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A critical analysis of the South African Organising Framework for Occupations for skills planning in the Chemical Sector

Research Report

Submitted for Masters of Education Research Project to the Wits School of Education, Faculty of Humanities at the University of Witwatersrand in partial fulfilment of the requirements for the degree of Master of Education

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Master of Education

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_____

Melissa-Ann Dorothy Erra

Date

20 July 2018

Dedication

To my daughters Makayla and Angelique

Your passionate curiosity about life and the light within you inspired my awakening!

Abstract

The interface between the world of work and education has been the subject of much interest over the past decade in the light of high youth unemployment and low economic growth in South Africa. Many countries undertake skills planning in order to better identify the skills needed to bolster economic growth.

The rapid economic growth in Asian countries has been attributed to the state adopting a centrally-driven skills planning approach in order to realise a stable labour market. (Ashton, Green, Sung, & James, 2002).

In contrast, skills planning in SA is demand-led and undertaken by Sector Education and Training Authorities (SETAs). SETAs develop sector skills plans informed by data collected from employers indicating the skills needed and the education and training required. Reviews of sector skills plans highlight that the quality and relevance of the data collected from employers is a vital component for skills planning (Marock, Yeowart, & Singizi, 2012). Considering policy learnings from Asian countries and skills planning approaches and methodologies, the SA government is developing a central skills planning mechanism. Data collected from employers on their skills needs is vital for both demand-led skills planning and centrally-driven skills planning.

According to official documents, the Organising Framework for Occupations (OFO) was introduced to collect better data from employers and to create a common language for skills planning. The use of the OFO entails the clustering of millions of jobs into occupations to enable dialogue on skills demand and supply. However very little research has been undertaken on the utilisation of the OFO for skills planning.

This study focuses on the use of the OFO by employers and officials responsible for skills planning in the chemical sector. The Chemical Industries Education and Training Authority (CHIETA) was identified as one of the SETAs that actively placed the concept of occupation and the use of the OFO as a central pillar in sector skills planning.

Using a mixed-methods research approach, data was collected from CHIETA and employers in the chemical sector. The qualitative data collected and analysed included source documents and interviews conducted with CHIETA officials and employers. The quantitative data was collected and analysed through a survey conducted with all employers in the chemical sector. The analysis of the data collected provides insights and understanding of the challenges and experiences of employers and CHIETA officials who utilise the OFO. The insights will be of particular interest to those involved in skills planning like policy makers, researchers, and employers.

Keywords: Occupational classification system, Organising Framework for Occupations, sector education and training authority, sectoral skills planning and Education and Training

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Acronyms

CHIETA:	Chemical Industries Education and Training Authority
DHET:	Department of Higher Education and Training
DoL:	Department of Labour
ILO:	International Labour Organisation
ISCED:	International Standard for Education
NQF:	National Qualifications Framework
OFO:	Organising Framework for Occupations
SETA:	Sector Education and Training Authority
SSP:	Sector Skills Plan
WSP:	Workplace Skills Plan

1 Chapter One: Introduction

1.1 Introduction and Background to the study

This study investigates whether the Organising Framework for Occupations (OFO) has been able to create a meaningful interface between the distinct domains of education and work in the chemical sector, for the purpose of skills planning. To obtain insights on how the OFO was used, the sector education and training authority (SETA) for the chemical sector, namely the Chemical Industries Education and Training Authority (CHIETA), was selected because of their active use of the OFO for skills planning.

SETAs are institutions legislatively established with the function of planning and supporting skills development for specifically demarcated industries (Department of Higher Education and Training, 2010). CHIETA is one of 21 SETAs. One of its key functions is to develop a skills plan for the chemical sector.

As mandated under section 26J (1) (l) of the Skills Development Act (SDA), the Department of Labour (DoL) introduced the OFO as an occupational classification system in 2008 for South Africa. In 2010, upon the establishment of the Department of Higher Education and Training (DHET), the skills development function, including the OFO, was transferred from the DoL to DHET. As skills planning and research is reliant on data from the labour market, specifically employer data on jobs, the DHET identified the OFO as a mechanism to improve the quality of data submitted by employers to inform skills planning and, accordingly, adopted the OFO to support skills planning undertaken by the SETAs.

The CHIETA implemented the OFO in 2013 as a mechanism to collect data from employers to inform their research and skills planning processes. With this data they sought to identify a) the occupations and/or skills required by the sector and b) education and training interventions required to address these identified occupations and/or skills.

The research investigated how CHIETA and employers have used the OFO to inform skills planning and implementation, and whether the use of the OFO has enabled

key role players to identify skills needed and the education and training interventions required to address the skills needed.

A decade has passed since the introduction of the OFO and little research has been conducted to establish whether the OFO has supported skills planning. I therefore focused on the chemical sector and examined how the CHIETA and employers in that sector have used the OFO in skills planning.

Lastly, the questions that guided the scope of this research report are outlined in section 1.5. The research questions frame the structure of this research report.

1.2 What is skills planning and its importance in South Africa?

In South Africa (SA), it is commonplace to hear that there is a skills shortage (Kruger, 2016) and that the perceived objective of education and training systems is to address the skills shortage. Education and training has become a key government policy priority in SA as a means to bolster the economy. The National Planning Commission, for example, argues,

> South Africa has set itself the goals of eradicating poverty, reducing inequality, growing the economy by an average of 5.4 percent, and cutting the unemployment rate to 6 percent by 2030. Education, training and innovation are critical to the attainment of these goals. (National Planning Commission - National Development Plan 2030, 2013, pp. 297–297).

The education system and the labour market therefore need to work together for SA to realise its socio-economic policy objectives.

To support the realisation of these socio-economic policy objectives, a mechanism to undertake skills planning is currently under development for SA. Skills planning is of international interest and the literature highlights that skills planning is complex (Keating, 2008; Powell & Reddy, 2014; Wilson, Woolard, & Lee, 2004). It is beyond the scope of this study to provide a framework for skills planning for SA. It is, however, important to indicate that sectoral skills planning has been undertaken since 2001 through SETAs (Marock et al., 2012).

Three key levels of analysis inform sectoral-based skills planning (Department of Higher Education and Training, 2015, pp. 10 & 11). Firstly, an analysis and identification

of labour market skills that are in demand. Secondly, an analysis of the supply of skilled labour including qualification and skills obtained from the education and training systems. Thirdly, a cross correlation analysis of skills in demand and supply of skilled labour to determine the skills gaps and skills shortages referred to as the extent of skills mismatch. Thus, skills planning provides insights about the labour market and provides signals to the education and training system.

It is commonly perceived that if the labour market and employers indicate the skills required, then the education and training system would immediately produce the type of skilled workers required. However steering education and training provision to respond to the skills needs of the labour market is complex and does not translate directly to skills supply. Numerous authors (Gamble, 2016; Moore, 1987) argue that the relations between work and education are indirect as each system has its own and distinct system purposes, policies and institutional arrangements. Thus understanding the internal logic of education and work and the relationship between these two systems has become of critical importance to inform approaches to address the skills needed.

The coupling of economic growth, labour market demands, and education supply assume and reinforce the human capital notion that there is a direct relation between education and work. Human capital theorist, Schultz (Schultz, 1961, p. 1), contends that as a result of investments in education, the "quality" of human efforts are improved and productivity is enhanced and this accounts for the rise in wages per worker. However, key critics of human capital theory, Bowles and Gintis, argue that this theory eliminates sociological and class concepts which are central to economics and the labour market and this may explain why education does not contribute evenly to earnings for individuals (Bowles & Gintis, 1975, p. 75). Bowles and Gintis (1975) further argue that while investment in human capital is important, the skills and knowledge that the worker acquires do not automatically make them productive (Bowles & Gintis, 1975, p. 77).

Further critiques of human capital notions consider the ideological relations between education and work are posited by Moore (1985) and Gamble (2016). Both argue that the relations between education and work are indirect and define direct relations as being based on an assumption that there is a fundamental,

underlying continuum between education and work (Moore, 1985, pp. 3–4). Further Gamble (2016, p. 216) adds that the direct relation between education and work is based on the assumption that the requirements of work can be translated into effective educational forms. Thus understanding the links between education and work has become of critical importance to researchers and policy makers.

It can be inferred that ineffective skills planning and implementation has led to or exacerbated the perceived skills shortages (Department of Higher Education and Training, 2013; Marock et al., 2012). However, reviews indicated that although the success of sectoral skills planning has varied (Department of Higher Education and Training, 2013; Marock et al., 2012), there is a need to improve skills planning and implementation. One of the tools introduced to improve skills planning is the OFO. According to policy the OFO was introduced to collect better data from employers so as to inform skills planning[1].

1.3 Problem Statement

Relevant and quality employer data is crucial for skills planning, hence the focus area for this study is the use of the OFO tool to collect employer data. Literature reviews of the skill systems in South Africa show that poor data is a significant factor undermining skills planning. Drawing on the reviews on the performance of the SETAs, specifically in relation to skills planning, Marock, Yeowart, & Singizi (2012, pp. 3–4) posit three critiques of sectoral skills planning.

The critiques summarised are, firstly, Sector Skills Plans' (SSPs) focus on immediate skills needs sourced from workplace skills planning data and some SETAs may not have used wider sources of research data or relevant methodological approaches. Secondly, there is insufficient translation of the skills demands to inform skills supply. Thirdly, sectoral planning has not translated to the medium to long-term support of national priorities such as the New Growth Path (NGP). The golden thread inherent in the numerous recommendations outlined by Marock et al (2012) and the Ministerial Task Team on SETA performance (Department of Higher Education and Training, 2013) highlights that the quantity and quality of labour market information needs to

[1] Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 5

improve while understanding the limitations of data (Marock et al., 2012, p. 34). The report *Alignment of Sector Skills Planning to the New Growth Path* recommends that

> more effort needs to made in SETAs to extract the 'employer voice' accurately and substantively, both in terms of the manner in which quantitative data is collected (as indicated this is currently through the workplace skills plan and annual training report) and in terms of direct engagement to support the collection of qualitative data. SETAs could look at the establishment of 'Expert Groups', who are focused specifically on articulating this voice in relation to skills needs (Marock et al., 2012, p. 35).

Thus, improving employer data submitted to SETAs is a critical priority to support sector skills planning as well as translating skills demand to skills supply in order to support economic development.

Quality and relevant data is required to inform the two key components of skills planning namely: the identification of skills required by employers, and the education and training interventions required to meet the skills needed by employers. The underpinning component of the skills planning process is to extract the 'employer voice' to understand the skills needed by employers. Employers submit annual data on employees, skills needed, and planned and actual education and training interventions for the short term through a Workplace Skills Plan and Annual Training Report (hereafter referred to as a workplace skills plan (WSP).

The collection and analysis of this data would presumably provide insights on skills in demand and signals for education and training supply. One feature of the WSP is that data provided must include an occupational classification code using the OFO[2]. Elias (1997, p. 14) indicates that to improve the quality of data some countries adopt occupational classification systems such as the OFO in order to collate information from the labour market to inform skills planning. In SA, employers submit data through the WSP linked to the OFO that is collated and analysed to inform sector skills planning.

As indicated, sector skills plans are the subject of much criticism as articulated in the various reports (Ministerial Task Team Report: SETA Performance, 2013; "Green Paper

[2] Workplace Skills Plan (Appendix 7)

for Post-School Education and Training," 2012; Marock et al., 2012) and potential to support national policy imperatives in SA to identify and address the skills needs identified. Much of the criticism of the sector skills plans relates to concerns regarding the reliability and credibility of the plans to identify specific occupational shortages and needs, and to translate these needs into specific education and training interventions (Department of Higher Education and Training, 2013, pp. 22, 26, 2015, p. 17).

Underpinning these critiques are concerns about the mechanisms that are used for sector skills planning, i.e. the WSP and the OFO. Specifically, the concerns regarding the OFO relate to its relevance in supporting the collection of data about the labour market for the purposes of skills planning and how it has supported the translation of occupational skills demand to education provision (Department of Higher Education and Training, 2013, p. 23).

SETAs officially use the OFO. Nevertheless, very little information is available about how it works or even how it is used or whether it supports the SETAs in obtaining reliable data from employers. The literature highlights that the adoption and use of occupational classifications systems are not homogenous across countries. The purpose and use of occupational classification systems are underpinned by country specific contexts and socio-economic factors (Allais, Marock, & Molebatsi, 2015; Elias, 1997; Standing, 2009). While insights from research on other occupational classification systems are useful, it is important to obtain insights specifically on the use of the OFO for skills planning in SA. There is currently little literature on the use of the SA OFO or whether the OFO provides signals for demand and supply.

As an official in the Department of Higher Education and Training working with the SETAs, I engage with the OFO on a daily basis and am aware of the structure and features of the OFO at a mechanical level. However it is not clear from the documents how SETAs have implemented and used the OFO.

As such, the purpose of this study was to address the knowledge gap to contribute to the debates and recommendations for national and sectoral skills planning mechanisms in SA. Moreover, the study provides a framework conceptualised as informed by the literature to analyse how the OFO is used and whether it has created an interface between education and work domains. This framework will need to be

further developed, adapted and applied to analyse how other SETAs or institutions have used the OFO for skills planning. Before turning to the literature review the scope of the Chemical sector is provided.

1.4 The Chemical Sector

As this study was undertaken within the ambit of the chemical sector, it is important to provide insights on the CHIETA and the core business of employers that reside within the chemical sector.

The purpose of developing the sector skills plan ("CHIETA Sector Skills Plan 2016/17," 2017) is to identify the skills needed by the sector and to provide funding for education and training interventions and other interventions that will address the skills required by employers, in order to respond to the needs of labour market. To perform these functions the CHIETA acts as an intermediary body. Petersen, Kruss, McGrath, & Gastrow, (2016, p. 409) define sectoral intermediaries as organisations within specific sectors that connect, translate and facilitate information flows as well as offer services that are essential. The CHIETA undertakes intermediary activities with key actors in the chemical sector such as, amongst others, employers, education and training institutions, and trade unions, to plan and support skills development interventions to address skills needs.

The CHIETA covers the following Standard Industrial Classification Codes in South Africa (SIC) as outlined in Table 1. SICs is defined as "classification of economic activities of industries. An industry consists of establishments engaged in the same or a closely related kind of economic activity based mainly on the principal class of goods produced or services rendered" ("Standard Industrial Classification of all Economic Activities (SIC) Fifth Edition," 1993). Column 2 describes the scope of these SICs. The CHIETA groups these SICs under nine sub-sectors (Column 3) which it in turn clusters into five chambers (Column 4). This table is useful as it outlines the scope of the Chemical sectors as well as to highlight the core business of employers that reside within the Chemical sector.

Table 1. CHIETA Industrial Composition and Scope of the Chemical Sector for this study

SIC Code	Scope of Coverage/Description	Subsector	Chamber
33410	Manufacture of basic chemicals, except fertilisers and nitrogen compounds	Base Chemicals	Petroleum and Base Chemicals
33430	Manufacture of plastics in primary form and of synthetic rubber		
34000	Manufacture of other non-metallic mineral products		
41210	Manufacture of industrial gases in compressed, liquefied or solid forms		
33100	Manufacture of coke oven products	Petroleum	
33200	Petroleum refineries/synthesisers		
61410	Wholesale trade in solid, liquid and gaseous fuels and related products		
87140	Industrial research, e.g. fuel research		
33501	Chemically-based general household and personal care products	Fast-Moving Consumer Goods	Fast-Moving Consumer Goods and Pharmaceut-icals
33541	Manufacture of soap and other cleaning compounds		
33543	Manufacture of beauty products		
33530	Manufacture of pharmaceuticals, medicinal chemicals and botanical products	Pharmaceut-icals	
33592	Manufacture of explosives and pyrotechnic products	Explosives	Explosives and Fertilisers
11600	Production of organic fertiliser	Fertilisers	
33420	Manufacture of fertilisers and nitrogen compounds		
33421	Manufacture of raw materials and chemical compounds used in agriculture		
33502	Manufacture, sale and/or distribution of diversified speciality chemicals for industrial use	Speciality Chemicals	Speciality Chemicals and

SIC Code	Scope of Coverage/Description	Subsector	Chamber
36400	Manufacture of accumulators, primary cells and primary batteries		Surface Coatings
33520	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	Surface Coatings	
39005	Powder coating		
34110	Manufacture of glass and glass products	Glass	Glass
34112	Manufacture of glass containers; glass kitchenware and tableware; scientific and laboratory glassware, clock and watch glasses and other glass products not elsewhere classified		

1.5 Research Questions

1.5.1 Primary Research Question

1. How have the CHIETA and employers used the OFO for Sector Skills Planning and has it created an interface between education and work?

1.5.2 Secondary Research Questions

1. How have the CHIETA and employers used the OFO to inform Skills Planning?

2. How have the CHIETA and employers in the chemical sector used the OFO to identify skills needed?

3. How have the CHIETA and employers in the chemical sector used the OFO to identify education and training interventions to address the skills needed?

4. Has the CHIETA addressed the skills needed based on the education and training interventions identified by the OFO?

2 Chapter Two: Literature Review

The literature highlights various ideologies and concepts such as occupation and skills which have sought to create an interface between the domains of education and work. Concepts have been adopted to link and translate the demand of the labour market to education, so that the education system produces and supplies the types of skills required for the labour market and employers (Allais et al., 2015; Gamble, 2016; Standing, 2009).

The first part of this chapter outlines debates on relations between education and work to argue that an interfacing concept is required between these distinct domains.

The second part of this chapter will discuss approaches to skills planning.

The third part of the chapter will discuss the concepts embedded in skills planning and the occupational classification systems.

The fourth part of the chapter will discuss the literature on occupational classification systems.

Lastly, an overview of the SA OFO is essential for comparison, to establish whether it is inclusive of features that look both ways to the world of work and education.

2.1 Distinct Domains: Education and Work

Gamble (2016) and Moore (1985, 1987) argue that the relation or interface between education and work are not direct nor is there a fundamental, underlying continuum between the two.

Gamble (2016, p. 216) further adds that the direct relation between education and work is based on the assumption that the requirements of work can be translated into effective educational forms. The identification of the two distinct domains makes it clear that seeking concepts and ideologies that create a meaningful interface is critical.

Although the interface between education and work is the core focus of this chapter and study, it is important to highlight that there are other systems, policies and

institutional relations that need to be considered such as social welfare, financial and labour regulation.

Countries such as SA, with reported skills shortages and a skills mismatch, aspire to have stable occupational labour markets. Drawing on various literature (Allais et al., 2015; Hall & Soskice, 2001; Iversen & Stephens, 2008) some insights on coordinated market economies with stable occupational labour markets will be provided.

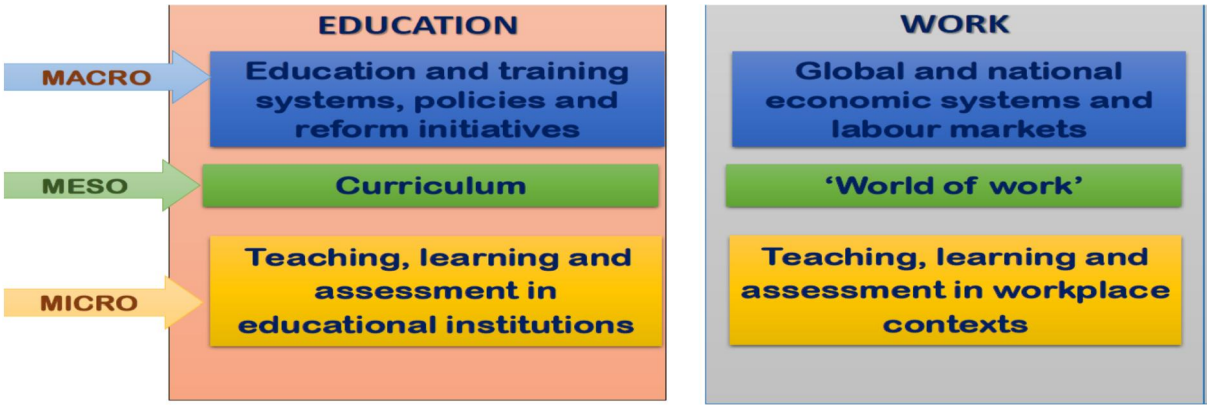
Iversen & Stephens (2008) posit that countries in Western Europe have stable occupational labour markets with high levels of investment in public education and training. This encourages both high levels of general and industry specific skills to respond to the changing needs of the labour market in conjunction with social welfare, fiscal policy support, and strong education and work relations (Iversen & Stephens, 2008).

It is beyond the scope of this chapter to discuss the interface and policies of each characteristic or feature of stable labour markets. However, it can be surmised that SA will need to align policies for education and work systems as well as reinforce and align across policy systems (e.g. social, labour regulation and fiscal policies) in order to strengthen relations between education and work. These insights provide policy learnings for SA in its pursuit of addressing skills shortages.

This study, however, requires that a direct focus on the interface between the two systems of education and work be highlighted in order to argue that these are two distinct systems. The next section sets out to discuss education and work as separate systems.

Gamble (2017, p. 7) provides a three layered socio-educational stratification as depicted in Figure 1. The image developed by Gamble presents the stratified education and work domains as parallel, distinct logics with distinct internal properties.

Figure 1. Stratified Education and Work Domains Distinct and Parallel



Sourced from (Gamble, 2017, p. 7)

- At the macro level are education and work systems and policies,
- at the meso level of analysis are the curriculum and the world of work, and
- at the micro level are teaching, learning and assessment in education and work domains respectively (Gamble, 2016, p. 216).

At the macro level of analysis of education and work systems, policies and institutional arrangements, the relation between education and work is neither continuous nor direct. Therefore Moore (1987, pp. 8–9) argues that education and work are distinct domains each having their own internal properties and logic.

The literature provides two concepts to explain the relationships that could be arrived at through this study. The first is a direct relationship, where both outputs (skills needed and education and training identified) appear to be closely correlated on the occupational classification system.

A simplistic example of what could emerge is an identified occupation in demand, for example a maritime lawyer, corresponding to the qualification required to be a maritime lawyer, for example a Masters in Law specialising in maritime law being depicted on the OFO. This example indicates a direct relationship between what is required (skills needed), and what is available from the education system.

The second concept is an indirect relationship or bridge where the OFO has been able to create a flexible link between education and work. For example, the occupation in demand is maritime lawyer and the qualification required is a law

degree; thus, graduates from any field of law may address the demand for maritime lawyers.

Further, each domain is underpinned by its own specific context and its own inherent notions of struggle, resistance and contestation. Further, there is no simple correspondence between educational practices and economic production as each carries its own distinct notions of labour (Clarke & Winch, 2006, p. 267; Gamble, 2016, p. 216). Therefore, bringing the two domains into one combined domain at the macro level, may not be plausible considering their distinct system purposes.

However, Moore (1987, p. 227) argues that approaches to reconcile the relationship between the two domains, such as outcomes-based systems, are based on shared notions such as skills and competence which has led to the ideology of production-regulating education.

In a similar vein, Allais (2012, p. 253) argues that education policies developed mimic economic ideas, and Moore (1987, p. 227) highlights that education does not service production but mimics production. As a result the way production is represented in education actually has very little to do with the actual reality in the world of work (Gleeson, 1986, p. 389).

It therefore can be argued that reconciling or creating an interface between the two domains may be plausible at the macro level of policy if a shared concept underpins the reconciliation between the domains. Education and work domains are characterised by its country context and by the systems, policies and institutional arrangements. Thus work and education do not mirror each other in terms of systems, policies and institutional arrangements. The distinction between work and education ideologies has implications for the curriculum and the world of work. This study explores the concept of occupation to establish whether it is a shared concept between the two domains for the purpose of skills planning.

2.2 Notions of Skills Planning

Skills planning has become a key policy lever internationally and in SA to address the skills needed by the labour market to support socio-economic priority objectives. The literature indicates various approaches and methods employed to undertake skills planning based on the context within which it is used. This section will outline the

approach adopted in SA while considering the overall approaches identified from the literature. The methods employed to undertake skills planning as informed by Wilson et al (2004) will be discussed.

According to Wilson, Woolard & Lee (2004) there are two approaches to undertaking skills planning. The first is demand-led skills planning and the second is a centrally-driven skills planning system.

In South Africa, skills planning is demand-led. In other words, the labour market through employers, identifies the skills needed and the type of education and training required. There is currently work underway to conceptualise and establish a national skills planning mechanism (Powell & Reddy, 2014).

Similarly, in Latin America, the labour market drove skills planning and not industrial policies (Ocampo, 2014). This market-friendly approach realised improvements in financial allocations and increases in education (Ocampo, 2014). However shifts in industrial policies coupled with labour market contraction led to the unemployment rate increasing while a shortage of skills for new industries rose due to the lack of planning for the supply to meet the new skills required (Ocampo, 2014).

The rapid economic growth in the East Asian tigers such as Hong Kong, Singapore, Taiwan, Japan and Malaysia is attributed to centrally-driven skills planning (Ashton et al., 2002). Skills formation was aligned to industrial policies and informed the identification of skills needed. Thus, the state steered the supply of education and training to meet the skills needed.

Skills planning and the approaches adopted have implications for skills needs identification. Wilson et al. (2004) posits that skills planning entails four methods, namely:

- national quantitative models,
- sectoral skills planning,
- focus group interviews, and
- employer surveys.

In support of the latter, the literature highlights that employer surveys provide insights into the skills needed by employers. As such it is in line with demand-led skills planning. A critique of this approach is that while employers may identify the skills needed, it is often short term, and is narrowly defined within the context and labour processes of the employer. As such it does not strive to address industrial policies (Marock et al., 2012; Wilson et al., 2004).

On the other hand, employer surveys provide valuable insights that can inform the debates and complimentary methods adopted for skills planning. The literature also highlights that the concepts, understanding and approaches for identifying skills needed are not homogenous across employers thus bringing the relevance and reliability of the employer survey approaches into question (Marock et al., 2012).

I argue that labour market data from employers has its limitations, nevertheless it does provide the basis for engagement and debate on the type of skills needed by the labour market. To be effective, the gathering of this data must be done in conjunction with skills planning approaches and methods of national quantitative models, sectoral skills planning and focus group interviews as argued by Wilson et.al (2014).

The next section will discuss the concepts underpinning skills planning and occupational classification systems.

2.3 Concepts: Skills, Qualification, Job and Occupation

An analysis of the literature highlights that there is a plethora of definitions and notions of skills, qualification, job and occupation that are not commonly understood. Such varied notions have implications for skills planning. I therefore first discuss these different concepts then identify the organising concepts adopted for occupational classification systems.

Clarke and Winch (2006, pp. 255 & 267) argue that the notions and differentiation of 'skills' and 'qualification' are determined within specific country contexts, thus finding equivalence between these concepts is extremely difficult. Ashton and Green (1996) refer to 'skills' in terms of social attributes, general education, training, qualification and technical skills, while Becker (1964) defines "skills as human capital", and Braverman (1974) conceptualises "skill in the job and skills socially constructed through negotiation". Further, Clarke and Winch (2006, p. 257) posit the Anglo-Saxon concept

that "skills are applicable within industries, occupations and jobs and attached to specific tasks" but argue that skill and qualification are different. Whilst there is a link between qualification and employment, it does not guarantee that someone has the skills. Thus, the notions of skills and qualifications are differentiated in skills planning.

The concept of 'occupation', according to Standing (2009), depends on triggers such as the era, the context of use, country context, and social and economic factors amongst others and thus it is difficult to provide a definition. A variant definition of occupation is provided by McLennan (1997, p. 5) who posits that an occupation is a set of jobs which are sufficiently similar in their main tasks such that they may be grouped together for classification. A critique of this definition is that it is narrowly defined and based on the "obscure notion of skill" considering the use of "tasks" and "groupings" (Allais, 2012; Barnett, 2006; Clarke & Winch, 2006). Standing (2009, p. 12) argues that the underlying principles and purpose of using the concept of occupation should be explicit when defining and adopting a concept for occupation.

Drawing on the occupation literature, principles and purposes are embedded in the concept of occupation. Standing (2009, pp. 10–12) indicates that the use of the concept of occupation dates back as far as the 16th century and is a social construct. In other words the use of the concept of occupations was constructed within a specific context and used for a specific purpose. Thus, Standing (2009) posits that to change the way the concept of occupation is constructed, understood and used takes time. Further, Standing (2009) and Freidson (2001) posit that the concept of occupation provides a means for those who control the labour market or the occupation to determine who has the right to practice within a claimed occupational jurisdiction.

The use of the concept of occupation does not mean that an occupation is homogenous as the context within which the occupation is used informs the specific construct of that occupation (Standing, 2009, pp. 10–12). The concept of occupation provides the basis of purposive compacts within a specific occupation with its own "secret" occupational lingua and practices. Standing (2009) indicates that in the light of the control, the construction of the concept of occupation lends itself to hierarchal constructs that enable and support the division of labour.

Although the earlier use of the concept of occupation related to paid work, the use of the concept is not purely a productive activity as it provides for individual identity to being, becoming and belonging (Njelesani, Tang, Jonsson, & Polatajko, 2012, p. 227). Standing (2009) indicates that occupation is also linked to the idea of vocation such as the sense of calling and religious connotations for individuals to enter certain occupations. Lastly, Standing (2009) argues that the concept of occupation contributes to society as it either supports and/or rejects reproduction of social or economic relations.

The analysis of the principles and purposes of using the concept of occupation as outlined by Standing (2009) indicates its importance for society, the economy and the individual. Townsend (1997, p. 18) takes it one step further to argue that the idea of occupation has the potential to transform individuals and society.

Considering the principles and purpose of using the concept of occupation, a broader and stronger definition of occupation is required. Clarke (2011, p. 103) defines an occupation as being

> a formally recognised social category, with regulative structure concerning Vocational Education and Training (VET), qualification, promotion and the range of knowledge, both practical and theoretical that is required to undertake the activities that fall within it.

The definition is inclusive of both notions of education and the world of work and thus provides for individual agency, societal and economic activities. However, the definition and the consideration of the principles reflect the power relations based on interests and perspectives and divisions of labour across and within occupations (Allais et al., 2015, p. 13).

The concept of occupation and its importance are embedded in occupational classification systems including the OFO. Thus Elias (1997, pp. 14–15) highlights that countries are at different stages in adopting and/or using occupational classification systems. Moreover the development and adoption of these systems are not straightforward as they carry with them the tensions and power relations tied to the concept of occupation.

Further, the literature highlights an additional concept of 'job' and a different definition of skills that are used to organise and update occupational classifications systems.

Occupational classification systems are not static and need to be flexible to reflect changes in the labour market. The occupational classification literature highlights two approaches to develop and update classification systems. The first sets the structure and the second considers factors and inputs to update classification systems. Elias (1997, pp. 5–6) indicates that there are specific organising concepts that influence the features, structure of occupational classification systems and the scope of information that is required (ibid).

Firstly, there are organising concepts inherent in occupational classification systems namely skill and job. The definition of a 'skill' is 'the ability to carry out the tasks and duties of a particular job'(Elias 1997, pp. 5–6). A 'job' is defined as a set of tasks designed to be performed by one individual in return for a wage or salary, while an occupation is a set of jobs which are sufficiently similar in the main tasks such that they are grouped together for classification (McLennan, 1997, p. 5).

In English speaking countries occupational classification systems are mainly based on the concept of "skills" as the central organising concept for classification (Budlender, 2003, p. 10). Classification of jobs and skills is based on the similarity of tasks within the structure of the occupational standard system ("International Standard Classification of Occupations Structure, group definitions and correspondence tables," 2012, p. 11). Secondly, Kotzee (2014) indicates that these systems have been revised and updated due to factors such as globalisation, technological advances and challenges experienced with the system.

Occupations are organised based on concepts that reflect the world of work and not education. A critique of the organising principles extracted highlight narrow notions of the concept of skills and job. Such debates on the concept of skills reveals that it is a complex concept and not commonly understood and used.

In summary, there are four concepts inherent in an occupational classification system: occupation, job, skill and qualification. The relationship between these concepts is neither clear nor explicit. Without having unpacked the structure and features of

occupational classification systems, it is already apparent that occupational classification systems and the concepts that underpin them are complex, not homogenous and not commonly understood.

2.4 Occupational Classification Systems

Considering the underlying conceptual tensions in occupational classification systems and skills planning, the literature on occupational classification systems and their use highlights that the context and use of occupational classification systems are also not homogenous. This section outlines how English-speaking countries such as Australia, Canada, New Zealand and Ireland use occupational classification systems.

The literature makes it clear that in order to obtain meaningful data from the labour market to inform skills planning and educational provision, some countries adopt national systems for occupational classification systems (Allais et al., 2015; Elias, 1997). Occupational classification organises millions of jobs into discrete groups based upon similarities as determined by the classification concepts used for statistical purposes (Emmel & Cosca, 2008, p. 1). However, Allais et al. (2015, p. 3) highlight a critical distinction in English-speaking countries that adopt national systems for occupational classification systems. Occupational classification systems should form part of a broader policy mechanism that supports skills planning considering the broader socio-economic context of a country. The use of occupational classification systems should not be narrowly confined to labour market or statistical analysis purposes. In other words, occupational classification systems carry with them underlying ideologies and concepts that have implications for the way they are used and for what purpose.

There are various countries and actors that use occupational classification systems for various purposes (Hoffmann, n.d., pp. 4–5). The International Labour Organisation (ILO) uses the international system for occupational classification for national and regional classification, while some countries set up domestic systems for occupational classification. Human Resource Development Canada has adopted the Canadian National Occupational Classification for skills forecasting. This supports public policies for the labour market, social development, early childhood and post-secondary education, in conjunction with Statistics Canada (Allais et al., 2015, p. 24).

Australia and New Zealand use the standard classification of occupation for skills forecasting using the surveys conducted by the Australian Bureau of Statistics. These are in turn used by national and state authorities for statistical and administrative purposes such as to steer skills funding (Allais et al., 2015, pp. 19–20). Thus, the use of occupational classification systems are not homogenous nor are they used for the same purpose by similar institutions across these countries.

2.5 Organising Feature of Occupational Classification systems

This section will explain the features and structure of occupational classification systems to gain insights on feature/s that may provide signals for skills needed and educational provision.

Features that are used to classify jobs and skills are skills level and skills specialisation. The Australian Standard Occupation system defines skills level as a set of tasks that are ranked based on complexity: the greater the complexity, the higher the skills level (McLennan, 1997, p. 5). Skills level is measured by considering the nature of work, the level of formal education and the amount of informal on-the-job training and /or previous experience required to competently perform the job (ibid). Thus, the measurement of skills level could provide information on education as well as changes in tasks due to new technology and the amount of on-job training. Skills specialisation is determined by the "field of knowledge required, tools and equipment used, materials worked on, and goods or services provided in relation to the tasks performed" (McLennan, 1997, p. 6).

After exploring features of occupational classification systems, it may appear that information on skills level and skills specialisation held by an individual may provide insights for educational provision. However the ILO cautions that information on skills level or formal qualifications held by an individual is not necessary and not useful when collected from employers ("International Standard Classification of Occupations Structure, group definitions and correspondence tables," 2012, p. 53). This could be due to the qualification status of an individual employee being different from the job description and the kind of education required for a job. Individual employee education information may indicate that an individual is overqualified or underqualified for the job. This could lead to error and introduce a bias in the relationship between data on occupation and level of education (ibid). As such, this

presents limitations for the use of occupational data and the use of occupational classification systems.

2.6 South Africa's Organising Framework for Occupations: Structure, Concepts and Education and Training framework

This section will explain the purpose of using the OFO in SA, how it defines occupation and its structure in order to identify whether it is inclusive of both elements of education and work. Considering that there was no literature on the SA OFO, the OFO Guideline issued by the DHET has been utilised to provide insights on the SA OFO and to compare with the international literature.

> The purpose of the Organising Framework for Occupations is to establish a common language for talking about occupations. In terms of skills development it enables labour market dialogue for talking about skills demand and supply ("Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 1).

The guideline further goes on to indicate that the OFO is a tool for skills planning so as to identify, report and monitor *skills demand and skills supply* in the SA labour market ("Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 4).

In addition the OFO adds value to *skills planning and implementation* as it provides a common language about 'jobs' as jobs are captured into an occupation that can be further grouped into broader categories of occupations and the hierarchal level of occupations are based on similarities of *task, skills and knowledge* (Ibid).

In SA, the South African Statistical Agency (STATSSA) uses the South African Classification for Occupations (SASCO) for national statistical purposes. Institutions such as the SETAs use the OFO for undertaking skills planning within their specific segment of the labour market.

In summary, in SA there are two different occupational classification systems utilised, namely SASCO and OFO. Institutions utilise these systems for differing purposes, albeit that the source of the occupational data stem from employers in SA.

The definition for occupation as embedded in the SA OFO provides further insights into the scope of the OFO. Occupation is defined as "a set of jobs whose main tasks

and duties are characterised by a high degree of similarity (skill specialisation)" ("Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 6). This is a narrower definition than that posited by Clarke (2011, p. 103) discussed earlier. The OFO definition groups jobs that perform similar tasks and duties.

The definition of occupation also highlights that inherent to defining occupation is the notion of skill. Skill is defined "as the ability to carry out the tasks and duties of a given job" ("Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 6). I argue that the OFO definition of skill is narrowly defined and specifically related to the world of work.

In search of the interfacing concepts, it was important to identify the concepts embedded in the OFO and the approach adopted to peg jobs to the OFO. By doing this it was possible to examine how education and work domains related to each other conceptually and/or technically.

However, an analysis of the OFO 2013 highlights some key insights on notions of education and work for the purpose of skills planning. While the OFO has a structure and features to inform occupational classification, it is complex and not easy to understand due to the underpinning concepts of occupations, skills and hierarchal principles that are not explained to a user. The structure of the OFO is depicted in Figure 2 ("Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 10).

Figure 2. Structure of the OFO



Sourced: "Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 19)

The OFO consists of eight hierarchal levels, referred to as major groups consisting of:

1. managers,
2. professionals,
3. technicians and associate professionals,
4. clerical support workers,
5. service and sales workers,
6. skilled agricultural, forestry, fishery, craft and related trade workers,
7. plant and machine Operators, and assemblers
8. elementary occupations

as depicted in Figure 2.

Table 2 below indicates that 1448 occupations were recorded on the OFO in 2013.

Table 2. OFO: Grouping and Number of Occupations

Major Groups	Sub Major Groups	Minor Groups	Unit Groups	Occupa-tions	Green Occupa-tions	Trades	ISCO Skill Level
1 Managers	4	11	32	135	3		3 + 4
2 Professionals	6	27	92	369	47		4
3 Technicians and Associate Professionals	5	20	84	274	35	1	3
4 Clerical Support Workers	4	8	29	68			2
5 Service and Sales Workers	4	14	46	111		1	2
6 Skilled Agricultural, Forestry, Fishery, Craft and Related Trades Workers	7	20	84	249	7	116	2
7 Plant and Machine Operators, and Assemblers	3	14	40	144		7	2
8 Elementary occupations	6	11	33	98	4		1
Total	**39**	**125**	**440**	**1448**	**96**	**125**	

Sourced: ("Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 19)

Each major group is categorised further into sub major group, minor group, unit group and occupations as indicated in Table 2. The group levels demarcate the level of grouping of occupations and descending order of specialisation for each occupation. A number is provided to indicate the hierarchy, grouping and specialisation ranging from 1 to 6 digit coding as well as the year in which the OFO was published (in this case 2013).

This is followed by a section with tasks and duties generalised to occupations on the OFO and linked to an OFO code. In addition, the OFO demarcates the occupations

using symbols to indicate whether the occupation is considered as a trade or an occupation with implications for the green economy referred to as green occupations.

As indicated in Table 2, 1448 occupations were recorded on the OFO in 2013. Grouping of the 1448 occupations is based on specialisation and task descriptors resulting in 440 occupations at unit group level. The documentary analysis does not indicate the criteria to peg or consolidate occupations into higher levels of unit groups on the OFO except for specialisation and descriptor.

Lastly, the OFO structure seen in Figure 2 is aligned with the National Qualification Framework (NQF), which consists of 10 levels to indicate the level of education linked to each major occupational group. As such, it could be interpreted that the NQF level demarcation of the major occupational group indicates the required level of education for the task and duties to be competently performed ("Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 6).

However, the OFO guide 2013 provides further direction on education and training levels based on another classification system for education, namely the International Standard for Education (ISCED) ("Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 7).

Figure 3. OFO Educational Levels and Descriptors

ISCO - 08 Skill Level	ISCED-97 groups
4	6 - Second stage of tertiary education (leading to an advanced research qualification) 5a - First stage of tertiary education, 1st degree (medium duration)
3	5b - First stage of tertiary education (short or medium duration)
2	4 - Post-secondary, non-tertiary education 3 - Upper secondary level of education 2 - Lower secondary level of education
1	1 - Primary level of education

Sourced: ("Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 7).

Alongside the ISCED group level depicted in Figure 3 is the alignment of skills levels that inform the International Standard Classification for Occupations (ISCO). ISCO has four skills levels that link to broad educational levels of ISCED.

Also in Figure 3, a number is provided, ranging from 1 to 6, to indicate the hierarchy, grouping and specialisation mapped to the broad educational levels of ISCED.

In summary, providing a descriptive understanding of the OFO structure was a requirement of this study. The OFO is not a standalone classification system. It interfaces in terms of both job outputs and broad educational levels. The need to incorporate other supporting classifications systems appears to influence the mapping of jobs to occupations on the OFO. The three features of an occupation (skills, knowledge and tasks) are determined based on two dimensions of skills (skills specialisation and skills level) in order to map a job to an occupational group and to further peg a job in terms of its hierarchy on the OFO.

Skills level is limited to the nature of work and the level of formal education required, while skills specialisation considers the field of knowledge, the tools and machinery used, the materials worked on, or with, and the kinds of goods and services produced. These two criteria inform the coding of a job in a specific employer firm to an occupation on the OFO. Thus it can be surmised that an occupation has information that describes the outputs of a specific job, the related tasks, the nature of work, the kinds of goods and services produced as well as information on the level of formal education required. In other words embedded in an occupation is information that can inform skills demand as well as skills supply.

2.7 Conclusion

This chapter has explained that the world of work and education domains are distinct yet parallel systems. In other words each domain has its own logic in terms of systems, policies, conceptual understandings and institutional arrangements. Thus this chapter has highlighted the implications for understanding each domain's logic in order to seek a meaningful interface between education and work for the purpose of undertaking skills planning.

Approaches and methods adopted to inform skills planning were discussed. The analysis of the skills planning literature has extrapolated four approaches to inform skills

planning. One of the methods discussed was the utilisation of employer surveys. These surveys provide critical data from employers on their skills needs in order to inform skills planning.

The discussion on skills planning approaches and methods highlights that complementary approaches to employer surveys are crucial for identifying skills needs to steer education and training systems for the long term. However, the literature makes clear that the data collected from employers is a crucial data source for skills planning.

An analysis of the literature highlights that there are four concepts that are embedded in skills planning and occupational classification systems. The four concepts discussed were job, occupation, skills and qualification. As this study seeks to establish whether the notion of occupation as embedded in the OFO has supported the collection of labour market data, it is important to indicate that the concept of occupation was highlighted as an individual, social and economic transformational concept.

It is made clear that concepts of jobs, occupations, skills and qualification inform how skills needs are identified and how occupational classification systems, including the OFO, are constructed.

Lastly, the analysis of the literature on skills planning and occupational classification systems indicated that these concepts are informed by how they are used and are not commonly understood or defined.

In order to improve the quality and relevance of employer data for skills planning, many countries have adopted occupational classification systems. The literature highlights that there are different occupational classification systems that are at different stages of implementation, that are used for different purposes and that are not used by every institution. However, caution is provided that occupational classification systems are not merely statistical coding systems as these systems are embedded in concepts, power and contestations.

Lastly, it was important to provide some insights on the OFO and its structure. The analysis highlights that the OFO is complex, contains concepts of skills, occupation, job, qualification and education and training. Further the analysis has highlighted that

the OFO does contain features to inform skills needs identification and insights for education and training. However, the literature does highlight that occupational classification systems are limited in their use of the education and training features for data analysis.

3 Chapter Three: Methodology

3.1 Introduction

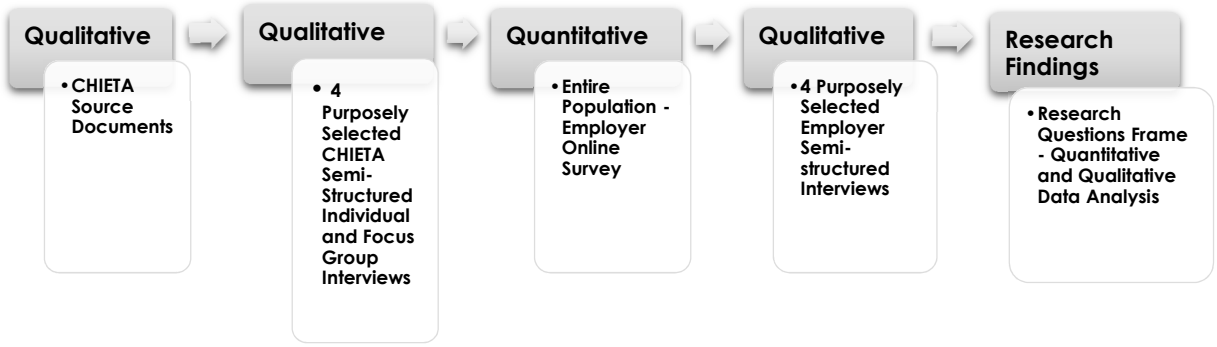
This chapter will outline the research methodology I used to understand how employers and CHIETA officials use the OFO for skills planning. This chapter will outline the research approach; the sampling of research participants; the analytical framework; and, the data collection method and analysis. It will also discuss ethical considerations, limitations of the study, and reflect on the role of the researcher in the study.

3.2 Research Approach

A mixed-approach method was used to collect quantitative and qualitative data for this study. Using quantitative and qualitative methods complement each other and allow for a more complete analysis of the research situation (Greene, Caracelli, & Graham, 1989; Teddlie & Tashakkori, 2009). Figure 4 provides a depiction of the mixed methodology employed for this study. It indicates that the research started with qualitative data document analysis. Further qualitative data was gleaned from four purposively selected semi-structured interviews with SETA officials.

I then conducted a quantitative survey with the entire CHIETA employer population. Lastly, I collected qualitative data from four purposively selected semi-structured interviews with employers.

Figure 4. Notation system for the Mixed Method for this study



The sections 3.4 and 3.6 will describe the quantitative and qualitative data collection and analysis methods. I now turn to discuss the selection methods used for the research.

3.3 Selection of institution

This study aimed to gain insight into OFO use for skills planning. A number of institutions and employers undertake skills planning in SA. I selected a single institution that has extensively used the OFO. This selection was appropriate because I was not aiming for a representative sample of institutions, but rather, hoped to understand the possible uses and problems of the OFO use in skills planning.

Selecting an institution that used the OFO for skills planning would contribute valuable insights for this research and I wanted to find an institution that, on the face of it, was using the OFO extensively, in order to gain insight into the nature of this use and to provide new knowledge on the SA OFO.

The institution purposively selected for the study was CHIETA, one of the 21 SETAs. The CHIETA and the chemical sector was introduced in Chapter 1. The criteria I used for selection included:

1. An institution that was responsible for skills planning in SA;
2. An institution that included employers as part of the skills planning process;
3. An institution that collected and analysed data from employers using the OFO for skills planning;
4. An institution that claimed to be using the OFO extensively for skills planning;
5. An institution that was responsible for providing support to address skills needed in the labour market; and was
6. Gauteng based.

The 21 SETAs vary considerably in their functionality (HSRC, 2012; Kraak, 2011, pp. 98 – 99). I chose to analyse the CHIETA annual report, sector skills plan and strategic plan as well as the SETA departmental performance report. The analysis of this documentation made it clear that the CHIETA officially uses the OFO extensively. Further, in my capacity as an official in the department responsible for sector skills planning, I frequently interact with SETA officials, and in my judgement the CHIETA is

one of the SETAs that has been the most proactive about using the OFO, and is making the most extensive use of it.

The CHIETA also appears, from an official report ("National Skills Development Strategy Implementation Report 2015-2016," 2017) and my interactions with them, to be relatively successful in skills planning. Based on my interactions with them, I was aware that the CHIETA adopts three principles to improve their sectoral skills planning processes:

1. Strengthening employer engagements and support to understand employers' skills needs with the aim of supporting effective skills planning and to obtain buy-in from employers.
2. Embedding the OFO in the sectoral skills system from its planning to reporting, through stakeholder support and information technology systems.
3. Establishment of "expert groups" to undertake research and to articulate skills needs and identify skills interventions.

In this sense, it would be a good case for exploring the potential role and uses of the OFO. For all these reasons, I selected to explore the CHIETA as the institution in this study.

3.4 Data Collection

Once CHIETA provided consent to participate in the study, the sampling of research participants and data collection methods commenced. This section sets out the sampling of research participants and the four data-gathering techniques used to collect data to inform this study.

3.4.1 Phase 1 - Qualitative: CHIETA Source Documentation

The first data collection method was a document analysis to understand how the OFO was supposed to be used. CHIETA provided me with a number of source documents which included their policies, systems and reports. Appendix 4 is the primary sourced document. While all sourced documents were analysed, the following documents provided key insights to inform this study:

1. Department of Higher Education and Training Organising Framework for Occupations (OFO) Guidelines 2013;

2. Department of Higher Education and Training Organising Framework for Occupations (OFO) Guidelines 2015;
3. Chemical Industries Education and Training Authority Workplace Skills Plan trends analysis report – December 2015;
4. Chemical Industries Education and Training Authority Report on General Mapping observations;
5. Chemical Industries Education and Training Authority Qualification Matrix;
6. Chemical Industries Education and Training Authority Annual General Meeting Presentation 2017/2017;
7. Chemical Industries Education and Training Authority Occupational Handbook 2014;
8. Chemical Industries Education and Training Authority Sector Skills Plan 16/17;
9. Chemical Industries Education and Training Authority Occupation and Qualification Focus Research Report: Towards the Establishment of a Credible Institutional Mechanism for Skills Planning within CHIETA - Defining the CHIETA's Focus in terms of Occupation;
10. Joint Chemical Industries Education and Training Authority Chamber induction SETA Grant Regulations – 2017 (PowerPoint)
11. Chemical Industries Education and Training Authority CHIETA WSP submission system and skills development cloud solution (presentation);
12. Chemical Industries Education and Training Authority CHIETA Business Matrix 2014;
13. The Organising Framework for Occupations as promulgated in (2015).

3.4.2 Phase 2 - Qualitative: CHIETA Interviews

The second data collection method was to complete four semi-structured individual interviews with CHIETA officials to gain insights on how they actually used the OFO for skills planning and implementation. I purposely selected four officials from the CHIETA based on their role in skills planning and implementation. Appendix 5 lists the CHIETA officials selected. Those who participated in interviews were:

1. The Acting Chief Executive Officer;
2. The Skills Planning and Research Executive Manager;

3. Chief Financial Officer;
4. Executive Manager - Project and Grants.

The aim of "qualitative interviews is to see the world through the eyes of the participant, and they can be a valuable source of information" (Maree, 2011, p. 87). Semi-structured interviews provided structure to the interviews in line with the research questions for this study and allowed me to clarify responses and/or to ask for further elaboration (Welman & Kruger, 1999, p. 167). Appendix 1 provides the interview questions. The questions sought to obtain information on:

1. The role of the official in skills planning and implementation;
2. Whether they used the OFO in their area of work and how they engaged in skills planning;
3. How they used the OFO in their area of work and its relation to skills needs identification, education and training and/or implementation;
4. Whether the OFO was useful;
5. The factors that negatively or positively affected the use of the OFO for skills planning; and,
6. Whether the use of the OFO in skills planning led to their skills needs being addressed through the education and training provision supported by CHIETA?

The CHIETA facilitated the dates, times, and venue for the interviews. At the start of each interview, I provided the officials with information about the study, my role as the researcher in the study and requested their consent to participate and for the interview to be audio-recorded. Once consent was obtained, interviews were conducted and then transcribed. The interview transcripts provided the qualitative data to understand how the OFO is used for skills planning and implementation.

3.4.3 Phase 3 - Quantitative: Employer Survey

The third data collection method was to gather data from employers. My first step was an online survey. According to McMillian and Schumacher (2010) survey research is conducted to collect information about the participant respondent's attitudes, belief, ideas, opinions, perceptions amongst others. As such it aligns with the aims of understanding experiences from employers.

I selected the entire CHIETA employer population of employers who had submitted their WSP for the 2016/2017 year. The CHIETA provided me with a comprehensive database of employers who had submitted their WSP during 2016/2017. The database included detailed information regarding the size, sub sector, and employer contact information. CHIETA has this database because employers submit WSPs to the CHIETA annually. The data collected from the WSP is utilised to inform the skills planning for the sector. As part of preparing the WSP, employers are required to report skills demands using the OFO as mapped to jobs in the organisation. I wanted to gain insight from as many employers as possible, and therefore decided to conduct a survey of all the employers on the database, to gather the experiences of employers who have used the OFO for skills planning.

The database consisted of 954 employer records. In Appendix 6 is a summary of the CHIETA employer profile. The table groups employers across employer size and identifies in which of the nine sub-sectors of the chemical sector the employer fits.

I sifted and cleaned the database to remove duplicate contacts and empty fields reducing the employer line records to 811. An analysis of the job titles of officials indicated that the WSPs were submitted either by the chief financial officer, human resource manager or training manager. According to the WSP template, the official who approves and submits the WSP is the skills development facilitator (SDF). Therefore, the target group was the skills development facilitator. The sifting and cleaning of the database entailed removing empty lines with no contacts and duplicate contact information of the skills development facilitators.

I do not provide detailed information here on the employers in order to protect their identity. A summary of the database is in Appendix 6 to provide information on the employer size and the chemical sub sector within which the employer participates for skills development.

Considering the size of the population group, the aim of collecting data from employers, accessibility and administration, as well as the costs, I determined that as employers were disbursed across the country and 100% of the sampled employer population had access to e-mail, administering a survey through an online platform, Survey Monkey, would be the most appropriate approach. In addition I designed the survey online, as a self-administered survey which would be able to record and

consolidate the responses received on Survey Monkey. The IT platform enabled me as the researcher to exert effective control over the design, distribution, administration, and recording of survey results within the 3 months allocated to collect the data.

I sent an e-mail link for the employer survey. Employers had one month to respond to the survey. The closing date was communicated through the e-mail correspondence which also provided an overview of the study.

Four reminders were set for employers to complete the survey to increase the number of respondents. In addition, employers contacted me through the e-mail link to survey monkey. Email correspondence allowed me to clarify questions raised by the employer in relation to completing the survey, receive feedback on the official's status at the firm and to correct email addresses of relevant officials to whom the survey should be sent. I had constant and direct control over the survey during the time of conducting the survey.

The survey was distributed to 776 employers representing the entire employer data population as per the database provided by CHIETA. At the time of closing the survey, out of a potential 776 employer responses, a total of 164 employers responded to the survey. The survey response rate was calculated based on the total number of employers the survey was sent to (776) which was then divided by the total number of survey responses received (164). Thus the survey response rate was calculated to be 21%. In addition during the administration of the survey, the following could be attributed to the response rate: four recipients referred the survey email to other employer officials to respond; 19 recipients opted out; and 16 emails were returned as undelivered. A number of emails were returned to indicate that some of the respondents had left the employ of the company at the time of the survey or had taken up another position in the organisation. It was not possible to contact each employer to establish if the respondents were still in their employ or in a position to respond to the survey.

Welman and Kruger (1999, p. 152) indicate that a low response rate restricts the usefulness of the survey. As a result a completely inaccurate picture of the population may be obtained. In the study the response rate was 21%, which I argue would not

present the views of all employers, and thus the survey would not provide a general picture of whether employers used the OFO for skills planning.

While the survey responses do not provide a general picture for the entire employer population, they do provide helpful insights on employer experiences and perceptions around using the OFO.

The design of the survey considered the following factors: the instructions for completing the survey, the appearance of the questionnaire, the time required to complete the survey, question sequence and the purpose of collecting the data (Maree, 2011, pp. 158–160). The survey comprised 11 questions that sought to obtain information on:

1. Size of the employer;
2. The role of the official in skills planning;
3. Whether they received support to use the OFO for each component of skills planning;
4. Whether they used the OFO for each component of skills planning;
5. Reasons they did not use the OFO; and
6. Usefulness of the OFO for skills planning.

Appendix 3 with the survey design is attached.

The survey included a brief background and purpose of the survey and the instruction and time it would take to complete the survey. The time taken to complete the survey was tested through a pilot test with two officials, one from the SETA and an employer.

I also realised during the test that alternate options had not been provided such as the size of employers. I should also have used simpler, user-friendly language. The survey design aim was for completion within 10 minutes and at most 20 due to language barriers. At the close of the survey, the average time taken by respondents to complete the survey was under five minutes. While the time allocated to complete the survey influences the response rate, the relevance and structure of the questions in the survey were also critical.

The CHIETA-sourced documents as well as the research questions outlined for the study, informed the survey design. Eight of the questions were closed questions and

three questions required the respondent to select multiple options and/or to provide additional comments. I identified one flaw during the analysis stage: the instrument design did not compel responses to specific questions, as a result 10 employers' skipped questions. I removed these from the spreadsheet.

After the survey closed, employer responses were downloaded, the consolidated spreadsheet populated with all responses and then printed. I was then able to commence with the analysis of the survey responses to obtain a general picture on the employer use of the OFO.

3.4.4 Phase 4 - Qualitative: Employer Interviews

The fourth data collection method was to conduct semi-structured interviews with employers. The CHIETA assisted me to identify and select five employer participants for the interviews.

The strength of this approach is that the CHIETA was able to assist in the identification of employers that actively make use of the OFO for skills planning. This made sense in the light of my research aims.

While this sampling approach could have biases due to the CHIETA selecting employers that are compliant and work with the CHIETA processes, I did not see it necessarily as a risk. I required insights into best practice cases, and wanted to explore with those employers how the OFO was assisting them and what they made of it. If the OFO was not useful in a strong SETA that utilizes the OFO proactively and if it was not useful to employers who are actively trying to engage with the system, then that was a significant finding for this study. My sampling was therefore deliberate, in terms of both sampling a strong SETA, and a selection of compliant employers.

I did provide two additional parameters to inform the employer sampling. Firstly, to control cost, the participants had to be Gauteng-based. Secondly, I examined employer responses to the survey such as

- whether they used the OFO for skills planning, or
- whether they only used the OFO to identify skills needs, or
- whether they only used it to identify education and training, or

- whether the OFO was not used by them.

I therefore identified four additional employers based on their responses to these questions. In total nine employers were purposively sampled.

Table 3 provides a summary of the employers sampled. The table also provides an indication of the size of the employers sampled and interviewed employers and the type of interview. The table also indicates the reasons why some of the participants sampled were not able to be interviewed.

Table 3. CHIETA Employer Interview Sample and Participation

	Employer	**Size of Employer**	**Comment on Participation**
1.	CHIETA Employer 1	Large: 150+ Employees	Focus group Interview
2.	CHIETA Employer 2	Large: 150+ Employees	Interviewed
3.	CHIETA Employer 3	Large: 150+ Employees	The Plant. Not interviewed.
4.	CHIETA Employer 4	Large: 150+ Employees	Outside Gauteng
5.	CHIETA Employer 5	Consultant	Did not respond to interview request in spite of follow-ups
6	CHIETA Employer 6	Large: 150+ Employees	Focus group Interview
7	CHIETA Employer 7	Micro: Less than 10 Employees	Interviewed
8	CHIETA Employer 8	Medium: 50 to 149 Employees	Could not secure suitable time and date
9	CHIETA Employer 9	Consultant	Did not respond

The data collection method with employers was semi-structured interviews. The aim was to collect qualitative descriptive data on how employers actually used the OFO. Preceding the interviews, I analysed the employer responses to the survey. This analysis provided me with insights on the employer perception on their use of the OFO,

identified the questions where additional probes could lead to an in-depth understanding of their survey responses and to triangulate and validate the responses provided in the survey.

The interviews were semi-structured as per Appendix 2. The interview questions required information on:

1. The respondent's position and role in relation to skills planning;
2. Did they use the OFO, and for what purpose did they use it?
3. How did they use it? Did they receive support to use the OFO for both skills planning components?
4. What were the factors that hindered or mitigated the use of the OFO for skills planning in the organisation?
5. Did they perceive that the OFO was useful for skills planning at the employer level?

I scheduled interview dates and times. Interviews were conducted at the employer offices. While the intention was to conduct individual semi-structured interviews with employers, two of the interviews became focus group interviews and two of the interviews remained individual interviews. At the start of the interview, I provided background on the purpose of the study and the role of the researcher. I then discussed the consent required for participation and audio recording of the interview. During the process of obtaining consent, two employer officials asked if they could include officials involved operationally to participate in the interview. As the intention of the study was to build on the knowledge base of SA OFO, I agreed to extend the individual interviews to focus group interviews while maintaining the interview questions. All participants provided their consent and I conducted the interviews that were audio recorded. The audio recording informed the transcription of the employer interviews. The transcripts formed the basis of the data analysis.

In the end I conducted two semi-structured interviews with individuals and two sets of focus groups using the semi-structured interview instrument. Five individuals participated in the focus groups. In total seven individuals were interviewed from four workplaces.

3.5 Analytical framework

While I had attempted to develop an analytical framework (Appendix 8) to guide the analysis of the data collected, the analysis was largely conducted in an inductive manner as outlined in section 3.6. Although the analysis was undertaken in an inductive manner, the development and conceptualisation of the analytical framework provided insights to guide the analysis considering the alignment of the research questions, the occupational literature and the literature on relations between education and work debates.

However, during the course of analysing the data, I was not able to analyse the relationships between education and work utlising this analytical framework as the OFO lacked implementation at the time of this study. The findings in Chapter 4 will provide further discussion.

In addition, to identify whether the skills needs were met as informed by the education and training identified, required a different methodological approach which I will discuss in Chapter 5 (reflections for this study). Thus the analysis was largely inductive.

If the OFO had been fully implemented, I would then have drawn on the concepts of direct and indirect relations extracted from the literature review in Chapter 2. This study does not assume that there is a one to one relationship between occupations on the OFO and qualifications. I wanted this research to follow the identification process and then cross correlate with what appeared on the OFO in terms of the notion of occupations in demand and the type of education and training interventions identified. Once the OFO is fully operational, it is recommended that such a study may be considered and refined.

3.6 Data Analysis

This section will outline how the data collected was analysed.

3.6.1 Qualitative: CHIETA Source Documentation

Once CHIETA had provided me with all the source documents, I firstly prepared a table that indicated the name of the document. I conducted an initial reading of the documents to obtain insights on their overall purpose and to acquaint myself with the

information. I attempted to use the overarching analytical framework to extract findings for each research question.

I however realised during the first stage of analysis that the analytical framework was very broad. Most importantly I had identified key qualitative findings that could enhance the analysis. I thus extracted broad thematic areas identified through inductive analysis during the second analysis of the source documents in line with the analytical framework. The aim of the analysis was to understand the use of the OFO in skills planning.

The analysis included populating the table with descriptive data for each broad category aligned with each research question. I was able to identify duplication in data entries and clustered findings to identify the key source documents. I filtered the key source documents based on the analysis as well as identified that other documents did not provide any additional insights beyond the 13 key source documents. A major portion of the time allocated to conduct this study was spent reading and analysing the vast volume of sourced documents. In hindsight, I could have saved time by using a qualitative analysis computer programme such as ATLASti, although I did gain a much more comprehensive understanding of the OFO within the broader context of CHIETA and the sector.

A table was produced with the text entries identified from the analysis. The table was further refined to remove overlaps and similarities in the text entries from the 13 sourced documents. For example, three documents explained the skillogical approach while not referring to it by name, while another document described the approach in summary. A table reflecting the findings provided a basis for cross correlation analysis with the findings arising from the interview data to establish if the description of the use of the OFO corresponded with its use in practice.

3.6.2 Qualitative: CHIETA Interviews

Once the four interviews were transcribed, I developed a table plotting out the interview number and the position of the official, as well as the research questions forming the basis of the interview questions. I analysed the transcripts inductively to identify codes and thematic areas. I then populated the table with data from the interviews. For the CHIETA interviews, I analysed the interview data:

1. To identify if they used the OFO in their section;
2. To identify for what purpose they used the OFO;
3. Whether they used the OFO to identify skills in demand for the sector and how;
4. Whether they used the OFO to identify education and training interventions and how; and
5. What factors (if any) informed the identification of skills in demand and education and training interventions?

The data from each interview was analysed and populated onto a table to indicate the responses received from officials. The table provided a basis for cross comparative analysis with the source document analysis to identify areas of correlation or differing descriptive uses of the OFO.

3.6.3 Quantitative: Employer Survey

The first analysis of the survey data we conducted at an employer level to establish which employers used the OFO for skills needs identification and/or education and training.

The second analysis undertaken collectively for all survey data was to consolidate all survey responses in one table based on the survey questions. I cleaned the data by removing incomplete surveys, allocated numerical descriptors to determine the mean/average and variable to compare the responses across variables.

I allocated a (1) where a response was provided and a (0) where variable/s were not selected by the employer. Scores were computed by adding the number of responses and then deriving the total number of responses received. Frequency tables were prepared to indicate the frequency of survey responses. The Frequency tables enabled me to extract data from those officials responsible for skills planning. The data analysis was further summarised into four thematic areas namely:

1. Did they use the OFO to identify skills needs for the employer;
2. Did they use the OFO to identify education and training interventions;
3. Whether the OFO was useful for skills planning; and
4. Why they did not use the OFO.

The data analysis was then populated into a table to inform the analysis for comparative data analysis.

3.6.4 Qualitative: Employer Interviews

The data from the four interviews was tabulated by interview number and the position of the employer official as well as the research questions forming the basis of the interview questions. I analysed the transcripts inductively to identify codes and thematic areas. I then populated the table with data from the interviews. For the employers I analysed the interview data:

1. To indicate for what purpose they used the OFO;
2. To obtain a description of whether they used the OFO to identify skills in demand for the employer and how;
4. To obtain a description of whether they used the OFO to identify education and training interventions and how; and
5. To identify factors that informed the identification of skills in demand and education and training interventions.

The data from each interview was analysed and populated onto a table to indicate the responses received from officials. The table provided a basis for cross-correlation analysis with the source document analysis and the survey data analysis to identify areas of correlation or differing descriptive uses of the OFO.

3.7 Ethical Considerations

Prior to the commencement of the study, I obtained ethics approval clearance from the University of Witwatersrand Education Ethics Committee. The ethics protocol Number is: 2017ECE008M.

The participants were informed about confidentiality before agreeing to participate in the study as those who participated would not be referred to by name, so as to secure their anonymity. The participants are referred to using a pseudonym such as Employer 1 or CHIETA official 1. Participants were informed that even though a pseudonym would be used, information about the organisation/s is available on the internet and in reports. As such there is no guarantee of anonymity. In addition all transcripts of interviews and surveys would be safely secured so as to maintain the

confidentiality of responses from participants. Participants provided their written consent to participate and for interviews to be audio recorded and transcribed.

All documents, audiotapes, transcripts and surveys have been recorded and stored securely and will be stored for five years in a locked cupboard in my home.

3.8 Research Limitations

While, this research provides insights on how one SETA and one sector has been able to use the OFO for skills planning processes, the findings of this research may not be generalised to other institutions and sectors. The study provides specific insights into the perceptions and practices in the chemical sector. As posited by McMillian & Schumacher (2010, p. 345) such a study may produce "detailed, specific accounts of particular circumstances rather than broad, generalisable findings".

In addition, the findings may also not be representative of all employers in the chemical sector however they do provide insights from those employers who actively use the OFO.

Lastly the study provides specific insights into the use of the OFO as an occupational classification system. The findings cannot be generalised to how other occupational classification systems such as the SASCO system are used. Despite this, I argue that this study does provide insights into the utilisation of an occupational classification system in SA.

The study identifies key issues for future studies on the OFO. However, the purpose of this study was to understand the use of the OFO for skills planning and thus this study provides valuable insights on the OFO, based on the experiences from officials and employers that actually use the OFO in the chemical sector. This research can provide useful insight into the potential roles of the OFO, and can inform other specific areas for further research to address specific questions.

3.9 Reflections: Role of the Researcher

While this study was conducted for academic purposes, it is important to highlight that at the time of conducting this study, I was a senior official in the employ of the Department of Higher Education and Training (DHET). I was involved in the development of the national skills planning mechanism. I was also providing policy

and framework support to the 21 SETAs including CHIETA. Part of my responsibilities include policy development, support, and oversight of the SETA sector skills plans processes, as well as being responsible for updating and maintaining the OFO.

I have also been previously in the employ of a SETA, where I was extensively involved with sector skills planning and quality assurance of training provision. As such, I have intimate knowledge and experience with regard to the SETA system. I was thus a "participant observer" in the research. As the researcher, I had access to information and networks to inform the study. McMillian & Schumacher (2010, p. 333) indicate that in such instances there is a need to employ reflectivity with conscious intent to remain as objective as possible. During each step of the study, I had foremost in my mind the purpose of this study. I constantly reflected on;

- how I asked questions;
- how I interpreted the data;
- how I presented the study;
- how I responded to questions from participants; and
- how I presented the data.

This reflectivity ensured that I undertook the study in an ethical way and in line with the academic intention of adding to the knowledge field, and not as an official of the department. I had to engage with peers to examine my interpretation or understanding, prepare information for interviews scripts and mock test interviews, and analyse and re-evaluate findings stemming from the data analysis. During interviews, I had to communicate my role to ensure that my engagements remained focused and not adversarial due to my role in the DHET.

To ensure that the scope of the study and my role was understood, I also conducted an information session with CHIETA and employer officials interviewed to give the context and this led to the head of organisation informing officials about the importance of such a study, and led to them consenting to participate. However, this was not sufficient. I also started each interview by reiterating my role and the purpose of the study so that officials felt comfortable during the course of the interview and I did indicate to them that at any stage they could request not to continue with the interview. I had to ensure that I posed the questions in a clear and objective manner

with no bias from my role in the DHET. By the third question, I noted that most officials were relaxed and felt free to express their experiences and perceptions without fear.

However, I had to reflect carefully, and consider whether the responses provided were a true reflection and honestly answered by officials, or, whether they were telling a DHET official what they wanted to hear. Thus, during the drafting of the findings chapter I had to consciously seek to triangulate the official interviews to the survey and document analysis.

Although being a participant observer in this study required considerable reflectivity, there were also positive returns for being an insider to the system. The skills system in South Africa is complex and all documents have a plethora of acronyms and institutions. As an insider, I was able to engage with the source documents made available for this study.

4 Chapter Four: Findings

This chapter presents my research findings. The main finding is that CHIETA has identified the OFO as a critical skills planning instrument, and has set in place a plan to phase-in its implementation. I learnt that the CHIETA utilises the OFO for three purposes: to collect workplace data; to analyse and present the skills plan for the sector; and, to validate the skills needed at the time of implementing the sector skills plan.

An interesting third main finding is that while the OFO is underpinned by a notion of occupation, the concept of skills determines how jobs are mapped to occupations on the OFO. Of particular interest is what the CHIETA calls 'the skillogical approach'. The approach guides employers to map jobs to occupations on the OFO. The CHIETA hopes that this will improve the quality of data submitted through the WSP.

Use of the OFO by CHIETA and employers to identify education and training interventions is yet to be implemented, which meant that an aspect of my proposed study — to understand whether the skills needs were addressed — was not possible. Thus it was also not possible to analyse whether the OFO had created a direct or indirect interface between education and work.

In the case of the employers, the key findings were that employers do not use the OFO for skills planning but only as a reporting instrument to submit their WSPs, suggesting that they view it as a tool necessary for compliance with policy but that it does not have much currency within their own systems. Instead, firm-specific behaviour and labour relations seem to inform their skills planning priorities.

In addition to the firm-specific dynamics, the concepts of skills needs and education and training interventions are understood differently amongst employers. In the main employers use the notion of *jobs* to steer their skills planning priorities.

4.1 Findings: CHIETA

4.1.1 CHIETA's use of the OFO for skills planning

This section presents findings on how CHIETA uses and implements the OFO for skills planning, identifying skills needs, and education and training. The findings come

from my analysis of the key source documents and the interviews with CHIETA officials. These findings are further discussed in line with the supporting data analysis.

a. State of implementation and approach to use the OFO

A key finding of this study is that the OFO is still being phased-in and has not been fully implemented. The CHIETA developed a report that outlines how the OFO is to be used for skills planning based on the 'skillogical approach' and identified mechanisms to enable the effective use of the OFO[3]. The skillogical approach refers to the steps guiding job to occupation mapping.

The source document analysis found that there is an approach to mapping jobs to occupations to improve the quality of data submitted in the WSP. The approach developed by the CHIETA for how the OFO should be used to map jobs to occupations on the OFO is referred to as the skillogical approach[4] . The skillogical approach outlines the components that make up an occupation. It provides the steps to follow to develop an occupation that would enable the clustering of similar jobs into occupations. The skillogical approach covers the following key components to develop occupation profiles for the chemical sector:

i. An output profile: the purpose and task statements.
ii. A knowledge profile: the knowledge and qualifications required to perform the tasks.
iii. A skills profile: the generic/employability and occupation-specific skills required in the occupation.
iv. A 'license to practice' profile: certificates of competency or professional registration requirements.
v. Career pathways profile: feeder occupations and progression options and a minimum qualification.

The CHIETA skillogical approach and the occupational handbook guides CHIETA and employers to map jobs to occupations. The development of the occupational

[3] "Towards the Establishment of a Credible Institutional Mechanism for Skills Planning within CHIETA: Defining the CHIETA's Focus in terms of Occupations.," 2014
[4] "Towards the Establishment of a Credible Institutional Mechanism for Skills Planning within CHIETA: Defining the CHIETA's Focus in terms of Occupations.," 2014, p. v

handbook outlines comprehensive occupational profiles for the sector using the skillogical approach as well as engagement with key actors in the sector.

CHIETA interviewees 2 and 4 indicated that they hoped this exercise would assist the sector and employers. The occupational profiles were developed to assist employers to better map jobs to occupations. In addition, the occupational profiles would provide the sector with a common and comprehensive understanding of the types of occupations in the sector, and the requirements for each of the occupations.

CHIETA interviewees 2 and 4 expressed that it was hoped that the occupational profiles would lead to more relevant data being submitted by employers to CHIETA.

The report highlights three principles that would underpin the effective use of the OFO for skills planning. These principles were:

- the accuracy with which employers articulate and relate their structure (at job level) to the occupations on the framework;
- employers identifying similar outputs based on job descriptions and not job titles; and,
- SETAs assisting employers to articulate their post structure (organogram) in respect of occupations on the OFO.

Changes to labour market and job outputs are provided through a process of updating the OFO[5]. Therefore, it can be deduced that the CHIETA had identified mechanisms to support and guide the CHIETA and its employer members to effectively use the OFO. Some of the interventions are provided next.

An analysis of the source documents and interviews indicate that CHIETA introduced interventions to ensure the effective use of the OFO for skills planning. These are:

- the WSP (Appendix 7) used to collect employer data;
- an IT platform on which the employers complete and submit the workplace skills plans;

[5] "Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 29

- the initial mapping of jobs to occupations done by CHIETA in conjunction with employers in 2013. (Subsequently the mapping of jobs to occupations is now being done by employers)
- the development of detailed and comprehensive occupational profiles for the sector as it was recognised that implementation of the skillogical approach and skills planning depended on a detailed understanding of the jobs in the sector before deriving and clustering jobs into occupations[6] .

This process was further corroborated with the findings from the CHIETA interview analysis. CHIETA interviewees 1 and 2 indicated that the OFO was still fairly new and did not contain comprehensive data on occupations. In addition, CHIETA interviewees 2 and 3 indicated that the implementation of the interventions to ensure effective use of the OFO is still being phased in and thus not all aspects have been implemented[7].

Although no approach could be extrapolated from the source documents to describe how the OFO has been used to inform CHIETA skills planning, the interview analysis provides insights on this.

CHIETA Interviewee 1, 2, 3 and 4 highlighted that the OFO was used to inform strategic planning, research, grant allocation, reporting and financial oversight within their respective units.

CHIETA interviewee 2 and 4 indicated that they directly engage and use the OFO in the main to collect and analyse occupational data linked to the OFO to inform the research and trends analysis, and to determine grant allocations and for reporting.

CHIETA officials 1 and 3 did not use the OFO directly but utilised the outputs of the research and grant allocation processes for strategic planning and financial oversight. Thus it was established that the OFO in the main was used for research and grant allocation.

[6] "CHIETA Occupational Handbook," 2014, p. ii
[7] "Towards the Establishment of a Credible Institutional Mechanism for Skills Planning within CHIETA: Defining the CHIETA's Focus in terms of Occupations.," (2014)

CHIETA interviewee 2 indicated that the occupational data is utilised to identify the skills needed by the sector.

CHIETA interviewee 4 used the OFO to validate the skills demanded during the grant allocation. The approaches to use the OFO as adopted by CHIETA interviewee 2 and 4 will be further discussed in 4.1.2 where the findings for skills needs identification is presented, and in 4.1.3 which presents the findings for identifying education and training interventions.

b. Purpose of CHIETA using the OFO

Three purposes for using the OFO for skills planning were identified from the source document and CHIETA interview analysis: to collect data; to identify and present skills needs; and to validate skills needed at the time of implementing the SSP.

Firstly, the document analysis indicates that CHIETA uses the OFO to collect data through the WSP submissions to increase reporting accuracy[8]. All the officials interviewed indicated that data received from employers is critical and thus seeking ways to improve the quality and quantity of the data collected from employers was a key lever to strengthen the sectors skills planning and implementation.

All CHIETA interviewees indicated that the OFO was adopted as a mechanism to collect data from employers that would support the identification, reporting and monitoring of skills demand (needs) and skills supply (education and training). It is clear from the source document and interview analysis that the quality and quantity of data collected from employers is a priority for CHIETA.

Secondly, the interview analysis indicates that the CHIETA officials use the OFO to identify skills needed (interviewee 1 and 2), to present and analyse skills needed and to validate skills needed at the time of implementing the sector skills plan (interviewee 4). CHIETA interviewee 4 indicated that the OFO was also utilised as a reporting mechanism to monitor implementation of interventions to address the skills needed. However, no source documents on monitoring the implementation could be identified to extract the use of the OFO as a monitoring tool.

[8] "CHIETA Occupational Handbook," 2014, p. ix

Thirdly, CHIETA interviewee 4 indicated that she uses the OFO to validate the applications for funding in line with the skills needed. She analyses the applications for funding by cross correlating the OFO to the skill needs captured by the applicant to the skills needs identified in the sector skills plan. No source documents were available for analysis to establish the outcomes of the cross correlation and validation of the skills needed for processing the application.

Thus, it was found that the OFO was used to collect data, identify skills needed and to validate grant applications as informed by the skills needs identified to guide implementation of the sector skills plan.

c. Concepts underpinning the use of the OFO

The third key finding extracted from the document analysis indicates that the concept of skills is key in mapping jobs to occupations. The literature review in Chapter 2 has outlined that four concepts are embedded in the OFO: occupation, skills, jobs and qualification. An analysis of the documents provided further insights on the significance of the concept of skills as embedded in the OFO.

The OFO Guideline[9] highlights that the concept of skill is further split into two categories as the basis to determine the remit of an occupation on the OFO. The two categories of skill are namely: skills level and skills specialisation.

The first skill category, skills level, refers to the "function of the complexity and range of tasks and duties to be performed in an occupation" and is measured based on the nature of the work performed, the level of formal education and on-job training required and work experience required for an occupation[10].

The second category of skill, skills specialisation, considers the field of knowledge required; the tools and machinery used; the materials worked on or with; and the kinds of goods and services produced.

[9] "Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 6 (2013, pp. 6 &7)
[10] "Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, p. 6 (2013, pp. 6 &7)

It can be inferred from the analysis of the skillogical approach that the two concepts of skills have been unpacked in a step-by-step construction of an occupation. It is thus found that the OFO is in the main constructed based on the concept of skill.

The significance of this finding will be further discussed during the presentation of findings arising from the employer survey and interviews and then synthesised in section 4.3.

4.1.2 The use of the OFO to identify skills needs

This section will present the findings on how occupational data is collected followed by how the occupational data is analysed and then how the skills needs are presented using the OFO.

a. Identification and presentation of Skills needed by the Sector

The OFO is used to obtain occupational data from employers that is then analysed to identify skills needed and present skills needed at occupational level based on the OFO. To identify the skills needed by the sector, data is collected from employers that includes OFO information that is then analysed to identify the skills needed. CHIETA collects data from employers annually who complete and submit a WSP (attached as appendix 7).

According to CHIETA interviewee 2, the CHIETA then undertakes a trends analysis of the WSP to identify annual trends in employment and scarce skills (skills needed). The trends analysis report[11] provides a detailed analysis of the employer data collected and consolidated at a sub sector level and then weighted. The analysis presents trends according to thematic areas such as age and geography. It uses the occupational coding of the OFO to disaggregate the employee data along the thematic areas[12]. CHIETA interviewee 2 indicated that the trends analysis provides insights on the priority areas that the CHIETA is required to support, for example, an

[11] CHIETA Trends in Employment and Training reports (2013, 2014, 2015)
[12] "CHIETA Trends in Employment and Training," 2015, p. 49

aging workforce, transformational priorities in terms of race and gender within each of the eight occupational groups, in addition to the scarce skills aggregation.

The structure of the occupational groups and occupation titles of the OFO is utilised to present the findings of the trends in the sector, the profile of the sector and the skills needed by the sector. According to CHIETA interviewee 2, the trends analysis is utilised to conduct stakeholder consultation to sift and determine the final adopted scarce skills list for the sector. In summary: occupational data is analysed, aggregated, and weighted to identify trends in the sector and to present the aggregation of the skills needed by employers.

Further, the OFO is utilised to present the skills needed by the sector in the sector skills plan. The skills needed are presented in a table referred to as the PIVOTAL list (Appendix 9). The skills needs identified are captured and presented using the OFO and Appendix 9 outlines the 10 skills most needed by the sector in the 2016/2017. The skills needed are presented according to an OFO code, occupational title and occupational specialisation and alternate titles for the occupation. A cross correlation analysis of the OFO and the skills needed as reported in the SSP align at the level of occupation code, occupation title and specialisation and alternate title. Thus it can be established that the OFO has been used to identify and present the skills needed by the sector in 2016/17. CHIETA interviewee 2, 3 and 4 indicate that the skills needed as reported in the SSP provide the basis for how funds (skills levies) are allocated.

In summary, the findings presented indicate that the OFO is utilised to identify and present the skills needed by the sector, as analysed and presented by CHIETA in the SSP. The skills needs are informed by the occupational data collected from employers and analysed by CHIETA. The analysis of the occupational data informs the trends needs analysis for the sector and provides the basis for stakeholder consultation and engagements to sift and refine the skills needs identified. The skills needed by the sector presented in the sector skills plan align with the OFO. The skills needs presented include the occupational code, occupational title and occupational specialisation/alternate title. Thus skills needs are determined, aligned and presented based on the use of the OFO according to the interview and source document analysis.

4.1.3 The use of the OFO to identify education and training interventions

This section presents the two key findings on whether the OFO is used to identify education and training interventions.

a. OFO not used for identifying education and training interventions

The first key finding arising from the document and the CHIETA interview analysis indicates that the OFO is not utilised to identify education and training interventions.

An analysis of two documents, namely the *CHIETA Occupational Handbook (2014) and the CHIETA Trends in Employment and Training (2015),* indicates that the WSP included a measure for qualification of the current employees while the occupational handbook provided occupational descriptions for key chemical sector occupations. These included detailed education, training and other requirements, such as professional registration, needed for such an occupation.

According to the *CHIETA Trends in Employment and Training* (2015, p. 12) report, the education and training level is based on information collected through the WSP bio data of current employees. However, the same report, *CHIETA Trends in Employment and Training* (2015, p. 12) mentions that the information on educational levels of the workforce in the sector was not comprehensive.

Although the OFO is utilised to analyse the skills needs reported by employers, the trend analysis report does not indicate how the education and training embedded in occupational mapping on the OFO was used to identify the education and training interventions required.

The CHIETA interviews provided insights on the *why* the OFO was not utilised for the purpose of identifying the required education and training. CHIETA interviewees 2 and 4 expressed reservations about the notion of education and training "levels". Thus CHIETA commenced with the development of a framework to measure education and training relevant to the SA context, that would be linked later to the chemical sector[13]. An analysis of the source documents indicates that the CHIETA

[13] CHIETA Occupational Handbook (2014) and Towards the Establishment of a Credible Institutional Mechanism for Skills Planning within CHIETA: Defining the CHIETA's Focus in terms of Occupations (2014)

developed a proposed framework aligned to the SA education and training system in terms of the NQF and a desktop analysis of qualifications on offer in SA. The proposed framework is provided as Appendix 10[14]. The analysis highlights that CHIETA is yet to implement the proposed framework.

I now turn to establish how education and training was identified.

b. Determining the measure for education and training used for skills planning

The document analysis highlighted that CHIETA determined education and training interventions on broad categories and thus did not use the ISCED levels, as embedded in the OFO.

CHIETA adopted the OFO guide (2013) to implement the OFO. A comparative analysis of the 2013 and 2015 OFO guideline reveals a significant difference in terms of how education and training levels were defined. The OFO Guideline 2015 excludes all reference to education level while the OFO Guideline 2013 indicates that ISCED be used as a measure for education and training.

CHIETA interviewees 2, 3 and 4 indicated that the CHIETA uses the OFO Guideline 2013. During the course of conducting the interviews I could not establish why the CHIETA used the 2013 guide and not the 2015 guide.

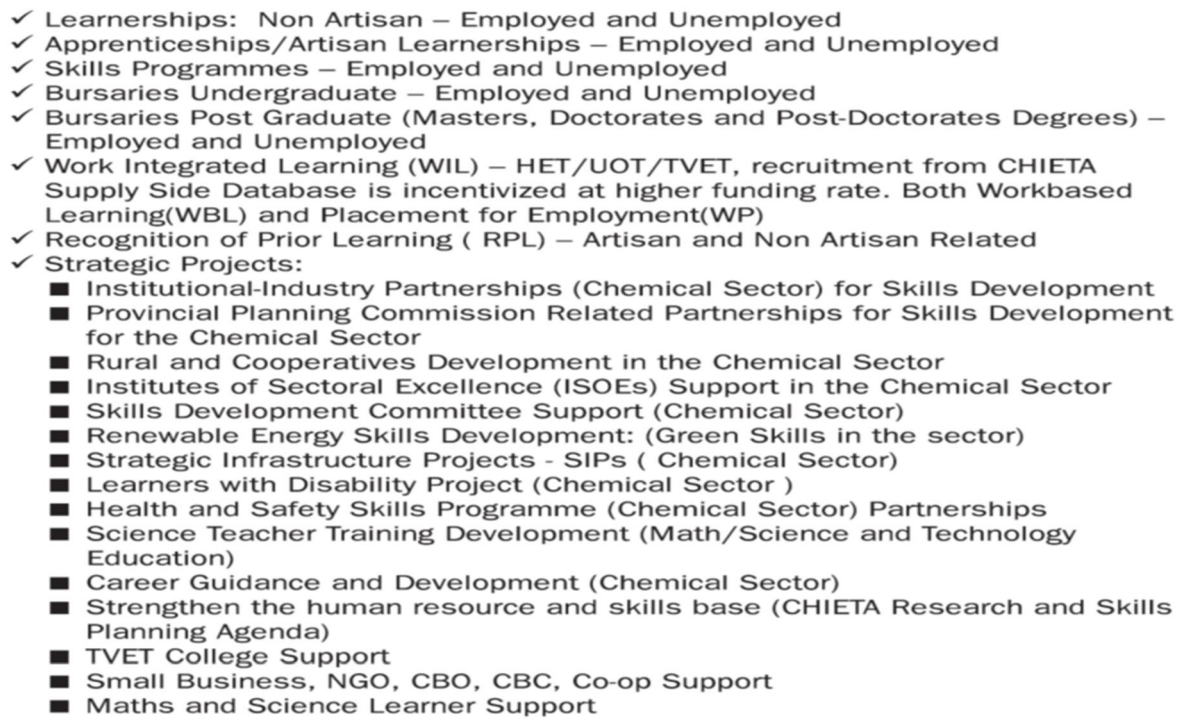
The OFO guideline 2013 says the skills level is measured by determining "the complexity and range of tasks and duties to be performed in an occupation"[15]. The skills level is also determined by *the level of formal education defined in terms of the International Standard Classification of Education (ISCED-97)* required for competent performance of the tasks and duties involved; and the amount of informal on-the-job training and /or previous experience in a related occupation required for competent performance of these tasks and duties.

However an analysis of the SSP[16] list of skills needed as well as education and training interventions, indicates that broad educational categories were used and not the ISCED levels provided in the OFO guideline 2013 (Figure 3). CHIETA supports

[14] "CHIETA Trends in Employment and Training," 2015, p. 50
[15] "Guidelines: Organising Framework for Occupations (OFO) 2013," 2013, pp. 6&7
[16] "CHIETA Sector Skills Plan 2016/17," 2017

education and training linked to the skills needs of the sector. It follows broad categories of education and training interventions linked to a level on the NQF and a funding route such as bursaries. The CHIETA advertisement on the internet as presented in Figure 5 shows an example of the broad support and education and training interventions funded by the CHIETA.

Figure 5. Discretionary Grant Advert 2017 to indicate the programme and support interventions offered by CHIETA.



- ✓ Learnerships: Non Artisan – Employed and Unemployed
- ✓ Apprenticeships/Artisan Learnerships – Employed and Unemployed
- ✓ Skills Programmes – Employed and Unemployed
- ✓ Bursaries Undergraduate – Employed and Unemployed
- ✓ Bursaries Post Graduate (Masters, Doctorates and Post-Doctorates Degrees) – Employed and Unemployed
- ✓ Work Integrated Learning (WIL) – HET/UOT/TVET, recruitment from CHIETA Supply Side Database is incentivized at higher funding rate. Both Workbased Learning(WBL) and Placement for Employment(WP)
- ✓ Recognition of Prior Learning (RPL) – Artisan and Non Artisan Related
- ✓ Strategic Projects:
  - ■ Institutional-Industry Partnerships (Chemical Sector) for Skills Development
  - ■ Provincial Planning Commission Related Partnerships for Skills Development for the Chemical Sector
  - ■ Rural and Cooperatives Development in the Chemical Sector
  - ■ Institutes of Sectoral Excellence (ISOEs) Support in the Chemical Sector
  - ■ Skills Development Committee Support (Chemical Sector)
  - ■ Renewable Energy Skills Development: (Green Skills in the sector)
  - ■ Strategic Infrastructure Projects - SIPs (Chemical Sector)
  - ■ Learners with Disability Project (Chemical Sector)
  - ■ Health and Safety Skills Programme (Chemical Sector) Partnerships
  - ■ Science Teacher Training Development (Math/Science and Technology Education)
  - ■ Career Guidance and Development (Chemical Sector)
  - ■ Strengthen the human resource and skills base (CHIETA Research and Skills Planning Agenda)
  - ■ TVET College Support
  - ■ Small Business, NGO, CBO, CBC, Co-op Support
  - ■ Maths and Science Learner Support

Sourced from CHIETA website: 2017

Thus, CHIETA uses overarching programme descriptors for education and training and funding routes such as learning programmes, skills programmes, apprenticeships, Bachelors, Honours, Masters and PHDs, bursaries or TVET programmes to address the skills needed.

CHIETA interviewees 3 and 4 indicated that while employers identify interventions through the WSPs, the CHIETA provides support in terms of the programmes summarised above. Thus it can be established that the CHIETA did not identify education and training interventions in terms of ISCED levels as provided in the OFO.

Were skills needs addressed by education and training intervention identified?

I could not answer this question as the OFO has not been fully implemented and in the main the key finding was that the OFO has not been used to identify education and training interventions as discussed in 4.1.3.

For future studies on the OFO, consideration on the methodological and data approaches will need to be refined to provide insights on whether the skills needs have been addressed. Although an analysis of the CHIETA annual report and CHIETA interviewees 3 and 4 indicated that skills needs have been addressed, this was at a very general level. The source document and interview analysis provided general insights that skills needs were met but did not provide in-depth insights or findings on specific cases where skills needs were addressed.

Reflections of the study in section 5.2 will discuss future considerations for studies on the OFO.

4.2 Findings: Employers

4.2.1 Findings and analysis on how employers use the OFO

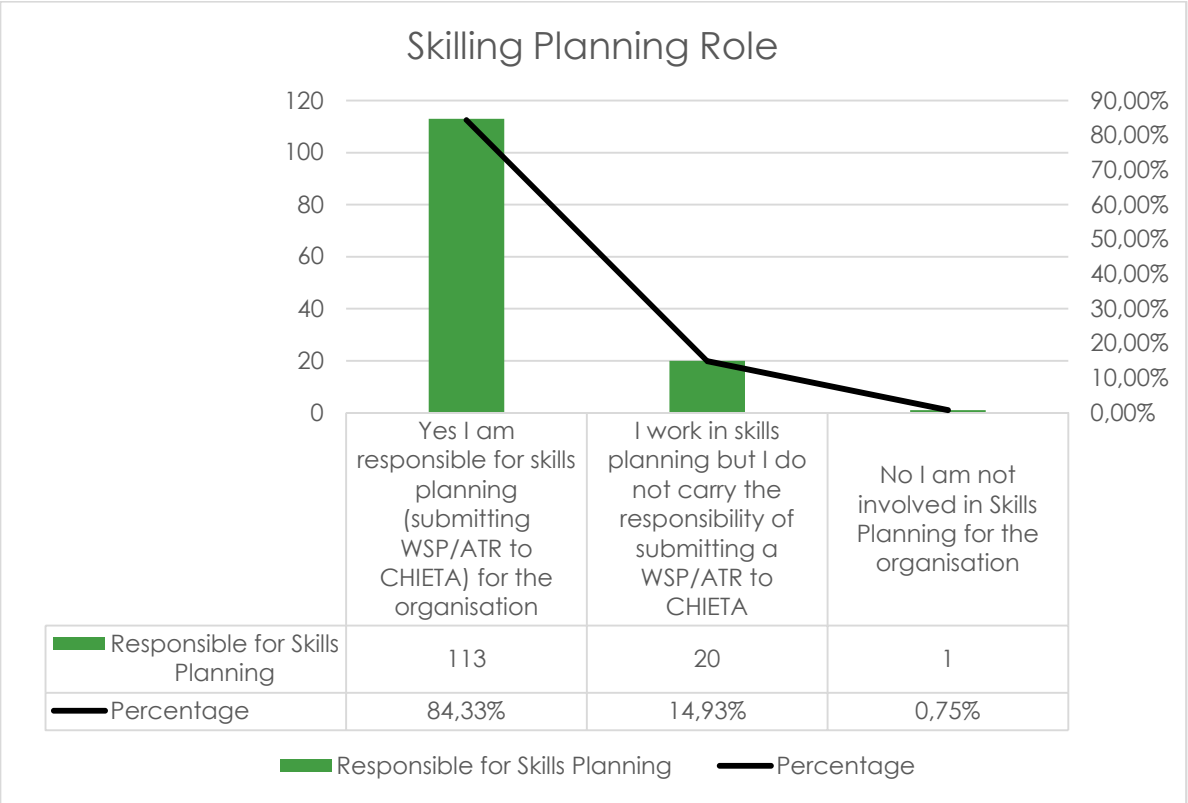
This section presents the findings from the employer survey and interviews. The two main findings from the source documents and employer interviews are that employers were supported to use the OFO for reporting to CHIETA but that the OFO is not used by employers for skills planning.

a. Information on Employers: Survey and Interviews

i. ***Employer Official Responsible for Skills Planning***

A total of 134 employers responded to the survey as shown in Figure 6 below.

Figure 6. Survey: Responsible for Skills Planning



Of the 134 respondents, 113 (84%) respondents were people that were responsible for skills planning for the employers falling under the CHIETA's scope. A further 20 (15%) respondents worked in skills planning but were not responsible for skills planning. Only one (1%) respondent was not involved in skills planning. It can thus be concluded that the survey was sent to the relevant officials, i.e. the Skills Development Facilitator (SDF) who is responsible for skills planning and signing off the WSP submitted to the CHIETA during the financial year 2016 to 2017. It can be deduced that the 113 respondents responsible for skills planning can provide insights into the practical utilisation of the OFO.

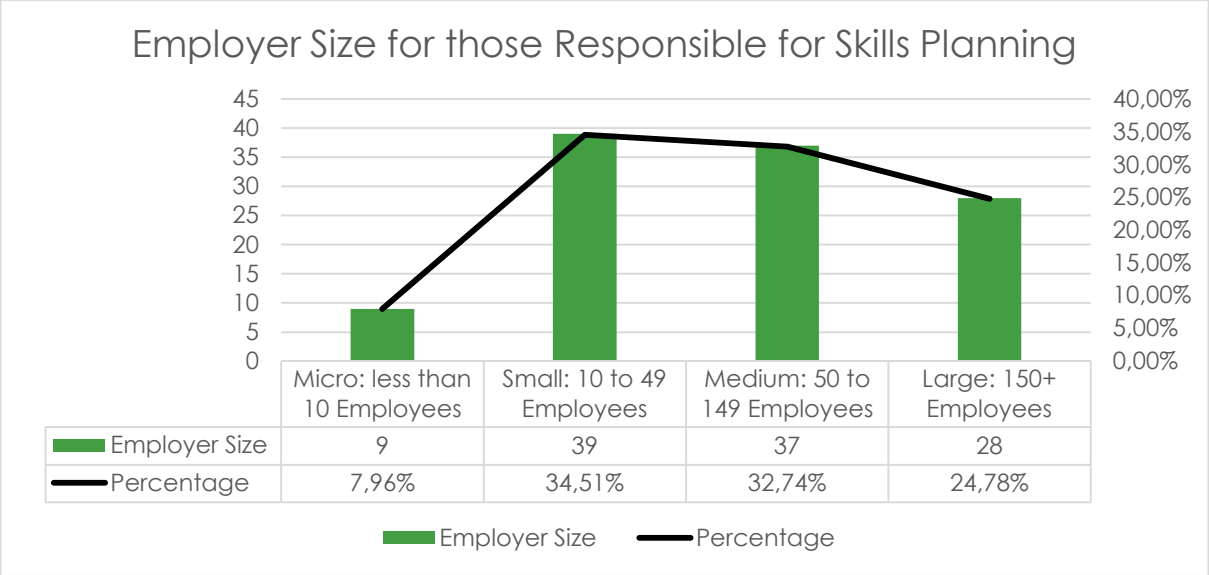
Further, the four employer interviews were conducted with those responsible for skills planning. In the case of the two focus groups, the individuals responsible for skills planning included officials involved in contributing and administering the completion of the WSP and skills planning for the employer.

Thus it can be concluded that, in the main, the survey and interviews represent the experiences of individuals responsible for skills planning as well as utilising the OFO.

ii. ***Size of Employer***

Figure 7 indicates the size of the workplace for the 113 employer survey respondents.

Figure 7. Employer Size for those Responsible for Skills Planning



The CHIETA demarcates the employer size according to four categories, namely micro, small, medium and large.

- Micro employers employ less than 10 employees;
- small employers employ from 10 to 49 employees;
- medium employers employ from 50 to 149 employees; and,
- large employers employ more than 150 employees.

Figure 7 shows that of the 113 employers that completed the survey, small and medium firms were the main respondents with 39 (34%) and 37 (33%) respectively. The third largest respondent portion were large firms with 28 (25%) firms responding. Lastly 9 (8%) micro sized firms responded to the survey.

Thus it was concluded that the responses to the survey completed by the 113 employer officials responsible for skills planning represent the experiences and views of small, medium and large employer firms in the chemical sector.

Employer officials interviewed were from three large employers and one micro employer.

b. Employers supported by CHIETA to use the OFO as a reporting instrument

According to the survey analysis and interviews, employers received support from CHIETA to use the OFO.

The survey responses highlight that CHIETA provided nine support mechanisms to employers to use the OFO. Employers indicated that they had received multiple types of support and thus the survey results represent the number of employers that received support per specific support intervention.

The OFO guideline provides the purpose, definitions and structure of the OFO. According to the survey results, 72 (64%) out of 113 employers used the OFO guideline.

Employers also received assistance from CHIETA initially to map jobs to occupations. According to the survey, 39 (35%) out of 113 employers indicated that CHIETA did provide extensive support initially when implementing the OFO by undertaking the mapping of all the jobs on the employer organisational structure to the OFO. Employer interviewees 1 and 2 indicated that CHIETA assisted in 2013 to map jobs in their organisation to occupations. However, employer interviewees 1 and 2 further indicated that subsequently the employer (they) were required to undertake the task of mapping new jobs to occupations.

CHIETA thus developed the skillogical approach to assist employers to map jobs to occupations coupled with the occupational handbook. The employer interviews did not provide specific insights as to whether or how employers used the skillogical approach. In fact, at no stage did any of the employers interviewed mention or appear to be aware of the skillogical approach.

Further CHIETA has also provided employers with mapping tables to identify jobs previously mapped to the OFO. According to the survey, 23 (20%) out of 113 employers used the mapping tables to guide their use of the OFO. According to the survey 33 (29%) out of 113 employers use an instruction manual to support them to use the OFO.

In addition to the guidelines and documents provided by the CHIETA, the analysis also highlights that the CHIETA conducted employer capacity building workshops

and one-on-one engagements to support employers, and employers could call an official at the CHIETA to advise them on how to use the OFO to map jobs to occupations.

Lastly, the CHIETA developed and implemented an online information technology reporting system for the submission of the WSP system with dropdown boxes for occupations. According to the survey, 24 (21%) out of 113 employers received support through the online workplace skills plan reporting systems.

Employer interviewees 1, 2 and 3 indicated that the CHIETA also provided support to create an interface with their internal HR systems to align their internal reporting of jobs to the occupations on the OFO.

The survey analysis highlighted that in the main employers used the OFO Guideline and called the CHIETA call centre for assistance to use the OFO.

Employers were also requested to indicate if any other type of support was provided by the CHIETA on how to use the OFO. 16 (14%) employers provided comments. An analysis of the comments indicated that employers received the following support from CHIETA: regional skills forums, assistance to complete the WSP, support provided to employer sourced consultants to complete the WSP. However, 7 (6%) of the 113 employers responded to indicate that they did not receive support and would require additional information and support on the OFO.

The numerous interventions and mechanisms set in place by CHIETA to support employers highlights the complexities and challenges experienced by employers when using the OFO. In spite of the current interventions, it can be inferred from the survey responses that support to use the OFO is critical to ensure its effective use.

Another inference arising from the survey analysis is the role of consultants and or professional bodies in the skill planning process. This study has, in the main, focussed on employers and CHIETA officials use of the OFO, but the survey highlights that CHIETA will need to consider approaches to support other key role players in the sector that perform skills planning on behalf of employers.

Unfortunately, the survey and interview analysis did not provide insights into why employers utilised consultants or external capacity to undertake skills planning. I thus propose that this be an area for further research. Such a study will provide insights on how skills planning is carried out within the employer firms.

The analysis of the survey and interviews indicates that the type of support CHIETA has provided has focussed on assisting employers to use the OFO as a reporting tool and not as a tool for employers to inform their skills planning.

The survey analysis produced varied results. According to the survey, 49 (43%) out of 113 employers indicated that the support did not assist them to identify the kinds of skills that they needed but it did help them to use the OFO as a reporting tool.

On the other hand, 37 (33%) of the employers indicated that the support provided did assist them to identify the kind of skills that they needed.

In addition, 27 (24%) of the employers indicated that the support did in part assist them to identify the skills they needed. It can be inferred that majority of employers, that is 76 (67%) out of 113 employers did not perceive that the support provided to use the OFO assisted them to identify the kinds of skills needed by the employer.

The survey responses from employers on whether the support assisted them to identify education and training interventions mirror the findings on whether the support assisted employers to identify skills needs. Thus it can be surmised that the support did not assist employers for skills planning as the OFO is engaged as a reporting mechanism.

c. Factors that influence employer skills planning

The key finding from the employer survey and interview analysis indicates that employers do not use the OFO for skills planning within their firm. The survey analysis highlights that 23 (20%) of 113 employers claim to use the OFO in their daily operation in contrast to the 51 (45%) of the 113 employers that do not use the OFO in their daily operations. In addition, 39 (35%) of the employers indicate that they only use the OFO as a reporting mechanism. Table 4 provides an overview of the survey results.

Table 4. Overview on whether Employers use the OFO on a daily basis for skills planning

Question	Answer	Number of Responses	Percentage
Do you use the Organising Framework for Occupations (OFO) in your day to day operations for skills planning?	Yes I do use the Organising Framework for Occupations (OFO)	23	20%
	No I do not use the Organising Framework for Occupations	51	45%
	Use the Organising Framework for Occupations to report to CHIETA	39	34%

None of those interviewed used the OFO in their daily operations for skills planning. Employer interviewees 1, 2 and 3 indicated that they use the OFO only for reporting in the WSP. Employer interviewee 4 indicated that the consultant undertakes the skills planning and although she is responsible for signing off the WSP, she has not used the OFO in the daily operations for skills planning.

However, Employer interviewee 1 did indicate that the OFO is utilised when the employer develops new jobs. It is used to map new entrant employees to an occupation for reporting, as well as to inform the qualification development process.

In summary, most employers used the OFO for reporting purposes to submit the WSP to CHIETA. The OFO is not used for skills planning purposes within the firm. It is therefore critical to explore the reasons or underlying factors as to why the OFO has not been utilised for skills planning at the employer level.

d. Factors undermining the use of the OFO for skills planning

I argue that two sets of conceptual tensions as well as a number of other factors undermine the use of the OFO in skills planning within employer firms.

The first conceptual tension highlighted was the distinction between jobs and occupations. Employer interviewees 1, 2 and 3 indicated that they undertake skills planning at the level of jobs and not at occupational levels as depicted on the OFO. However, Employer interviewee 3 indicated that as they had an international

footprint, they could consider using the OFO to analyse the occupational scope of the entire employee base with their sister organisations. The survey analysis similarly highlighted that employers in the main identified skills requirements based on jobs and not occupations.

The second conceptual tension identified was that employers understood skills needs and education and training interventions as interchangeable concepts. When Employer Interviewee 2, the manager of a training centre responsible for skills planning, was asked how they identified skills needs, she indicated that training programmes were identified to support employees to obtain knowledge of new equipment. On further probing on how they identify the type of jobs and skills required, she indicated that another section in the firm identified jobs to be advertised and the skills and educational qualification required to do the job.

This was also the case for Employer interviewee 3 who indicated that another unit within the firm identified, advertised and was aware of the jobs that were hard to fill. Employer Interviewee 1 indicated that the jobs that were hard to fill, or new entry level jobs, were identified as skills needed. I thus could deduce that the terms skills, education, training, and qualification were not commonly understood by employers, and in some cases were viewed as interchangeable concepts.

Table 5 highlights that in the main employers did not use the OFO to identify skills needs nor to identify the types of education and training required. Moreover, the response rate between the use of the OFO for skills needs identification and the use of the OFO for identifying education and training was insignificant (Table 5).

Table 5. Employer used OFO to identify skills needed and education and training

Question	Answer	Number of Responses	Percentage
Do you use the OFO for identifying:	Skills needed by your organisation - Yes	34	30%
	Skills needed by your organisation - No	77	68%
	Education and Training to address skills needs identified - Yes	36	32%
	Education and Training to address skills needs identified - No	75	66%

However, I was unable to confirm whether the conceptual tensions revealed in these survey results could be confirmed as part of the general employer population other than the data collected from employer interviewee 1, 2 and 3. This is an area that would require further research through conducting more interviews.

In addition to the conceptual tensions discussed above, two other main reasons were provided by employers as to why they do not use the OFO in the daily operations for skills planning: the first was that firms identified skills requirements based on jobs and not occupations and the second was that the occupations on the OFO did not match jobs in their firm (Table 6). This is a key finding for this study as the respondents are those who are most likely to use the OFO, and they already use the OFO for reporting in the WSP.

Table 6. Reasons the OFO is not used

Question	Answer	Number of Responses
If you do not use the OFO for skills planning, why not? Please tick relevant box/s:	Too complex	17
	The occupations on the OFO do not match jobs in our organisation	38
	The OFO does not include skills required by the organisation	17
	The OFO is not mapped to the education and training provision available	15
	The OFO does not map/match types of education and training required to address skills required	15
	The organisation identifies skills requirements based on jobs and not occupations	43
	We use international occupational categories and so do not use the OFO	5
	Other (please specify)	16

Other key factors that led to employers not using the OFO were that:

- It is too complex;
- It is not mapped to education and training provision available; and
- Some employers use international coding systems which are not compatible with OFO.

Five employers responded to the survey indicating that they do not understand the OFO and that it was merely a statistical and administrative tool for reporting to CHIETA. One employer responded that "The coding does not play any role in any decisions, but is merely an administrative function."

The analysis and findings on why the OFO is not used by employers in the survey were corroborated by the employer interview analysis. Employer 2, 3 and 4 reiterated that the employer undertakes skills planning based on jobs and that the OFO was too complex and it was not updated in line with new emerging jobs.

Employer 2 and 3 provided additional reasons as to what informs skills planning and undermines the use of the OFO: that the company strategy informs the type of skills needed, the employees determine their own personal growth and development plans, and salary negotiations and retrenchments/downsizing.

4.3 Summary of Overall findings

In this section, I shall firstly provide a summary synthesising the research results obtained structured in line with the research questions.

4.3.1 Discussion and Analysis: CHIETA and Employer

a. ***Primary Research Question: How have the CHIETA and employers used the OFO for Sector Skills Planning and has it created an interface between education and work?***

At the time of conducting this study, it was found that the OFO was not fully implemented and thus establishing whether the OFO had created a meaningful interface between the world of work and education was not possible. A critique of this finding may be that the implementation and use of the OFO recognises that the world of work and education are two distinct domains. Hence the OFO is firstly being used to identify skills needed from the perspective of the world of work. Thus critics may argue that the concept of occupation has not been able to create a direct interface between work and education at the time of this study.

This study has found that the OFO was introduced with education and training features not relevant to the SA education system and hence the need to develop and refine. Hence I argue that CHIETA is further developing and refining the OFO to

create a meaningful interface between education and work. Future studies could provide further insights once the OFO has been fully implemented.

b. *Secondary Research Question 1: How have CHIETA and employers used the OFO to inform Skills Planning?*

The key finding is that employers do not use the OFO for skills planning as employers use the notion of jobs and firm specific dynamics to inform their skills planning within the organisation.

The CHIETA on the other hand currently uses the OFO data collected from employers to identify, present and validate sector skills needs and not for identifying education and training interventions.

This study has found that CHIETA and employers do not use the OFO for the same purpose. This has implications for the relevance of sector skills planning outcomes.

On the one hand, the CHIETA has used the OFO to collect occupational data from employers to inform skills needs, to identify and present the skills needs for the sector and to validate skills needs for grant allocation.

Employers, on the other hand, have not used the OFO to inform their skills planning and in the main use the OFO as a compliance reporting instrument by compiling their WSPs and submitting them to CHIETA.

This is worrying as the strength of skills needs analyses and interventions are underpinned by quality and reliable data from employers. As this study has found, the submission of skills needs and interventions through WSPs is perceived to be for compliance purposes only and thus the relevance and reliability of the data reported undermines the outcomes of sectoral skills planning. Understanding employers' internal dynamics is critical as it will inform the skills that they need and provide insights to refine the OFO and approaches to skills planning.

This study has highlighted the conceptual tensions as employers and CHIETA do not have a common understanding of the concepts embedded in skills planning and the OFO. The four concepts extrapolated from the study are occupations, skills, jobs

and qualification. In the main, employers use the notion of jobs while the OFO is underpinned by the notion of skills in order to determine occupations.

c. Secondary Research Question 2: How have CHIETA and employers in the chemical sector used the OFO to identify skills needed?

This study has found that only the CHIETA uses the OFO to identify and present the skills needed by the sector. Given that CHIETA uses the data from employers, I argue that the quality and quantity of data from employers underpin the relevance of the skills needs identified and presented by CHIETA. Employers do not use the OFO for skills planning and have other factors that inform the skills needs identified.

d. Secondary Research Question 3: How have CHIETA and employers in the chemical sector used the OFO to identify education and training interventions to address the skills needed?

This study has found that the OFO has not be used by CHIETA nor employers to inform the identification of education and training interventions. Nevertheless the CHIETA is refining and developing the education and training in line with the SA education and training provision. Further studies may need to establish the use of the OFO for education and training once it has been fully implemented.

e. Secondary Research Question 4: Have the education and training interventions addressed the skills needed?

This study has not been able to establish whether the skills needs were addressed by the education and training interventions identified as the OFO is not yet fully implemented.

5 Chapter Five: Reflections on findings and on the research process

In concluding this research, I will now reflect on the research findings, considering the employer internal dynamics, complexities and limitations of skills planning, clarity of concepts used, and divergence in Occupational Classification Systems. This research raises some issues for consideration by researchers and policy makers in relation to the OFO and skills planning. Finally, I present my reflections of this study and future considerations for studies on the SA OFO.

5.1 Discussion and Analysis

5.1.1 Understanding the Employer Internal Dynamics

A key finding of this study is that employers determine and inform their skills planning needs and interventions based on internal firm dynamics. Further this study has found that employers do not use the OFO to inform their skills planning processes. However, this study has found that employers are required to report their skills needs and interventions in line with the OFO. In other words the data on skills needs and intervention may not be representative of the skills needs and interventions as informed by the internal firm dynamics. This has implications for the quality and relevance of the employer data on skills needs and interventions that is reported to CHIETA.

Therefore, it is important for those involved in skills planning to understand the internal dynamics that influence and steer skills planning within employer firms. Employers approach skills planning focussed on their internal skills planning needs and interventions and not broadly for the sector. Employers are not a homogenous grouping with similar production, notions of labour process and labour relations. An in-depth understanding of employer behaviour and factors that influence production and labour provide a foundation on which to strengthen the quality and relevance of skills planning and its implementation while understanding its limitations.

Understanding employer dynamics can assist to develop demand-led skills planning systems and mechanisms. In other words, establishing or understanding the notions of skills, qualification, occupations, labour, education and training, and jobs in

relation to production, may provide the basis to better set in place instruments, policies and systems that provide insights for demand-led skills planning.

Sectoral skills planning relies in the main on data from employers to identify the relevant and required skills needed to grow their productivity. Thus the mechanism used to support and enable effective skills planning needs must be in tune with the dynamics and notions inherent in employer firms. My study confirmed the research discussed above (Marock et al., 2012) that it is essential to extract and translate the employer voice in a manner that does not drift from the actual skills needed. However, as the labour market constantly shifts, the data is limited to represent a specific time and this requires complementary approaches to skills planning.

5.1.2 Complexities and Possibilities of Skills Planning

In SA, steering supply of education and training provision to meet employers' skills needs as well as national policy imperatives has and remains of paramount importance.

The literature indicates (Gleeson, 1986; Marock et al., 2012) that demand-led skills planning is narrowly focussed on specific employer skills needs for the short term. Understanding the short term needs of employers provides insights on shifts in the employer and the labour market, and provides a basis to inform skills planning. While this type of insight is valuable for understanding or recognising shifts in sector or within specific firms, it is not sufficient to inform the steering of education and training system over the long term. Responding to address these short terms needs may have implications for resourcing as well as locking employees into specific employer occupational requirements linked to the employer's immediate needs. This limits employees from moving into other sectors as they will have learnt specific skills required by an employer.

Short term skills needs can be addressed through in-house employer training while steering of education and training systems for the longer term requires both an understanding of employer skills demands as well as complementary research. Marock et al. (2012) and Wilson et al. (2004) posit that using complementary skills planning approaches and methods in conjunction with demand-led skills planning

or employer surveys could provide the required insights to steer education and training provision over the longer term.

Further, this study has found that CHIETA is revising and developing the educational descriptions present in the OFO. The CHIETA has identified that the way education and training is framed in the OFO does not align to the SA framing and structure of education and training provision. This study has found that education and training is not conceptualised within the SA context, yet employers are required to indicate skills needs and the types of educational supply. This has resulted in the delinking of education and training systems from sectoral skills planning. This has implications for addressing skills needs. The engagement and alignment of the education and training provision system within the context of skills planning will need to be further researched and harnessed.

5.1.3 Clarity of Concept and Terminology

Drawing on the skills planning literature (Wilson et al. 2004) and sector skills plan review (Marock et al. 2012) there are five concepts that underpin sector skills planning and the OFO. In concurrence with the literature, this study has identified skills, occupation, education and training, qualification and jobs as the key concepts underpinning skills planning and the OFO. These concepts were introduced to provide a means to translate and build a bridge between the work and education domains. However, in pursuit of establishing relations between these parallel domains, the underpinning contestations, and differing understandings of these concepts by the various actors in skills planning, has added complexity to skills planning.

This study has found that the concepts are not commonly or even well understood. Further employers undertake skills planning based on the concept of jobs and not on occupations.

In an endeavour to improve skills planning, mechanisms have been introduced to support skills planning. Yet this study has found that policies and planning instruments carry within them concepts that have implications for their use and how they interface with other instruments and approaches. It is therefore vital to establish an understanding of these concepts as well as the relations between these concepts to support skills planning.

Further work will need to be undertaken during the implementation of the OFO. This should include seeking conceptual clarity and understanding to enable effective sector skills planning. While this is my proposal for sector skills planning, I also argue that this would need to be applied to the entire skills planning mechanism envisaged for SAs national skills planning mechanism.

5.1.4 Divergence in use of the Organising Framework for Occupations

This study has found that while the OFO carries or has an embedded notion of direct relations between education and work, in practice education and work domains are approached as distinct and parallel systems. Developing and implementing skills planning policies and occupational classification systems such as the OFO, it is key that the logic, systems, policies and institutional arrangements for education and work domains are understood. This will steer the conceptualisation and development of policies that recognise each system's distinct nature but also identify policy approaches at the macro level that can seek to reconcile these domains.

Recognising these distinct systems provides a solid stepping stone to implement and achieve the objectives set for policies to be introduced. The analysis of the OFO highlights that various frameworks and other policy instruments such as the NQF and ISCED and skills have been included in the OFO. However, the alignment and intention of embedding these policy instruments and concepts within the OFO has added to the contestation and complexity of utilising the OFO for skills planning. The literature has highlighted that it is critical to also consider the alignment across social, fiscal and labour regulations in order to provide a coherent approach to achieving stable occupational labour markets as argued by Iversen & Stephens (2008). Thus related policies and systems need to be aligned and the logic made explicit for the user.

This study has found that the OFO is used as a statistical coding instrument by employers to report and submit their workplace skills plans. Allais et al. (2015, p. 3) highlight that the purpose and use of occupational classification systems should not be viewed as a statistical collection instrument as it carries with it notions and concepts that have implications for its use. This study indicates that the key purpose of using the OFO according to the source documents is to identify, monitor and

report on skills demand and supply. Thus the use of the OFO as a reporting instrument has deviated from the purpose for which it was designed.

This study has highlighted that the focus on the employer skills needs has placed less emphasis on the role or understanding of the education and training provision system. Future studies will need to be undertaken to establish the perspective of education and training systems in relation to the OFO and skills planning. This type of research is key to informing the types of signals required by education and training systems.

As the OFO is still in the process of being fully implemented and further refined, I argue the OFO carries with it the possibility of enabling and supporting effective demand-led skills planning in SA by considering the alignment of policy, holistic skills planning approaches and conceptual clarity both within and across the world of work and education.

5.2 Reflections for this study

The methodological approach for this study has enabled me to obtain insights into this new area, the use of the OFO for skills planning in South Africa. The literature on skills planning, the debates on education and the world of work as well as literature on skills has provided me with a strong conceptual framework. The conceptual framework and the research methodology provided me as the researcher with the means to obtain insights into the use of the OFO as the SA occupational classification system for skills planning. I am however acutely aware that this study has not been without flaws. As such this section sets out some reflections on this study as well as considerations for future studies.

I propose that future studies consider additional methodologies and approaches to grow the body of knowledge on the OFO and further analyse whether the skills needs were addressed. Future researchers could interrogate the underlying relation between education and work by conducting either a conceptual study or alternatively a case study approach of specific occupations at the level of the employer and the CHIETA. In the process, the components of occupations could be tested and a mixed methods approach inclusive of tracer and case study

methodological approaches, could be used to grow the body of knowledge on the OFO.

In addition, researchers could interview education and training providers so as to establish their relation to the OFO and to provide deeper insights on how and why the providers have or have not used the OFO for educational planning.

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7 Appendices

7.1 Appendix 1: Interview protocol for CHIETA Officials involved in Skills Planning who use the Organising Framework for Occupations

The following questions will be posed to the CHIETA officials interviewed. The interviewer will limit probing to seek clarity and follow ups to participant responses.

The officials to be interviewed are responsible and/or involved in skills planning and specifically those officials that use the Organising Framework for Occupations as an instrument to inform sectoral skills planning.

The interviews audio-recorded in order to prepare transcripts to support and inform the analysis of all interviews.

In order to follow the protocols used by the CHIETA officials and to identify the linkages between education and work paradigms three sets of interviews conducted> Firstly interviews conducted with those responsible for the outputs of the sectoral skills planning for the sector and secondly a focus group with those responsible for identifying Skills Needs and interventions with the officials responsible for supporting and implementing the education and training identified.

The questions used to guide the interviewer were:

1. What is your role in CHIETA and your role specifically to skills planning?
2. Is the OFO beneficial to the CHIETA Skills planning process? And what do you use it for?
3. Have you identified new interventions to provide support to employers to use the OFO for skills planning and what do you think that the new intervention will seek to address?
4. How do you help employers to match jobs to occupations? Which features of the OFO helps you to do this this type of matching and who undertakes this matching?
5. How do you help employers to match jobs and occupations to educational levels? Are these levels aspirational or entry requirement? Which features of the OFO helps you do this and who undertakes this matching?
6. How do you help employers match educational levels to the types of education and training interventions to address the skills needed? Which features of the OFO allow you to do this and who undertakes this matching?
7. And are there other factors or tools that you have to use to arrive at the skills needed by the organisation and the type of education and training intervention?
8. Can the OFO be strengthened to help identify the skills needed by the employer as well as the type of education and training interventions? How and what will this address?

9. Has CHIETA provided support to address the skills needs identified through the education and training interventions identified? Can you provide me evidence?
10. What are some of the lessons learnt in using the OFO for skills planning that you may not have already indicated?

7.2 Appendix 2: Interview protocol for Employers involved in Skills Planning who use the Organising Framework for Occupations

The following questions will be posed to the CHIETA Employers interviewed. The interviewer will limit probing to seek clarity and follow ups to participant responses.

The officials to be interviewed are those officials responsible and/or involved in skills planning and specifically those officials that use the Organising Framework for Occupations as an instrument to inform skills planning.

The interviews were audio-recorded in order to prepare transcripts to support and inform the analysis of all interviews.

1. The Criteria used to guide the interviewer were:

1.1 Did they complete Survey? (I check and structure the below questions based on their response to survey)

2. Questions used to guide the interviewer were:

2.1 What is your role in skills planning?
2.2 Do you use the OFO?
2.3 Do you use it in your daily operations?
2.4 What do you use the OFO for?
2.5 Please indicate how you match jobs in your organisation to occupations? What features of the OFO do you use to undertake the matching of jobs to occupations, if at all?
2.6 Indicate how you match occupations to education and educational levels? Are these levels aspirational or entry requirement? Which features of the OFO allow you to do this, if at all?
2.7 Indicate how you map education level required as per the OFO to education and training intervention? Which features do you use to do this?
2.8 And are there other factors or tools that you have to use to arrive at the skills needed by the organisation and the type of education and training intervention?
2.9 Do you think the OFO is useful to you as a person responsible for skills planning?
2.10 Can the OFO be strengthened for skills planning in your organisation? How and what will it achieve to do?
2.11 Did you receive support for the type of education and training interventions required to address the identified skills needs? – Can you provide evidence if you have received support.
2.12 What are some of the lessons learnt in using the OFO for skills planning that you may not have already indicated?

7.3 Appendix 3: CHIETA Employer OFO Survey Instrument

Purpose of Survey and Introduction

To understand the perceptions of employers of the support that was received with regards to the use of Organising Framework for Occupations for skills planning. Your participation in this survey will contribute to this academic study that seeks to establish if employers have been supported to use the organising framework for occupations for skills planning and whether the skills needs identified have been addressed. It is hoped that this research can contribute to broader discussions on skills planning in South Africa and debates in higher education and training.

Instructions provided to complete the survey – It should take you 10 minutes to complete the survey. Your response will be completely anonymous as such no individual or institutional names are required.

CHIETA Employer OFO Survey

* 1. Are you responsible for skills planning, that is to submit a workplace skills plan and Annual Training Report (WSP/ATR) in your organisation?

- ○ Yes I am responsible for skills planning (submitting WSP/ATR to CHIETA) for the organisation
- ○ I work in skills planning but I do not carry the responsibility of submitting a WSP/ATR to CHIETA
- ○ No I am not involved in Skills Planning for the organisation

* 2. The number of employees in the organisation:

- ○ Micro: less than 10 Employees
- ○ Small: 10 to 49 Employees
- ○ Medium: 50 to 149 Employees
- ○ Large: 150+ Employees

* 3. Has the Chemical Industries Education and Training Authority (CHIETA) provided you with support on how to use the Organising Framework for Occupations (OFO) for skills planning?

Strongly Agree	Agree	Disagree	Strongly Disagree
○	○	○	○

4. Please indicate the type of support provided? Please tick relevant box/s:

- ☐ OFO Guidelines
- ☐ Mapping of job to occupations
- ☐ Mapping tables
- ☐ Instruction Manual to use the OFO
- ☐ Capacity Building
- ☐ One on one support engagements
- ☐ I can call a call centre or an official to ask for advise on how to use the OFO
- ☐ Guidance and IT specifications to interface HR Systems and the CHIETA Reporting system
- ☐ IT Systems that convert jobs to Occupation linked to OFO
- ☐ Workshops and engagements to update, add and delete occupations to keep OFO relevant

Other (please specify)

* 5. Has the support that the CHIETA provided on the use of the OFO assisted you in identifying your employer's skills needs?

- ◯ Yes
- ◯ No
- ◯ Partly

* 6. Has the support that the CHIETA provided you to use the OFO assisted you in identifying your employer's type of education and training interventions?

- ◯ Yes
- ◯ No
- ◯ Partly

* 7. Do you use the Organising Framework for Occupations (OFO) in your day to day operations for skills planning?

- ◯ Yes I do use the Organising Framework for Occupations (OFO)
- ◯ No I do not use the Organising Framework for Occupations
- ◯ Use the Organising Framework for Occupations to report to CHIETA

8. Do you use the OFO for identifying:

	Yes	No
Skills needed by your organisation	◯	◯
Education and Training to address skills needs identified	◯	◯

9. Is the OFO a useful tool for identifying:

	Strongly Agree	Agree	Disagree	Strongly Disagree
Skills needed by your organisation	◯	◯	◯	◯
Education and Training to address skills needs identified	◯	◯	◯	◯

10. If you do not use the OFO for skills planning, why not? Please tick relevant box/s:

- [ ] Too complex
- [ ] The occupations on the OFO do not match jobs in our organisation
- [ ] The OFO does not include skills required by the organisation
- [ ] The OFO is not mapped to the education and training provision available
- [ ] The OFO does not map/match types of education and training required to address skills required
- [ ] The organisation identifies skills requirements based on jobs and not occupations
- [ ] We use international occupational categories and so do not use the OFO

Other (please specify)

11. Can the OFO be strengthened to assist you in identifying skills needs and/or the types of educational provision?

- ( ) Yes
- ( ) No
- ( ) Please specify reason/s:

Thank you for your participation.

7.4 Appendix 4: List of Primary Sources

Plans:

1. Sector Skills Plan 13/14;
2. Base Chemical Sub Sector Skills Plan 2013;
3. Explosive Chemical Sub Sector Skills Plan 2013;
4. Fertiliser Chemical Sub Sector Skills Plan 2013;
5. FMCG Chemical Sub Sector Skills Plan 2013;
6. Glass Chemical Sub Sector Skills Plan 2013;
7. Petroleum Chemical Sub Sector Skills Plan 2013;
8. Pharmaceuticals Chemical Sub Sector Skills Plan 2013;
9. Surface Coating Chemical Sub Sector Skills Plan 2013;
10. CHIETA SSP 2014/2015;
11. CHIETA SSP 2015/2016;
12. CHIETA SSP 2016/2017;
13. Draft Sector Skills Plan 2017/18.

Reports:

1. CHIETA Occupation and Qualification Focus Research Report: Towards the Establishment of a Credible Institutional Mechanism for Skills Planning within CHIETA - Defining the CHIETA's Focus in terms of Occupations. ;
2. CHIETA Annual Report 2013-2014;
3. CHIETA WSP Analysis 2013;
4. CHIETA WSP Analysis 2014;
5. CHIETA WSP Analysis Final Report December 2015;
6. Final WSP Observations – Report;
7. General Mapping Observations – Report.

Policies and Guidelines:

1. CHIETA bursary Policy;
2. CHIETA Business Matrix 2014;
3. CHIETA Handbook 2014;
4. Complete OFO 2015 Version;
5. OFO Guideline 2013 – CHIETA;
6. OFO Guideline 2015 – DHET;
7. Supply Side Database;
8. Version 2012 to version 2013 Mapping;
9. CHIETA pivotal List 2015/2016;
10. CHIETA Qualification Matrix 2014.

Other: eg. Survey, presentations

11. Sub-Sector and Chamber Composition;
12. CHIETA WSP submission system and skills development cloud solution (presentation);

13. Customer satisfaction Survey;
14. Joint Chamber induction SETA Grant Regulations – 2017 (PowerPoint);
15. Discretionary Grant Advert 2017 2018;
16. Research and Skills Planning (PowerPoint);
17. General Household Survey 2016.
18. CHIETA Employer company information for WSP approved register 2016/17;
19. List of employers participating on Research and Skills Planning Committee of CHIETA;
20. Names of selected officials involved in Skills Planning at CHIETA;
21. Annual General Meeting presentation by CFO 2016/2017.

7.5 Appendix 5: CHIETA Official Interviewees

1. The Acting Chief Executive Officer – CHIETA Interviewee 1;
2. The Skills Planning and Research Executive Manager – CHIETA Interviewee 2;
3. Chief Financial Officer – CHIETA Interviewee 3;
4. The Project and Grants Manager– CHIETA Interviewee 4.

7.6 Appendix 6: Employer Summary for Survey

Subsector	Number of Employers	Number of Small Employers inclusive of exempt	Number of Micro Employers	Number of Medium Employers	Number of Large Employers
Base Chemicals	157	102	1	37	17
Explosives	6	2	0	2	2
Fertilisers	48	24	0	19	5
FMCG	111	53 1 Exempt (no details)	2	38	17
Glass	39	14	0	12	13
Petroleum	155	105	2	24	24
Pharmaceuticals	123	37	1	52	33
Speciality Chemicals	239	141	1	73	24
Surface Coatings	76	40	0	26	10
Totals	**954**	**518 + 1 Exempt**	**7**	**283**	**145**
Cleaned	811				

7.7 Appendix 7: CHIETA WSP Submission Template 2017

1. Bio data

	Employee Biodata	Please note that this utility is copyright protected. It may only be used by organisations related to SETAs that have contracted IT Aware for support in 2017. No enterprise may use, change or distributete this tool without the explicit permission from IT Aware.												These columns will be auto populated, once you have selected an occupation from the "Search Utility"		
		Biographical Information										Post Information				
ID / Passport No / Employee Number	Name & Surname	Birth Year	Gender	Race	Disabled?	SA Citizen?	Province	Municipality	Highest Qualification Type	Employment Status	Occupational Levels For Equity Reporting Purposes	Organisation Structure Filter (Optional)	Post Reference (Optional)	Job Title	OFO Occupation Code	OFO Specialisation	OFO Occupation
										COMPULSORY							

2. Training

Employee Name will show if in Biodata Sheet	Enter ID / Passport No / Employee Number	Qualification / Learning Programme Type	Please select details of Learning Programme from lists supplied	Please specify if study field or specialisation is not in previous column	Total Training Cost (See guide for cost calculation)	Achievement Status	Year Enrolled / Completed

3. Scarce Skills

Scarce Skills	Please indicate which occupations you regard as scarce due to not finding adequatly qualified or experienced peole to fill current or future vacancies. SCARCE SKILLS refer to those occupations in which there are a scarcity of qualified and/or experienced people, currently or anticipated in the future, either (a) because such skilled people are not available or (b) they are available but do not meet employment criteria. Scarcity can be both quantitative as in (a) where there are few qualified people or qualitative as in (b) where there are enough qualified with training not adequate to meet job or professional demands. If the specific occupation is not listed under the CHIETA focus occupations you need to add the occupation by selecting it at the bottom of the list.						
	SCARCE OCCUPATIONS TO REPORT?						
Occupation or Specialisation Title	Occupation Code	Reason for Occupation being Scarce	Number of hard to fill vacancies that you considered scarce during Jan 2016-Dec 2016	Add comments regarding the scarcity, ie which tasks/outputs that are critical for the occupation are not being met or performed by employees.	With what type of learning programmes are you planning to address this occupational scarcity?	NQF Level	If you are planning on importing this skill from outside South Africa, please state number of people

4. Finance and Training Comparison

Finance and Training Comparison

PLEASE NOTE THE WSP-ATR SUBMISSION WILL BE CONSIDERED INCOMPLETED IF ALL THE SECTIONS ON THIS SHEET ARE NOT COMPLETED. PLEASE RESPOND TO SECTIONS THAT YOU HAVE NO COMMENT OR THAT ARE NOT APPLICABLE BY TYPING "not applicable" OR "no comment"

Skills Development Spend	
Total **actual** payroll for the year 01 Jan 2016 - 31 Dec 2016	
Total **actual** skills development spend for the year 01 Jan 2016 - 31 Dec 2016	
% of payroll spent on skills development	
Total **projected** payroll for the year 01 Jan 2017 - 31 Dec 2017	
Total **projected** skills development budget for the year 01 Jan 2017 - 31 Dec 2017	
Projected % of payroll to be spent on skills development	

Number of People Trained	
How many beneficiaries did you plan to train in the last financial year as recorded in your WSP submitted in year Jan 2016-Dec 2016?	8
Did you submit a WSP for 2016?	
Total beneficiaries actually trained in the Jan 2016-Dec 2016 reporting year	
Actual Training vs Planned Training %	0

Alignment between PLANNED and ACTUAL Training for 2016 is less than 60%, please state reasons for deviation

Impact Assessment

Please indicate to what extend the WSP-ATR submission process influenced the following in your company:

Confirmation of employees' highest qualifications	
Consideration to provide learning opportunities for unemployed people	
Identification of learning areas and opportunities for employed staff	
Addressing equity and BBBEE targets	
Offering work placement opportunities to learners requiring work integrated learning	
Identification of areas for research and innovation	
How many learners did you retain after offering learning to them	
How many people were able to find employment due to the training you have offered	

General comments on how training, as reported, has affected the company

SUPPORT RENDERED and PLANNED

Please indicate what support was rendered / is planned for each of the following. Also Indicate the budget of the support rendered.

Rural Development support planned and rendered	Budget
Non-Governmental Organisation (NGO) support planned and rendered	Budget
Community Based Organisation (CBO) support planned and rendered	Budget
Non-Profit Organisation (NPO) support planned and rendered	Budget
Community Based Co-operative (CBC) support planned and rendered	Budget
Small Business support planned and rendered	Budget
Cooperatives support planned and rendered	Budget

7.8 Appendix 8: Analytical Framework

Literature Review: **Research questions**	**Occupational Classification Literature - purpose /approaches (Descriptive)**	**Education and Work Relations Literature_ Direct or Indirect:**
1.Overall description of the use of OFO for skills planning	Approaches/factors/ Structure	Narrative description of skills planning using the OFO – is skills needs identified separately from qualification required? Cross correlation of skills demand representation and educational profile from 2, 3 and 4 – is there a match to actual OFO or not? **Hypothesis options: Interface between education and work-** 1. Both (1 and 2) – Direct 2. No correlation (1) and not skills addressed (2) – Dichotomy 3. If OFO still in development – Latent presents potential to create interface; 4. If OFO not used – Non-existent interface 5. Others may be identified
2. Description of OFO use to identify Skills Needs (Logic in the world of work)	Approaches/factors/ Structure	Narrative description of skills planning using the OFO – is skills needs identified. How is this presented (Occupational title or description of skills or production outputs
3.Identify Education and training Interventions (Logic for education)	Approaches/factors/ Structure	Narrative description of skills planning using the OFO – is education and training identified. How is this presented (Qualification title, educational level, training intervention)
4.Addressing skills needs	Approaches/factors/ Structure	1. Cross correlation of skills demand representation and educational profile – is there a match to actual OFO or not? **And** 2. Were the skills needs addressed based on the educational and training identified? – **Hypothesis options: Interface between education and work-** 6. Both (1 and 2) – Direct 7. No correlation (1) and not skills addressed (2) – Dichotomy 8. If OFO still in development – Latent presents potential to create interface; 9. If OFO not used – Non-existent interface 10. Others may be identified

7.9 Appendix 9: CHIETA PIVOTAL List (Skills needed and Education and training interventions)

OCCUPATION CODE	OCCUPATION	SPECIALISATION/ ALTERNATIVE TITLE	INTERVENTION	NQF LEVEL
211301	Chemist	Laboratory Chemist, Analytical Chemist, Manufacturing Chemist, Pharmacologist (Non-clinical), Industrial Chemist	Bursaries, Work Integrated Learning	7-8
214401	Mechanical Engineer	Rotational Plant Engineer, Mechatronics Engineer, Mechanical Engineer (Mines), Piping Engineer, Maintenance Management Engineer, Structural Steel Engineer, Forensic Engineer, Machine Design and Development Engineer, Diesel Engineer, Automotive Engineer, Fuel Cell Engineer, Transportation Systems Engineer, Pressurised Vessels Engineer, Thermodynamics Engineer, Heating and Ventilation Engineer, Air-conditioning, Heating and Ventilation (including fire) Engineer, Fluid Mechanics Engineer, Industrial Machinery Engineer	Bursaries, Skills Programmes, Work Integrated Learning	8
214501	Chemical Engineer	Bioengineer, Pharmaceutical Engineer, Heat Transfer Engineer, Glass and Ceramics Technologist, Catalytic Processing Engineer, Cosmetics Engineer, Crude Oil, Coal and Petrochemicals Engineer, Hydrometallurgical Engineer, Fluid Dynamics Engineer, Food Processing Engineer, Biochemical Engineer	Bursaries, Work Integrated Learning	8-10
215101	Electrical Engineer	Control Engineer, Electrical Design Engineer, Railway Signal Engineer, Power Distribution Engineer, Electrical Engineer (Mines), Power Systems Engineer, Electric Power Generation Engineer, Illumination Engineer, Power Transmission Engineer, Electromechanical Engineer	Bursaries, Work Integrated Learning	6-8

313301	Chemical Plant Controller	Pharmaceutical Production Controller, Pharmaceutical Plant Controller, Acetylene Gas Plant Controller, Pilot Plant Controller, Synthetic Fibre Control Room Operator, Pharmacy Products Machine Controller, Chemicals Fermentation Controller, Chemical-still and Reactor Operator, Chemical Process Technician, Chemicals Distiller	Bursaries, Learnerships Grant - Artisan Related, Learnerships Grant - Non-Artisan Related, Other Occupationally Directed Chemical Sector Related Programmes, RPL - Non-Artisan Related, Skills Programmes, Work Integrated Learning	2-4
651202	Welder	Spot Welder Operator, Arc Welder, Welding Tradesperson, Plater-welder, Automotive Acetylene and Electrical Welder, Brazier, Special Class Welder, Carbon Dioxide Welder, Welding Inspector, Solderer and Brazer, Special Class Welder, Carbon Dioxide Welder, Welding Inspector, Solderer and Brazer, Plate Layer, Electric Arc Welder, Flame Cutter, Aircraft Welder	Apprenticeships Grant, Artisan Programmes_ Apprenticeships - Engineering Trades, Bursaries, Learnerships Grant - Artisan Related, RPL - Artisan Related, Skills Programmes, Work Integrated Learning	2-4
651302	Boiler Maker	Boilermaker, Boilermaker-welder, Plater-boilermaker	Apprenticeships Grant, Artisan Programmes_ Apprenticeships - Engineering Trades, Learnerships Grant - Artisan Related, RPL - Artisan Related, Skills Programmes	2-4
652302	Fitter and Turner	Industrial Mechanician	Apprenticeships Grant, Artisan Programmes_ Apprenticeships - Engineering Trades, FET College Lecturer	2-4

			Development, Learnerships Grant - Artisan Related, RPL - Artisan Related	
671101	Electrician	Electrical Contractor, Electrician (Engineering), Winder Electrical Technician, Construction Electrician, Electrical Wireman, Electrician (General), Electrical Fitter	Apprenticeships Grant, Artisan Programmes_ Apprenticeships - Engineering Trades, FET College Lecturer Development, Learnerships Grant - Artisan Related, RPL - Artisan Related, Skills Programmes, Work Integrated Learning	2-4
672105	Instrument Mechanician	Scalemaker, Electronic Instrument Trades Worker, Instrument Maker, Meteorological Instrument Maker, Instrument Fitter, Instrument Mechanician (Process Control Systems), Instrument Mechanic, Electronic Repair Technician, Scientific Instrument Maker and Repairer, Aircraft Instrument Mechanic, Industrial Instrument Maker / Repairer / Serviceman, Surgical Instrument Maker / Repairer, Scale Mechanic Weights and Measures, Medical Instrument Repairer, Electronic Service Technician, Instrument Mechanician (Industrial), Instrument Mechanician (Industrial Instrumentation & Process Control), Electronic Technician (Navy), Survey Instrument / Maker / Repairer / Manufacturer, Instrument Mechanician (Process Control), Communication Electronic Technician (Air Force), Instrument and Control Service Person	Apprenticeships Grant, FET College Lecturer Development, Learnerships Grant - Artisan Related, RPL - Artisan Related	2-4

7.10 Appendix 10: CHIETA Proposed Education and Training Framework to measure skills level

NQF BAND	QUALIFICATION	NQF level
General Education and Training (GET)	Grade 9 / ABET Level 4	1
Further Education and Training (FET)	Grade 10/N1/NCV 1	2
	Grade 11/N2/NCV 2	3
	Grade 12/N3/NCV 3	4
Higher Education and Training (HET)	National certificates	5
	National diplomas	6
	National first degrees and higher diplomas	7
	Honours degrees	8
	Master's degrees	9
	Doctoral and post-doctoral research degrees	10