manufacturing engineering and technology (met) subjects in the FET band in the Sisonke district” has been thoroughly edited and proofread as of 01 February 2016. I verify that it is ready for publication and/or public viewing as it is up to the expected standard.

*Please take note that Exclamation Translations takes no responsibility for any content added to the document(s) after the issuing of this certificate.*

Kind regards

A handwritten signature in black ink, appearing to read "Melissa Labuschagne", is written over a light grey circular stamp.

Melissa Labuschagne

---

Melissa Labuschagne trading as Exclamation Translations.

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## Appendix 7. Turn it in report

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