1

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1. Introduction to occupational classification systems

In a world characterized by a polycrisis, the accompanying ever-strengthening belief is that education is key in preparing people to work, and that changing education systems will get more people into work. Exploirgn relatonships between education and work are central to many contemporary debates.
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It seems self-evident that some curricula, the knowledge selected and sequenced in a programme of learning are better able than others at preparing for work helping people to access work, doing well at work, doing work well, and doing work which does good. But there is no agreement about what type of knowledge is required at work, what type of knowledge best prepares people for work, or about the best ways of developing such knowledge, and the role of formal education in this regard.

While work is changing(Boutang, 2011; Ford, 2015; Rifkin, 1995; Susskind & Susskind, 2015), the future of work is the topic of much international research and speculation. Recent developments in modern economies, particularly technological change combined with rising inequality, have led to predictions that the idea of occupation (and profession) is becoming obsolete. Some researchers argue that specialized knowledge will be of diminishing value in labour markets in the future for most of what we now regard as middle class work, and indeed sociologist Randall Collins (2013) argues that middle class work is going to increasingly disappear. The ways in which work is organized is social and political as much as technical. It is important to understand the role of educational preparation for work, particularly in developing economies like South Africa where it is poorly understood.

Currently there is a popular discourse of skills gaps, which imply weaknesses in education systems as a primary economic problem. These are usually embedded in neo-liberal labour market rhetoric that 'learning equals earning' which assume that the relationship between education and work is direct (Gamble, 2016). Gamble draws on Moore (1987) in distinguishing between this idea of a *direct* relationship and an *indirect* relationship between education and work. The idea of a *direct* relationship rests on an assumption of underlying continuity between education and work, with features of the former held to be intelligible in terms of requirements of the latter. By contrast, the

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idea that this relationship is *indirect* holds that education and work are independent, structurally distinct systems, with their own internal properties and logic.

The phenomenon of ever-rising qualification requirements, which co-exists with the discourse of skills shortages, suggests that the relationship is less direct than assumed by the neo-liberal model and by human capital theory. 'Qualification inflation' (Dore, 1976) or 'credentialism' (Collins, 1979) aggravates the difference between, on the one hand, qualification requirements in terms of labour market access, and on the other hand, knowledge requirements in terms of labour process. This probably reinforces the general discourse of dissatisfaction about graduates, whether of vocational or professional qualifications, even where they do gain employment.

A key body of knowledge which has explored these indirect relationships is institutional political economy (Busemeyer & Trampusch, 2012; Hall & Soskice, 2001; Thelen, 2004). This literature provides insights into the ways in which education and training systems are embedded in modes of capitalist production and social protection, and in networks of "political and socioeconomic institutions, such as collective wage bargaining, corporate governance and financing, labor market and welfare state policies, as well as industrial relations" (Busemeyer & Trampusch, 2012, p. 7). The forms that education and training systems take in different countries also reflect power relations. For example, Streeck (2012, p. 343) argues that in countries with strong collective skill formation systems, workers have historically been able, due to strong unions, to "extract from capital concessions in excess of what capital would have considered functionally required for profitability." While this body of literature has substantially shaped the way skill formation systems are understood, there is very little application of this literature either to African countries or to the challenge of development.

Another important body of literature when considering educational preparation for work is research which looks at occupations and occupational identity formation.

The notion of occupation is important in understanding the idea of specialization, which is central to educational preparation for work. Freidson (2001) argues that where occupations are able to exert control over division of labour, members of distinct occupations have exclusive right to perform the tasks associated with them, inevitably overlapping to some extent with related occupations. Consumers and managers who want to contract for the tasks connected with those specializations are obliged to use bona fide members of the occupation; they are neither free to employ any willing worker, nor to train workers for the purpose. It is the occupations themselves which determine what qualifications are required to perform particular tasks. The occupations

control the criteria for the licensing or credentialing procedures that are enforced by the state (Freidson, 2001, p. 56).

Where labour markets are organized and controlled by occupations, not only is training likely to be strong, but it is essential. Freidson as well as Abbott (1988) have argued that the acquisition of bodies of knowledge and skill plus meaningful opportunities to practice know-how (practical knowledge) protects workers in organized occupations or professions. In Friedson's terms, it is bodies of knowledge that enable the creation of 'labour market shelters' for given occupations or professions. For example, within the professions, the acquisition of bodies of theoretical knowledge, and the relationship with universities that teach, develop, refine, systematize, and expand the body of knowledge over which each profession claims jurisdiction, gives workers more power over their work. Craft guilds are another empirical example of this type of labour market. Other authors critique this, and argue that it is primarily power relations, and not the intrinsic value of bodies of knowledge that give workers in occupational labour markets protection from competition in the labour market (Derber, Schwartz, & Magrass, 1990).

The two bodies of literature—institutional political economy and studies of occupational labour markets and occupational identity formation—come together in studies of vocational education, because successful vocational education and apprenticeships systems have generally been focused on education for an occupation. In other words, they develop competence and identity for a regulated occupational labour market where an occupation is a formally recognized social category, with regulations in terms of aspects such as qualifications, range of practical and theoretical knowledge required, and promotion requirements and procedures (Brockmann, 2011, drawing on Rauner, 2007). The employment relationship is a long-term one. This makes it possible for it to be founded on broad abilities, such as an understanding of the entire work process and of the wider industry, and on an integration of manual and intellectual tasks, in order to be able to plan, execute, and evaluate work, and not just carry out narrowly specified tasks. The implication is that occupational labour markets are linked to strong vocational education systems.

The German concept of the *Beruf* exemplifies the relationship between a strong vocational education system that builds occupational identity and a labour market with recognized occupational categories for mid-level workers (Hanf, 2011). The concept of a *Beruf* structures the German labour market. To pursue a *Beruf*, an individual needs a systematic combination of formal knowledge, skills, and experience-based competence, and their deployment is not linked to a specific workplace. *Berufe* are linked to the collective bargaining system as well as to the welfare system. They are also part of a broader concept of 'cultivated and qualified' labour, and linked to

the idea of dignity as opposed to humiliation in work (Hanf, 2011, p. 55). *Berufe* provide, in Friedson's term, 'labour market shelters'.

In contrast, in labour markets with casualized or constantly changing jobs, vocational education programmes can either be somewhat removed from the immediate needs of the labour market or they can be comprised of ever-changing short courses in narrow skills. Programmes tend to be structured by what Buchanan, Marginson & Wheelahan (2009, p. 3) refer to as *ad hoc* clusters of highly fragmented units of competence tied to specific tasks.

The notion of occupation is also important in terms of the meaningful organization of people's lives and reproduction of society. As Guy Standing (2009a, 2009b) argues, work organized in occupations provides workers with greater autonomy and satisfaction, and is more likely to be done to the greatest good, than commodified and fragmented work. A sense of "belonging to a community of like-minded people with similar interests and aspirations" (Standing, 2009a, p. 57) is important for personal development whereby work provides "lasting meaning to people's lives and in doing so anchors their identity" (Standing, 2009b, p. 12).

Durkeim (1969) saw division of labour as offering the potential for powerful forms of social solidarity in which all people would be valued because they would do specific and useful work. He hoped for a future in which the social and political organization of society would be based on occupational identities. Standing offers a neo-Durkheimian notion of occupations as providing a basis for thinking about decommodified work as well as revitalized societies and economies through building occupational identities. He argues that this must happen through reconstructing ideas about occupation.

Standing's definition (2009, p. 11) of occupations, "an evolving set of related tasks based on traditions and accumulated knowledge, part of which is unique" is built on a distinction between the concept of labour (an inherently commodified relationship) and the concept of work. Work, for Standing (2009, p. 8) "reflects a human desire to be creative, productive and regenerative, for the benefit of self, family and communities." He argues (p. 7) that in performing work, "a person has agency, a sense of self- determination. By contrast a worker required to perform labour lacks agency .... And work done because a person wishes to do it, in the pursuit of self-chosen goals of development and social participation, is the essence of real decommodification". Standing argues that 'labour' does not capture these norms or what work means for individuals' lives. It excludes 'pride of craft', a sense of occupational discipline and freedom from blind following of routine. He argues that work should be seen as a set of activities and tasks that together form a vocation (Standing, 2009b, p.12). They form a vocation because the activities and tasks a worker performs

evolve from 'traditions and accumulated knowledge', which convey unique combination of ways of being and norms of practice associated with the occupation in which they form part:

An occupation is never a purely productive activity. Members perform a social function, which may include imparting norms to recruits, monitoring standards of behavior and expertise, and giving mutual support. An occupation embodies notions of social inclusion, entailing a sense of substantive belonging and continuity. (Standing, 2009b, p. 11) Similarly to Standing, Winch (2002) warns against the common understanding of work as economically productive tasks. In creating something useful one should be able to experience the sense of pleasure which comes from working with others, doing something skillfully and exercising responsibility and autonomy. Working in this way helps one fulfills the practical goal towards which the activity was directed and gives one joy in doing something which is experienced as worthwhile in itself (2002, p.105-106). This foregrounds the social and normative dimensions of work, and the role of accumulated knowledge (of different forms) in exercising occupational tasks.

This idealized notion of work may be an increasing impossibility. Semi-skilled and mid-level work, and increasingly, professional and highly skilled work as well, are undergoing labour casualization, outsourcing and fragmentation of employment (Collins, 2013; Freidson, 2001). Cultural forces such as technological innovations, changing market demands and state rules unsettle occupational boundaries and complicate occupational regulation (Standing, 2009a, p. 57). Teichler (2009) argues that notions of employment and work-related identity differ substantially across countries. For example, in France and Germany historically, he argues, employment and work have been expected to be a major force for individual identity, which has reinforced high pride of skilled workers in Germany. In Japan, affiliation to an individual's employing organization has been more of a source of identity and pride. And in the Anglo-Saxon tradition, identity linked to work seems to be confined to high-level occupations; this is underscored by a terminological distinction in English between (high-level) "professions" and other "vocational" or "occupational" areas.

But labour markets are changing everywhere, and even in those countries which have historically had strong occupational labour markets, two-tier labour markets are emerging (Standing, 2011). Many researchers are critical of efforts to redeem work, or sensitive to the distortions which maybe invoked by nostalgia for the productionist systems of the past (Barchiesi, 2011; Ferguson, 2015; Standing, 2009).

In short, in today's changing labour markets, the notion of occupation is shifting, its relationships to education and training systems increasingly unclear, and the relationship of education and training systems to economic and social development is increasingly unclear. Improving insight into the ways in which occupations are organized and the viability of the concept of occupation in today's rapidly changing labour markets could assist in understanding (and where possible, improving) how education prepares people for work.

2. Overview of Different Occupational Classification Systems

This section of the report outlines five countries and their associated occupational classification systems. The report provides some insight into how occupational classification can be used on a national level by the government and research institutions. The five countries in this report cover economies at different stages of development, it is noted here that developing countries' occupational classification is most likely to only cover the formal labour market and economy. This introduction will briefly outline three dominant uses of occupational classification.

National classification systems for industry and occupations came into being in the last decades of the 19th century (Mannetje & Kromhout, 2003). Elias (1997) argues that coded occupational classification systems became increasingly popular in the 1980s globally due to the increasing need to analyse the composition of labour markets. Classifications systems had very limited beginnings. Early classification systems were focused on understanding the labour composition in a particular geographical area where technology was not considered in early occupational classification (Katz, 1972). Though what can be assumed was that manual occupations were grouped according to the degree of automation and the nature of the work setting (Katz, 1972). As occupational classification has become more widely in national data collection for census and labour markets, there are three dominant ways in which occupational classification provides a method to organise data for a specific purpose.

Firstly, occupational classification assist in understanding labour market dynamics. The most popular use for occupational classification systems is centred around the widely agreed upon common characteristic of occupational classification systems which are that the data was organised by the type of tasks and duties that a person would do in a job (Hoffmann, 1998). Hoffmann (1998) outlines two uses of occupational classification systems. Firstly, statistical use where statistical applications use a sorting function to determine where to organise jobs. Secondly, a client

oriented function where users are concerned with giving advice to individuals, an example would be the use a database function and sorting function to match job seekers and vacancies. Hoffman (1998) and Tippins & Hilton(2010) provides areas that use occupational classification systems as a tool, prominent uses will be covered in this report which are workforce development and career development, statistics, job placements, vocational guidance, planning and design of vocational training and skill certification programmes, immigration control, monitoring occupational safety and health, pay and human resource management systems (Hoffmann, 1998b; Tippins & Hilton, 2010).

Secondly, research based in sociology can often benefit from data collected that uses occupational classification. Ganzeboom (2005) specifically looks at using occupational classification in sociological research such as conceptualising occupational status (prestige) and class social economic status. Researchers in the area often request a more detailed classification for more sociological relevant properties of occupations such as educational requirements, earning potential etc. which may vary from occupation to occupations. A crude definition would be the general occupational definition found in an occupational classification systems. Ganzeboom (2005) argues that the variance is not as large as anticipated when analysing at crude versus detailed occupational definitions use in sociological research. Though suggestions are often made that standard occupational classification are inadequate, Ganzeboom (2005) shows that many aspects of an occupation are determined by educational requirements and earning potentially. Additionally, his study of the international social survey in 1989 suggests that there was very little difference between education requirements and earning potentials between crude and more detailed occupational definitional.

Lastly, data collected using occupational classification at a national level can assist in investigating national health concerns. The choice of occupational classification system enables an epidemiological study (study of how often diseases occur in different groups of people and why ("Chapter 1. What is epidemiology? | The BMJ," n.d.)) as it provides three benefits(Mannetje & Kromhout, 2003b). Occupational classification which requires a hierarchical structure that provides codes for detail for aggregate groups. Secondly, occupational classification systems typically provide description of tasks and goods produced within an industry which improves the interpretation of a job title. These systems are often easily translatable to other languages because their designs are similar and provide a platform for multicentre studies. CBO is a good example of this type of occupational classification systems as it is similar to ISCO-68 even though its codes

are different. Thirdly, there is the possibility of linkages to other data as standardized occupations and industry data can be linked to other data. For example, links to social class scale can occur providing insight into the job exposure matrices (cross-classifications of occupation and exposure) in in particular industry and occupational class.

2.1 United States of America

The United States of America(US) is an advanced economy that has experienced stable growth in 2018 largely due to fiscal stimulus (World Bank Group, 2019). The growth reflects a stronger than expected domestic demand which can be related to the labour market (World Bank Group, 2019). The labour market remains strong which has increased consumption (World Bank Group, 2019). In 2018, unemployment fell to a 50 year low with about 200 000 jobs added monthly being filled by new labour market entrants (World Bank Group, 2019). Currently there seems to be increased labour participation and productivity (World Bank Group, 2019).

The US labour market with its solid growth has raised questions around the definition of full employment (Organisation for Economic Co-operation and Development, 2018b). It is important to note that employment has not reached its peak in comparison to previous years and real wage growth remains weak, both of which indicate that the US has not reached full employment (Organisation for Economic Co-operation and Developmen, 2018b). A key contributor to the employment rate may be the US programmes that provide support in the early stages of unemployment and seemingly reduce the period of unemployment (Organisation for Economic Co-operation and Developmen, 2018b). One of the notable trends in the labour market is the deceleration in middle and low incomes, this is a result of technical progress due to globalisation where there is a reduced demand for lower and mid- level skills.

The United States can be described as liberal model country in the variation of collective skills formation systems (Martin, 2012). In identifying the nature of the collective skills formation systems (specifically for vocational education), Cathie Jo Martin (2012) describes two features of the state which are the party systems structures and the degree of state commitment to training. She argues that this indicates the government's commitment to social spending. In her case study, she highlights the two-party system and federal competition that exists due to the absence of industrial self-regulation by employers and trade unions. A notable feature of the US system are the very weak employers association and unions, and the absence of systematic input from social partners in qualification development (Martin, 2012). This means that industry was unable to form

an relationship with labour in skills formation (Martin, 2012). The two party system found in the US leans towards policy making that supports professional associations and industry aligned to political representation which makes it difficult to have a coordinated skills formation system (Martin, 2012). The narrative of the system found in the US assist in providing insight into the uses of occupational classification systems and their associated effectiveness in this country.

2.2 United States Occupational Classification System

The main occupational classification system is O*NET (Occupational Information Network) (O*Net Academy, 2016). It contains a detailed database of skills, abilities, knowledge, work activities and interests associated with a particular occupation. It contains job descriptions for both the public and private sector for the American workforce. It has skills based definitions of the worker's skills and attributes. O*NET contains occupations coded according to the most recent Standard Occupational Classifications System which was developed in 2010. The Standard Occupational Classifications System is used by government statistical agencies in the United States to classify workers into occupational categories. There are 840 detailed occupations, 461 broad occupations, 97 minor groups and 23 major group (United States Department of Labor Bureau of Labor Statistics, 2016).

The occupations are defined according to skills in different domains of O*NET. Each occupation has worker oriented domains and job oriented domains. The worker-oriented domains are worker characteristics, worker and experience requirements. While the job-oriented domains are occupational requirements, workforce characteristics and occupations specific information. Worker characteristics have 4 broad categories for abilities and 52 specific abilities are defined as "enduring attributes of the individual that influence performance" (National Crosswalk Service Center, 2007, p. 4; O*Net Academy, 2016). A more detailed definition of cognitive ability follows which was described as "abilities that influence the acquisition and application of knowledge in problem solving". It is noted that within cognitive abilities, a more detailed description of Deductive Reasoning was provided which was the ability to apply general rules to specific problems to produce answers that make sense (O*Net Academy, 2016). Each occupation that has deductive reasoning will contain a rating for the importance and level of skill needed. While the job-oriented domain has Occupational Requirements which are a the title of the job, descriptions, tasks.

2.3 Uses of O'NET

Occupational classification systems are typically used in statistical work where occupational classifications cover all jobs in the economy such as the whole employed workforce (Hoffmann, 1998b). For example, state and local labour market information specialists in public workforce development offices use O'NET data regularly, one of the reasons was to analyse broader workforce trends by linking O'NET data and SOC data (Standard Occupations Classifications which is an occupations classification and dictionary) (Tippins & Hilton, 2010). Analysts in the O'NET context may link to data types to provide insights for skills demands in states or metropolitan areas in the United States of America (Tippins & Hilton, 2010)

Occupational classification systems can be used for facilitating job placements, typically used by job employment agencies who use the information to perform job – seeker matching, to produce statistics on job seekers, register unemployment vacancies and placements, and organise their work in finding employment for clients (Hoffmann, 1998b). In the use of O'NET, different views are created for different users consulting with business and governed agencies will take the O'NET data as a starting point to define tasks, knowledge, skills, ability and other attributes for a particular job context or job description (Tippins & Hilton, 2010).

Occupational classification systems can be used as a source of vocational guidance where people are informed and advised of their career prospects based on their skills knowledge, current situation and mental capabilities The field of career development take not of O'NET occupational information (such as Knowledge, Skills and Abilities required for an occupation) with wage data and the age of user. Different users will view this information as important as Guidance counsellors working with young people will have less need for detailed wage data while guidance or job placement counsellors with adult workers will require more wage data (Tippins & Hilton, 2010).

A key use of O*NET was its use in workforce development in the United States of America. These projections can assist education and training providers to align curriculum with skills demand. Tippins & Hilton (2010) identified four components of the information required to use O*NET in workforce development. It is noted here that Tippins & Hilton (2010) are making suggestions of O'NET and there is little evidence of these suggestions being enacted. Firstly, its use in the defining of critical occupations for economic and workforce development for the state, national and regional areas which includes defining clusters of occupations that are relevant for a particular

sector. Secondly, the skills transferability and worker assessment tools that can be used in place adults into jobs in a period of layoff. Thirdly, the ability to identify appropriate education options for displaced or transitioning workers. Fourthly, assisting employers in human recruitment activities such as recruitment, retention and development. In the context of the United States, it was agreed that in order use O'NET in workforce development that linkages needed to occur from O''NET to other taxonomies and data systems. This means it was important that O'NET not stand alone as classification systems but had relations to SOC coding system that was used by federal employment agencies and that additions to the O'NET occupational definitions was important. A good example of this is the addition of green occupations to the classification systems that would make it less aligned to SOC which would then make need to updated. The linking of O*NET data to other systems enable many other uses for career development and information systems, occupational information systems and specialist applications of O*NET data.

An important use of occupational classification systems was in planning and design of vocational programmes which means that statistical numbers of employed and unemployed person in particular occupations can inform decisions to create capacity through a training programme(Hoffmann, 1998b). As discussed earlier, analysts use O'NET data to project skills demand, these projections can assist education and training providers to align curriculum with skills demand (Tippins & Hilton, 2010). However, there is little evidence to suggest that education and training providers do use O'NET to align curriculum to skills demand.

2.4 Strengths and Weaknesses of O'NET

An agreed upon definition of an occupation can also be viewed as a strength of an occupational classification system as this is a requirement to view trends in the labour market. Tippins & Hilton(2010) show that some users favoured the occupational description of O*NET as it was viewed as enabling work and worker requirements to be described in terms of skills, knowledge, abilities, tasks, work systems, work content and education and training required. As the definition was quite detailed this was viewed as providing flexibility and versatility in different uses of the system. The hierarchical organizations of the O*NET descriptors are seen as allowing for analysis of the occupational description to occur at different level of analysis. The standardised descriptors allowed for collection and reporting data for cross job comparison for organisations, industries and economic sectors. The ability to link multiple sources of data and information with easy access to the O*NET online website was seen as very valuable, especially in relation to SOC data.

In light of O*NET's strengths in the above paragraph, there were many issues with use of the system. These weaknesses will be discussed in detail highlighting one area that arises in appropriate use of these systems, the occupational definition and linkages/ relationships between data internal and external to the system. This area linked to the occupational definition structure which creates problems when used in different areas. A recurring limitation with O*NET definitions are that they are too generic or not sufficiently specified for use specifying training requirements (Tippins & Hilton, 2010). The consensus was that generic nature of the definition limited associated task information that was based on O*NET job descriptors rather than specific job context which makes it difficult to understand how the job was performed (Tippins & Hilton, 2010). Additionally, Handel (2016b) highlights that many items describing occupations were " vague, overly complex, and jargon-laden", which he viewed as a product of job analysts receiving questionnaires about skills and abilities from workers but not performing site visits. The difficult nature of interpreting job definitions was problematic for career centres who were attempting to match job seekers (Tippins & Hilton, 2010). The problem with the using the occupational definitions emerged in organisational use where companies had to add to occupational definitions to match their context which meant an additional job analysis within the company had to occur (Tippins & Hilton, 2010). The issues with use of occupational definitions shows clearly that most functions struggle to use the generic occupational definition found in occupational classification systems.

There were strengths and weaknesses that were identified post the collection of data for the O*NET system. An obvious strength of the O*NET was the amount of content collected and the size of the database which reflected more of the labour force than any previous system. The content was viewed as strong in number of areas, an example was the training and education items which were easy to understand by respondents, the options were detailed and reflected real educational degrees and units of time (Handel, 2016). Though there were detailed domains of work, the reality was the work divisions were not accurate and the content overlapped (Handel, 2016). The size of the O*NET database together with the loose structure of the concepts meant that it was difficult to summarise information within the limited budget provided (Handel, 2016).

A weakness that emerged was the coverage of data lined to new technologies and work structures, the coverage of the data was sparse which made the content almost irrelevant (Handel, 2016). The description of items were problematic due to the vague, overly complex and jargon filled language (Handel, 2016). These strengths and weakness need to be taken in the context of continuous improvement, it is widely acknowledged that any system requires maintenance and reflections on

elements of these systems serve as indicators for further improvements. The intended further development of the technology module indicates ongoing maintenance (Handel, 2016).

2.5 An Overview of Australia and New Zealand (ANZSCO)

Australia has experienced strong economic growth for 27 years and has shown resilience to shocks (Organisation for Economic Co-operation and Development, 2018a). The labour market has experienced rising employment and labour force participation. Despite rising employment and economic growth, wage growth has remained surprisingly weak. The country indicators show high levels of health and education. However, globalisation and automation have impacted the lives of Australians specifically around the most vulnerable groups where low labour participation and high risks of poverty are found. This means that increased labour force participation needs to be encouraged through developing skills connected to evolving technologies.

An important aspect in understanding the Australian context is having a broad view of the neoliberal market economy framework, this framework outlines weak linkages between education and training institutions, employers, trade unions and other industry organisations (Polesel, 2017). The Australian labour market has transformed since the mid -1970s. The most notable change has been the erosion of well-defined occupational and internal labour markets through decades of re-structuring (Polesel, 2017). A key development has been the loosely defined demand driven system where skills required by industry was prioritised. The re-ordering of the training systems caused concerns around the coordination of skills formation and the quality of skills offering. This led to the government funding a large number of programmes with a central focus on workforce development which prioritised the connection between businesses and skill development. This approach has fragmented the skills formation systems and weakened the system to develop intermediate skills. In this context several autonomous initiatives have emerged in specific sectors and regions where local employers have attempted to become self-reliant in ensuring labour development for their business needs.

2.6 Australian and New Zealand Occupational Classification System

The Australian Standard for Classification of Occupations (ASCO) was developed in 1986 and at its time of release was significantly different from other national classification systems (McLennan, 1997). The difference lay in the use of skill level and skill specialisation to define an occupation (McLennan, 1997). ASCO was a skill-based classification that included all the occupations in the

Australian workforce and was based around concepts of job and occupation, "A 'job' is a set of tasks designed to be performed by one individual in return for a wage or salary" and "An 'occupation' is a set of jobs with similar sets of tasks." (McLennan, 1997). It is noted here that this skill based classification in 1986 was different from previous Australian occupational classification. In 2006, the Australian Bureau of Statistics and Statistics New Zealand (SNZ) developed the Australian and New Zealand Standard Classification of Occupations (ANZSCO) which went through two reviews in 2009 and 2013 (Australian Bureau of Statistics, 2013). Major revisions include the addition of emerging occupations and the deleting of outdated occupations. This means that ANZSCO was developed for Australian and New Zealand labour markets. ANZSCO has five hierarchical levels including major group, sub-major group, minor group, unit group and occupation. Skill levels run from 1- 5; level 1 represents a bachelor degree or five years of experience on the job while level 5 represents New Zealand Register Level 1 qualification, Australian Qualifications Framework Certificate I or Compulsory secondary education(Australian Bureau of Statistics, 2013).

The Australian and New Zealand Standard Classification of Occupations (ANZSCO) is a skill-based classification of occupations which is used as the standard for producing and analyzing labour force statistics, human resource management, and the listing of job applicants and vacancies (Australian Bureau of Statistics, 2013). This system classifies jobs according to skill level (e.g., the amount of formal education, on-the-job training and previous experience necessary to perform the job) and skill specification (e.g., the knowledge required, the tools and equipment used, the materials worked on and the goods and services produced) (Australian Bureau of Statistics, 2013).

2.7 The use of ANZSCO

ANZSCO is used within migration management through skilled visa programs, where this is a an occupation code is a requirement for visa eligibility, the code is considered a standard by which a visa applicant's skills are assessed to perform a specific nominated skilled occupation in Australia . An example of migration management is the list of computer related professionals on the Department of Immigration scarce skills list which enables the migration of temporary workers to Australia (McLachlan, Craig, & Coldwell-Neilson, 2016). Though it is noted that the scarcity of ICT skills in Australia is viewed as ambiguous (McLachlan et al., 2016). Therefore, it can be inferred that the scarce lists are not an accurate reflection of the skills demands in the country.

Occupational classification, as discussed earlier, can be used to investigate national health concerns. ANZSCO was used in a retrospective study of suicide related mortality from 2002 – 2012 in order to investigate whether certain occupations had a higher risk of suicide and whether men or women associated within certain occupations had a higher risk of suicide. (McLachlan, Craig, & Coldwell-Neilson, 2016)

Occupational classification can be used by employers when recruiting new employees. ANZSCO has an added criteria in skill specialisation for employability skills such as personal attributes such as loyalty, commitment and motivation, and generic skills, including communication, team work and problem-solving (Australian Bureau of Statistics, 2013). According to the Australian Bureau of Statistics (2013), employers are increasingly using employability skills as a means to assessing the suitability of an individual's skills for a particular occupation. Another example of recruitment is the use of ANZSCO by Australia's premier job advertisement website called Seek.com.au (Terblanche, 2011). The website uses four criteria for employers to search for potential candidates through which are Keywords, Classification, Location and Salary (Terblanche, 2011). The classification for occupation uses sub-classifications for different types of a certain occupation, this is all based on ANZSCO.

Occupational classification can be used to track labour market outcomes for certain types of training. For example, a study investigated student outcomes in Vocational Education and Training where mapping was done between the intended occupation of training activity and the occupation after training (Karmel, Mlotkowski, & Awodeyi, 2008). This survey used the intended occupation as listed by ANZSCO for a student's qualification and training.

2.8 An Overview of Singapore

Singapore was a developing country in the 1960s with low levels of economic development while in 2011 Singapore GDP was slightly below the united states. This rise in GDP reflects the rapid economic development the country has experienced despite acing unique challenges as a city state with no natural resources. Singapore as a city state reflects its goals to become a hub for the global economy (Organisation for Economic Co-operation and Developmen, 2013). Therefore, the management of human resources is viewed as important for competitiveness and economic strength.

As Singapore has progressed through different economic stages rapidly, The economic structure has through each stage development aligned with national skills formation policy to meet new

industrial needs (Sung & Raddon, 2017). This meant that many skilled occupations were subject to planning to ensure that skills would meet demand. The planning for skills development was enacted Economic Development Board (EDB), this board focuses on creating employment in Singapore by offering attractive packages to Western multinational corporations (Sung & Raddon, 2017).. As Singapore's goal is to become an advanced economic and developed country by 2030, the current strategic economic plan is investment driven and knowledge intensive (Sung & Raddon, 2017). In order to achieve this goal, the government has identified that further skills are required in basic skills required for effective participation in advanced industrial society, enhancement of intermediate level technical skills and the expansion of higher education.

2.9 Singapore Occupational Classification System

The Singapore Standard Occupational Classification (SSOC) is designed for the collection of data, for example the censuses. SSOC is used for the compilation, presentation and analysis of wide range of statistics, for example labour market statistics (Department of Statistics Singapore, 2015). The basic principle used for the classification of an occupation is the main type of work performed which means that people who perform the same principle tasks are group under the same occupation. SSOC uses the basic concept of skill which embodies the ability to carry out a task. Similar to other occupational classification systems, skill is defined through skill level (level of formal education required) and skill level (encompassing of knowledge required, tools and machinery used, materials worked on and goods produced).

2.10 The use of SSOC

Similar to other occupational classification systems SSOC is widely used in research to provide insight into the labour market, national health concerns and the economy. An example of insight into the labour market was a Singaporean study that replicated a US study that investigated intergenerational earnings mobility (Ng, Shen, & Ho, 2009). The study used the sample criteria in the Singapore National Youth Survey on the U.S. Panel Study of Income Dynamics. The findings showed similar mobility which confirmed that the countries had similar economic realities, welfare systems, education regimes, and labour structures. The study highlighted that policy makers faced a challenging battle to overcome inequality and immobility while still maintaining global competitiveness.

As mentioned earlier, occupation classification can be used to investigate national health concerns. An example of study that addressed national health concern was the Singaporean study that looked at the parental occupational low birth weight infants born in Singapore between 1994 and 1998. The study showed that parents in certain occupational groups had a higher risk of having children with low birth weights. These parental occupations were linked to socioeconomic level and some work related factors.

SSOC has been used in to investigate the changing occupational structure in Singapore, as mentioned earlier Singapore has undergone rapid economic development which possibly has required substantial analysis and planning of occupations in the labour market. Two studies reveal that nature of changing occupations in Singapore. The first study investigated the changing structure of occupation over 60 years (Kuo & Chen, 1987). The study used the population census data from 1921 – 1981 . It is noted that the Singapore Standard Industrial Classification was also used. Singapore Standard Industrial Classification (SSIC) is the national standard for classifying economic activities for economic units and is used for censuses of population, household and establishment surveys and, increasingly, in administrative databases ("Singapore Standard Industrial Classification SSIC 2015 (Version 2018)," n.d.). This study found that Singapore was a service society with regards to the distribution of occupations in sectors, 60% of country's labour force participated in the service sector. Additionally, it found that manufacturing sector had grown which confirmed the rapid industrialisation that had occurred during the period. The second study followed which looked at the 80 years of occupational structures in Singapore, more specifically analysing government initiatives since the 1980s to change occupational structures and direct industrial restructuring (Eddie C. Y. Kuo, 2001). This study found a long term growing trend of information related occupations aligned to the government directed restructuring of industry. The government made distinct changes to the education system to support the pursuit of a knowledge based economy. These studies show how the use of occupational classification system in data gathering can assist in providing insight into the economy, labour market and state interventions in society of a country.

2.11 An Overview of Brazil

Brazil's economy has gone through major changes in the last 20 years (Gouvea, Kapelianis, & Montoya, 2018). The change occurred through market oriented reforms in the early 1990s which included trade liberalisation together with privatizations reforms increased competitions in Brazilian markets (Gouvea et al., 2018). Brazil's initiative in modernising its economy and society

has placed its economy as the world's eighth largest in 2014 (Gouvea et al., 2018). The population of 201 million live within a country of contrasts where despite economic development achievements. Communities still experience a lack of sanitation services and high mortality rates for infants and toddlers, these provide some indications of the lack of healthcare (ranked 75th in the world) (Gouvea et al., 2018).

Brazil has experienced economic and social progress for a number of years where millions of people were lifted out of poverty and there was significant inequality reduction (Alston, Melo, Mueller, & Pereira, 2016; World Bank, n.d.). The economy has been experiencing a slower growth rate since the beginning of the decade as a result of the global recession (World Bank, n.d.). Most notably, 60 percent of Brazilians moved to a higher economic group between 1990- 2009 with extreme poverty almost eliminated (Alston et al., 2016). As a result the structure of society has changed with a larger upper and middle class which has allowed for a greater access to good and services (Alston et al., 2016). Despite these radical changes, improvements in income and income distribution Brazil is slow, real income changes are small (Alston et al., 2016).

The shift towards trade liberalisation in the 1990s changed the demand for certain occupations (Muendler, 2007). In the trade goods sector there was a simultaneous downgrading of occupations while raising the education requirements, this has meant that more highly educated individuals are employed in low skilled intensive jobs. Across sectors there was a shift in labour demand to the least and high skilled.

2.12 Brazil Occupational Classification System

The Brazilian Occupational Classification System (CBO) from 1994 (CBO-94) classified jobs through a hierarchy of skill and tasks (Muendler, Poole, Ramey, & Wajnberg, n.d.). CBO underwent revisions in 2004 , the revisions mapped CBO to ISCO-88 (International Standard Classification of Occupations) for international comparability (Muendler et al., n.d.). CBO-94 grouped occupations according to content and conditions to perform work which meant that the underlying principles of classification were similar to ISCO-88. Content in CBO-94 represents the tasks and duties performed by a person in the production of goods or services while conditions refers to the degree of complexity of tasks associated with knowledge and abilities to perform task.

Currently, CBO describes and orders occupations according to characteristics that are "nature of the workforce (functions, tasks and obligations, etc.) and the content of their work (knowledge, abilities, personal attributes and other requirements required for the occupation)"(Figueroa, Jun, Glaeser, & Hidalgo, 2018, p. 2). In particular CBO definition of an occupation allows for brief description of job content, education and experience requirements with regards to qualifications and level of study (OECD, 2018).

2.13 The uses of CBO

CBO has been used by the Brazilian government in various ways. The development of CBO provided a platform for the government to track occupational demand trends for specific educational degrees and levels of experience (OECD, 2018). CBO is used to guide individual training and education choices. The Ministry of Education (MEC) regularly publishes vocational training and short courses which are associated to CBO codes (OECD, 2018). The Ministry of Labour based on the MEC list can link the CBO code to median earnings and hiring rates for an occupation which means that individuals can make informed decisions about training.

A key registry RAIS (Rela ̧c □ ao Anual de Informa ̧c □ oes Sociais) is used by Brazil to administer its federal minimum-wage supplement program and by various statistical agencies uses CBO. The linked employer- employee data from RAIS which is a registry of workers that "worker characteristics such as age, gender, and education, and job characteristics including the wage, dates of hiring and separation, and a detailed occupational classification that permits inferences about the skill intensity of jobs (Muendler, 2007, p. 2) . The RAIS registry uses National Classification of Economic Activities (CNAE) for industries, and the Brazilian Occupations and is maintained by Brazilian Institute of Geography and Statistics (IBGE) (Figueroa et al., 2018). The RAIS database covers 97% of the Brazilian formal labour market and allows for variables to be tracked on an individual level which provides key insights into labour market dynamics in (Figueroa et al., 2018). RAIS is taken annually, it identifies employees on payroll that have recognised wage or salary, assists in contributions for funds for years of services and is an instrument for taxation and to regulate that people are following legal rules and norms. Studies that have provided insight into the migration of workers in particular industries and diffusion of knowledge across companies have used RAIS information where labour market changes in and between sector, and labour market compositions were studied over a fixed period (Figueroa et al., 2018).

CBO is used to assist in tracking national health concerns. For example, a study investigated the risk of death from non-Hodgkin lymphoma among agricultural workers in Brazil (Boccolini, Boccolini, Chrisman, Koifman, & Meyer, 2017). The study found a statistically significant increase in the risk of death by non-Hodgkin lymphoma among farmers aged 20–39 years which was similar to a study in New Zealand that found non-Hodgkin lymphoma among male agricultural workers aged 20–50 years was significantly higher than other groups.

2.14 An Overview of Nigeria

Nigeria is the most populated and one of the largest economies in Africa, the country gained its independence from Britain in the 1960s (West Africa Gateway, n.d.; World Bank Group, n.d.). The country's most important sectors were in agriculture, mining and industry but these industries have struggled due to the misguided policies and failing infrastructures.. Nigeria is Africa's largest oil exporter and has significant natural gas reserves (West Africa Gateway, n.d.). In 1999, Nigeria implemented reforms that included an annual budget that made reference to a conservative oil price and motioned to save the surplus in the Excess Crude Account (ECA) (McGann, 2018). This decision assisted the Nigerian economy to grow which enabled an annual GDP growth of 7% between 2004 and 2014 making it Africa's fastest growing economy (McGann, 2018). The growth of US oil production does pose a threat to Nigerian economy which was reflected in 2014 with a 18% drop in oil exports despite an increase in production.

Analysts agree that there is a need for diversification within the Nigerian economy. The rebasing of the GDP in Nigeria saw it surge past South Africa to be the largest economy in Africa (Ajakaiye, Jerome, Nabena, & Alaba, 2016). The rebasing of the economy did reveal the a more diversified economy where the entertainment industry, and recent banking reforms with associated private Nigerian banks were better captured. The rebasing of the economy more clearly showed that the Nigerian economy was moving from an agrarian economy to tertiary service economy.

Surprisingly, the recent economic growth has not translated to significant social and human development (Ajakaiye, Jerome, Nabena, & Alaba, 2016). The unemployment rate increased between 2011 (23.9%) to 2014 (25%)(Ajakaiye, Jerome, Nabena, & Alaba, 2016). The services sector is the largest growing sector of employment, this sector employed 24% of the labour force in 2000 while in 2014 it was employing 24% of the labour force (Ajakaiye, Jerome, Nabena, & Alaba, 2016). There is little evidence that Nigeria is able to translate its recent high levels of growth into innovation-based high-skill (knowledge) economy. Nigeria also struggles

with intensifying levels of youth unemployment which was 45.8% in 2014. Youth unemployment is high regardless of level of education.

2.15 Nigeria Occupational Classification System

The Nigerian national occupational classification is derived from the ILO's International Standard of Occupational Classification (ISCO).The first national occupational classification was developed in 1966. The occupational classification system was then updated in 1986 with assistance from the ILO.

Occupation is defined by level of skill and type of work. Type of work is structured according to Administrative and Managerial., Technical, Scientific and Allied Professional, Other Professionals., Agricultural and Health. The level of work is typically Senior, Intermediate/Supervisory and Junior. The work is grouped according to the Nigerian International Standard Industrial Classification of All Economic Activities (ISIC) such as Agriculture, Hunting and Forestry or Fishing. It is noted that the national survey does capture labour force details such as employment characteristics, education and economic Characteristics (occupation, level of skills and remuneration).

2.16 Uses of Nigerian Occupational Classification System

Nigerian has recently undergone vocational education reform through the development of national occupational standards (NOS). The development of NOS assists the National Board for Technical Education (NBTE) perform quality assurance. Thirteen National Occupational Standards have been developed in occupational areas for the development of National Vocational Qualifications. These standards cover four sectors of the Nigerian economy which are energy, hospitality and tourism, construction, and service industry.

Occupational Classification assists with investigating national health concerns. For example, research regarding health issues in specific occupations such as potential health welders exposure to work hazards that negatively affect their health was investigated in Benin City (Isah, n.d.). Another study investigated the healthcare seeking behaviour of heads of households in a rural community in Southern Nigeria where occupational classification was used to indicate socioeconomic status of individuals which can affect behaviour.

Occupational Classification also provides insights into labour market dynamics where wage differentials occur between occupations groups. The study investigated employers, self-employed workers and paid employees where it found employers experienced a wage premium over income distribution while self-employed workers experienced a wage penalty at lower income distribution while in comparison to paid employees who benefited from minimum wage guarantees.

3. How concepts are used in policy and practice: Understanding the concepts of job, occupation and skill beyond one dimension

A useful way to approach the meaning of occupation is to consider the term 'job' which…is sometimes used interchangeably with occupation. The term 'job' has a much more limited meaning than 'occupation' because it is connected to an employment contract in a workplace. In contrast, an occupation is a much more general and all-encompassing term for 'employment in which individuals are engaged' and is not restricted to a particular workplace. The concept of occupation is aligned with the German concept of *Beruf*; an occupation as a vocation which may be manifested at different levels as the individual matures (Fuller & Unwin, 2013 p. 2).

In explaining this quote, it is clear that the concept of a job is thought to be far more specific as compared to that of occupation. more so, this quote also (implicitly and explicitly) brings to the fore the challenge of providing a globally viable or acceptable definition as this piece will later reiterate this point. Nevertheless, the main focus of this discussion will be centered on the manner in which concepts such as occupation, job and skill have been used in policy and in practices. In other words, this piece seeks to encapsulate the possible dichotomy in the manner in which such concepts have been used in policy documents and in practice. Hence, this enticing discussion ought to be structured in the following manner:

- Firstly, this section will engage with the debates on the nature and meaning of occupation and also explore as to whether policy definition of the said concepts is consistent with such debates.
- Secondly, this section ought to provide contestations on the concept of a job and such will be followed by a critically engagement with the policy definition of such concept.
- Lastly, the concept of a 'skill' will just like the other two concepts be a subject of scrutiny.

    - A **job** is a set of tasks and duties carried out or meant to be carried out, by one person for a particular employer, including self-employment.
    - An **occupation** is a set of jobs whose main tasks and duties are characterised by a high degree of similarity (skill specialisation).
    - A **skill** can be defined as the ability to carry out duties and tasks of a specific job.

***Source**: DHET (Department of Higher Education and Training). (2017). Guidelines: Organising Framework for Occupations 2017*

3.1 Developing an Understanding of Occupation

As a starting point, occupational science as a discipline mainly focuses on producing knowledge that speaks to the structure, meaning and functions of human occupation (Zemke & Clark, 1996, p. vii). In simple terms, occupational science as a discipline is concerned with the manner in which occupations are in and of themselves (i.e. form or structure), how they function and how humans have come to understand occupations (i.e. meaning). More so, according to Price, Hooper, Krishnagiri, Taff and Bilics (2017) "occupational science promoted learning about philosophy, the relation of theory to practice, the occupation paradigm, and occupation applied to practice" (p.2). Further to this, Carlson, Park, Kuo & Clark (2014) postulated that "even after more than 20 years of study, there currently exists no universally accepted definition of occupation" (p. 118). This implies that most (if not all) of the proposed definitions of occupation have shortcomings. As a result, the meaning avouched to varying sets of delineation on what constitute or makes an occupation will have to be assessed in context. A multitude of scholars have attempted to provide a widely acceptable definition of occupation and unfortunately such attempts were in vain. Notable examples of such attempts include Clark, Parham, Carlson, Frank, Jackson, Pierce, Zemke (1991) who defined occupation as pieces of culturally and personally meaningful activity which is named in a particular cultural lexicon and it involves humans. To put it simpler, occupations are a product of varying sets of activities which humans engage and are thought to be personally and culturally meaningful. Trakoli (2010, p. 237) states that, "human occupation is defined as the doing of work (paid and unpaid), play or activities of daily living within a temporal, physical and sociocultural context that characterizes much of human life". Furthermore, Wilcock (1998) defined an occupation as "all 'doing' that has intrinsic or extrinsic meaning" (p. 257).In simple terms, it is clear from this definition that for Wilcock the notion of occupation can be purely thought as an idea that can be understood by individuals who is actively engage in it and those who are deriving or generating theories about the nature and purpose of such activities.

To further drive this discussion, Nelson (1988) contended that the notion of occupation comprises both occupational form which refers to sociocultural and physical structures that are already in existence and have amicable impact in shaping the 'doing'; and occupational performance which refers to the 'doing' in its concrete sense. Nelson (1988) posited that albeit the fact that occupational form (which includes sociocultural expectation surrounding whatever that can be

considered a "doing") underpins the nature of occupational performance such nexus cannot be presumed to be deterministic. Thus, form and performance arguably reinforce each other. Hence, Piece (2001) demarcated between the doing and notion of doing by delineating "occupation" as the former, he also defined activity as the latter. For Pierce, occupation refers to the activity that is done within a particular sociocultural context, time, and space; it can only be experienced by the person involved and as result, it is not repeatable. This implies that, the notion of a standard occupation that is rooted in similar characteristics is a myth. Hocking (2009 cited in Carlson, Park, Kuo & Clark 2014) purported that the existence of what is presumed to be an occupation supersedes individual involvement in it. In other words, the existence of occupation does not depend upon the person engaged in it. To add on this, Hocking (2009 cited in Carlson, Park, Kuo & Clark 2014) noted the demarcation between "the concrete performance of occupation and the larger sociocultural idea of occupation" which according to Pierce (2001) is in the stored in the minds of individuals and also in the cultural language that is commonly shared by such individuals.

3.2 The Use of Occupation in Policy

How is the concept of occupation is then used in policy? For the start we consider the National Skills Development Strategy III (NSD) which defines an occupation as "a set of jobs whose main tasks and duties are characterised by a high degree of similarity (skill specialisation)" (p. 136). In further elucidating on this point, the NSD highlighted that "Occupations represent a category that encompasses a number of jobs. For example, the occupation 'General Accountant' also covers the specialisation / job 'Debtor's Manager'" (p. 136). What can then be extrapolated from the two quoted delineations of an occupation is that an occupation refers to a group of jobs that happen to share similar practices. To put it bluntly, an occupation is a consequence of grouping jobs that share comparable sets of skills. It is worth mentioning in passing the definition of occupation which is in the NSD is also evident in Stats SA (2001) and also in the National List of Occupations in High Demand (2018). Furthermore, it is evident in the NSD that the notion of an occupation is an abstract or theoretical categorization of jobs. That is to say, if one follows the logic of the NSD on what makes an occupation different from a job, they may be tempted to for example argue that a 'teacher' is an occupation while 'mathematics teacher' and 'History teacher' can be considered jobs. The impetus for reaching such supposition would be due to the fact that a mathematics and history teachers are engaged in jobs that share a lot of commonalities in terms of pedagogical strategies despite the fact that they are teaching subject that originate from distinct

disciplines i.e. mathematics which is rooted in numbers while history is heavily underpinned by theory which is mostly in meaningful written words.

If meaning in of one of these concepts is distorted and contested in various degrees, it may at times makes it difficult to apply it and make use of it in policy. For example, the concept occupation is used more predominantly also in the Organising Framework for Occupations (OFO). And the framework understands jobs as what constitute occupation and therefore would not record jobs per se, but records multiply of jobs which would when put together constitute occupation. The biggest question: Do people who use concept for the purpose of application in real world operational meaning understand all these complexities in meaning and how or where would they draw a line? Just as a way of diverting a little from defining concept of occupation, we consider dealing with OFO and how is used to register, make meaning and classify occupations. The OFO is defined by the Department of Higher Education and Training (DHET) as "a **skills-based** coded classification system that captures all **jobs** in the form of **occupations** and provides a framework for the identification, articulation, reporting and monitoring of skills demand and supply in the South African labour market".[3] DHET uses the OFO as their main tool for identifying, reporting and monitoring skills demand and supply in the South African labour market. It is therefore very important for DHET to ensure that concept find same in meaning at micro (individual employer) and macro level (e.g. those who use may use concept for various reasons).

The *White Paper for Post-School Education and Training e*mphasises that a core role of the SETAs is gathering accurate data on sector skills needs. The DHET (through White Paper in Post School Education and Training) issued government Gazette on grant regulations. One of the intentions of the Grant Regulations (Gazette No R 990, 3 December 2012) is to improve the quantity and quality of labour market information received by the SETAs to inform skills planning and ensure SETA discretionary funds are spent on PIVOTAL programmes that address scarce and critical skills needs. The term scarce and critical skills needs have been changed to hard-to-fill vacancies so to capture broader skills that would otherwise not be identified in the former terminology. Employers are required to report their skills plans, inclusive of PIVOTAL training and the training they have undertaken as per Annexure 2 of the Grant Regulations in relation to OFO occupations.

SETAs are required to use the OFO codes to report on the scarce and critical skills in their Sector Skills Plans (SSP) which, in turn feeds into the identification and addressing of the needs in the

[3] Source: DHET (Department of Higher Education and Training). (2017). Guidelines: Organising Framework for Occupations 2017

country. All grant categories, such as learnerships and other learning interventions, should be mapped to the occupation for which they prepare learners.[4] A common understanding of the concepts occupation, job and skill and a common approach to their usage by employers, SETAs and the QCTO is important for developing occupational qualifications and accurate skills planning data to inform decision-making, implementation, monitoring and reporting. Various stakeholders have found the inadequacy of the terminology, the inconsistency in interpretation of terminologies within the skills development system and the real difficulty in identifying skills needs accurately within current OFO system for example could inhibit effective and accurate skills planning, appropriate interventions and reporting, and occupational qualification development.

3.3 Defining the Concept of a Job

The next concept to explore is a concept of a 'job'. A job is a set of tasks and duties carried out or meant to be carried out by one person for a particular employer, including self-employment (DHET, 2013). A job description stipulates what a person's tasks or duties in a particular job are. According to Hackman (1969) a job description may comprise clearly stipulated set of tasks which are thought to be part of a person's job. What emanates from this delineation of a job is that made up of a multitude of tasks which seeks to serve as guideline in terms of how such job can or should be done in order to achieve to the desired outcome. It is noteworthy that the stated delineation of a job does not provide a clear definition of a job. Instead, it offers an explication of the main feature of a job. The impetus for such is due to the fact that it is quite challenging to provide a globally acceptable definition of a job. Consequently, this piece will subjectively define a job as a "set of single tasks and activities that an employee subjectively considers to be part of his or her job" (Dettmers, 2014 p. 251). More to this point,

Role theory would consider job descriptions and formal guidelines as a source of role expectations that are perceived by the jobholder. In the process of role taking, however, multiple sources of role expectations - including the jobholder's view - are taken into account (Dettmers, 2014 p. 250).

What can be extrapolated from this quote is that, role theory explores the nature of job expectation (by the employee) in light of job description and official guidelines. It is also evident in the quote that the jobholder is not assumed to be an object (or a robot) since his or her perception of the job is taken into cognizance. This means that, the stipulated job descriptions and formal guidelines

[4] Source: DHET (2015) Guidelines on Grant Regulations

which the role theory seeks to comprehend (as to they serve as a source of role expectation by the assumed jobholder) are isolated from the agency of the jobholder. It is against this backdrop that Dettmers (2014) articulated that employees with a very narrow job definition feel responsible only for their traditionally prescribed core tasks. A broad job definition would be indicated if an employee feels responsible for a wider range of activities, such as minimizing stocks, the functioning of teamwork, long-term problem solving, accident prevention, and business improvement (p. 251).

It is in light of this quote that this piece now turns to discuss the definition of a Job in the NSD which is presumed to be "a set of tasks and duties carried out or meant to be carried out, by one person for a particular employer, including self-employment (official ISCO definition)" (2011, p. 136). The definition of a job in the NSD is arguably conceptually coherent with the broader definitions of a job provided in the literature as discussed in this piece. It is worth noting that this piece does not ignore the fact that the NSD definition of a job does not capture the complex of a job. To be precise, the definition somehow objectifies the jobholder as if they do not have agency. That is to say, the NSD unfortunately failed to capture the fact that part of a job is a jobholders understanding of what is expected of them (tasks and formal guidelines and the jobholder's interpretation of such tasks and guidelines), all these in turn influence the jobholders' behavior and going about in completing such a job. It is worth mentioning that the relationship between job expectation and what the jobholder think is expected from him or her is complex. Hsiung and Tsai (2009) "definition [of a job] discrepancies might result in negative consequences. For example, an employee may overlook an in-role task thus making a bad impression on his/her supervisor who perceives the task as important" (p. 89). Hsiung and Tsai (2009) also noted that when an employee is of the view that his or her superiors are imposing extra responsibilities such may trigger psychological resistance from an employee's side. This means that the connection between job expectation and jobholders' expectation also has a psychological dimension. This piece will now turn to discuss the notion of a skill.

3.4 Job, Occupation and Skill

The terms of Job, Occupation and Skills as defined above, are based on the International Standard Classification of Occupations (ISCO) and utilised in the South African occupational classification system, the OFO, as well as in the Occupational Learning Framework (OLF) (see Table 1.). Jobs in the workplace could either be related to occupations or specialisations on the OFO, depending on the extent to which the output of that particular job is unique.

Occupations are arranged into groups based on consideration of two elements, namely skill level and skill specialisation. Skill level relates to the complexity and range of tasks to be performed in a job by looking at the nature of the work performed, the level of formal education and the extent of on-the-job training/experience required. Skill specialisation focuses on specific areas of expertise and relates to the field of knowledge required, the tools and machinery used, the materials worked on or with, and the kinds of goods and services produced. Occupations are described in relation to a descriptor or core purpose statement and a set of tasks, usually defined on the OFO at the group above the occupational level i.e. Unit Group level.

In the more recent period, DHET discouraged the use of the scarce and critical skills terminology and requires SETAs to focuses on occupational shortages and skills gaps. By occupational shortages, DHET refers to shortages which occur when the demand for workers in specific occupations exceed the supply of workers who are qualified, available and willing to work. The strongest indicator to measure occupational shortages is Hard-To-Fill Vacancies (HTFV). DHET defines HTFVs as a vacancy (occupation) that an employer was unable to fill within 6 months, or it took longer than 6 months for the employer to find a suitably qualified and experienced candidate. By skills gaps, DHET refers to "skills deficiencies in employees or lack of specific competencies by employees to undertake job tasks successfully to required industry standards. Skills gaps may arise due to lack of training, new job tasks, technological changes, or new production processes, to list a few." Skills gap can also be seen as "critical or top up skills", usually requiring a short training intervention. DHET advises that the term "critical skills" should be avoided and rather the term "skills gaps" be used in line with international practice. [5] The SETA is required to define the main skills gaps at the OFO Major Group level. In addition, the SETAs need to provide a PIVOTAL list, based on OFO occupations and learning interventions that they have prioritised.

Although DHET decided to use HTFVs as an alternative to scarce and critical because HTFVs is a broader concept that can include occupations that may not be scarce nor critical but generally hard to fill, many SETAs and industries, such as the chemical industry, still use scarce and critical skills because they have a significant meaning and implication within their organisations. When these terms are dropped and broader terms such as HTFV used, industry feels that there are occupations that need to be classified within the former categories. It may be that a mind shift is

[5] DHET. (2016). Sector Skills Plan Framework and requirements. Sector Skills Plans and Annual Updates 2016 – 2018

required which may happen in time but as it stands the HTFV terminology has not been wholly accepted.

In the skills planning and reporting context, occupations are often used as a proxy for skills. In addition, occupational vacancies are often seen as a proxy for a shortage of skills. This data can be misleading and challenging to interpret, not least of all because the nuances and complexities of the skills required may be missed and that there can be numerous non-skill related reasons for the vacancy. The LMIP report notes that "Yet despite these concerns about the extent to which occupations can be used as a proxy for skills, it is much easier for employers to report employment and vacancies based on occupation, rather than trying to articulate a detailed skills-set for each occupation".[6]

The Occupational Qualification Framework, a sub-framework within the National Qualifications Framework, enabled by the Occupational Learning System (OLS) is the responsibility of The Quality Council for Trades and Occupations (QCTO). The focus of the OQF is on occupationally-directed learning aimed at addressing occupation-related skills requirements as guided by the OFO.

Occupationally-directed qualifications have three components to the curriculum which are developed based on the OFO occupation descriptors and tasks. The first component if **a** knowledge component, defined as "what one needs to know to do the job effectively", the second is the practical component, defined as "translating the knowledge into work practices", and the third is a work experience component, defined as "an integration of knowing and doing in an authentic workplace".[7]

SETA stakeholders recognise that the Occupational Learning System (OLS) is aimed at unpacking the qualification requirements and the curriculum components relative to the occupation descriptors and tasks as defined in the OFO. Concerns were raised by banking stakeholders with the inadequacy of this OLS process. Occupations are changing rapidly, with often a greater integration of roles and greater degrees of complexity, cutting across traditional disciplines and occupations and occupational groups or clusters. This has been noted in various contexts, including in the South African banking environment.[8]

[6] LMIP report
[7] Source: DHET (Department of Higher Education and Training). (2017). Guidelines: Organising Framework for Occupations 2017
[8] BANKSETA Mapping Project: Workshop held 9th November 2018 at Wits REAL

3.5 What happens when equating occupations to skills?

Balwanz and Ngcwangu argue that the conceptualisation of 'skill' is narrowed when skill is defined as 'occupation'. They identify three problems when associating skills with occupations: Firstly, as occupations are identified in relation to the OFO, the limitations of the OFO frame the skills dialogue; Secondly, occupational shortages are not the same as skills shortages; and thirdly, occupation is a "blunt and highly inflexible way" to conceptualise skills. [9]

Similar concerns related to occupations and skills were raised by banking employers at a recent workshop. They argue that skills are fairly narrow defined (the ability to carry out duties and tasks of a specific job) and this conceptualisation does not address the real skills and knowledge required in an occupation or occupational grouping at different levels of complexity, whether it be acquired formally via accredited learning or via non-accredited learning and experience. Given that the OFO is an occupation framework and does not adequately cater for skills and knowledge, a strong concern was raised by banking stakeholders that using the OFO to inform skills planning and reporting results in inaccuracies that omit the complexities and nuances of occupations and skills requirements. The inaccuracies are thus evident in the identification of hard-to-fill vacancies, skills need, priorities, interventions and grant allocations, and ultimately when aggregated nationally, occupation-based lists are used to inform the Department of Home Affairs Critical Skills Visa Lists, impacting negatively on banking and other employers needing to import specific skills. [10] Furthermore, future examination is needed on the changing nature of existing occupations and newly emerging occupations and the implications for skills needs as well as new skills needs across occupations.

The LMIP [11]found that there can be a considerable gap between what an enterprise understands by a 'skilled' person and how skills policy defines a 'skilled' person. This can lead to situations where enterprises report a particular skills shortage (against an OFO occupation) whereas it appears that there are unemployed persons and/or those graduating from PSET institutions who should have suitable skills. As seen by the employer, a "skilled" person usually includes several components not reflected in the tasks defined on the OFO, nor necessarily evident in qualifications or part-qualifications. Similar or identical occupations may differ considerably by industry in terms

[9] D. Balwanz & S. Ngcwangu. (2016) SEVEN PROBLEMS WITH THE 'SCARCE SKILLS' DISCOURSE IN SOUTH AFRICA, (published in South African Journal of Higher Education Volume 30 | Number 2 | 2016 | http://dx.doi.org/10.20853/30-2-608)

[10] BANKSETA Mapping Project: Workshop held 9th November 2018 at Wits REAL

[11] LMIP report

of context and nuance and the skills associated with a particular occupation may change over time, particularly as technology changes.

Within the context of a democratic society, a broader conceptualisation of skills would be more inclusive of social and community development needs and priorities and those of the marginalised in the "informal sector" of the economy.

Finally, this document begun by exploring policy and practice-based reflections on how key OFO concepts, such as "occupation", "job" and "skill" are used in a Sector Education and Training (SETA) context, particularly in relation to skills planning and reporting. Different interpretations of concepts, even when defined by DHET, can result in skewed data being used for skills planning and reporting purposes at sectoral and national level. Further reflection and engagement regarding the conceptualisation and practical implications of key terminology in skills planning is required.

4. Developing a Framework for Analysing an Occupational System

4.1 Introduction

This section will provide a framework for analysing an occupational system. In order to develop a framework a desktop analysis of three occupational classification systems was conducted: The United States O-Net system, The Singaporean Skills Framework and the South African Organising Framework for Occupations (OFO).

The development of this framework forms an integral part of the occupational international study tour to Singapore and will inform and guide the questions and activities of said study tour. It will also ultimately inform the final research report that will be produced as a summative product emanating from the international collaboration between Skills Future Singapore and the Centre for Researching Education and Labour in South Africa. The findings and recommendations of the report will also be disseminated through engagements with BankSETA, other relevant and/or interested SETAs, and the Department of Higher Education and Training (DHET).

The ultimate purpose of the study tour is to learn from best practice, whilst being critically aware of at times substantive contextually differences, which will ultimately inform the development of a more robust, responsive and accurate occupational classification system in South Africa. Singapore was selected as their occupational classification system is also an emergent system. It is envisaged that by learning from and collaborating with Singapore South Africa can more efficiently and quickly develop and improve its occupational classification system than it would if it were to work in isolation.

4.2 O-Net (United States of America)

The Occupational Information Network (O-Net) was developed to replace the Dictionary of Occupational Titles (DOT) in the United States of America. The government department in charge of O-Net is the US Department of Labour. It incorporates 60 years of knowledge about jobs and work (Peterson, Mumford, Borman, Jeanneret, Fleishman, Levin & Gowing, 2001). It is continuously updated and for every single occupation in the United States it contains various categories of information related to the occupation—including labour market outlook and education and training entry points. In order to develop a common language to describe and categorise occupations multiple job descriptions per occupation were used in order to develop as robust, detailed and accurate an understanding of occupations as possible (Peterson et al., 2001).

One of the primary motivating factors behind the development of O-Net was to develop an occupational classification system which could stay abreast of the changes in the world of work due to technological developments; amongst other change drivers.

The O-Net system contains the following categories of occupational information and each category can be defined as follows (there are approximately 1200 occupations on O-Net and for each occupation the below categories of information are provided):

Table 1 O*NET surveys and principal content

Survey	Main content
Education/ training	Required education, related work experience, training
Knowledge	Various specific functional and academic areas (e.g., physics, marketing, design, clerical, food production, construction)
Skills	Reading, writing, math, science, critical thinking, learning, resource management, communication, social relations, technology
Abilities	Writing, math, general cognitive abilities, perceptual, sensory-motor, dexterity, physical coordination, speed, strength
Work activities	Various activities (e.g., information processing, making decisions, thinking creatively, inspecting equipment, scheduling work)
Work context	Working conditions (e.g., public speaking, teamwork, conflict resolution, working outdoors, physical strains, exposure to heat, noise, and chemicals, job autonomy)
Work style	Personal characteristics (e.g., leadership, persistence, cooperation, adaptability)

Source: *(Handel, 2016, p.162)*

In order to better understand O-Net it is worthwhile to briefly examine the system which it replaced and the rationale behind the need for developing a new occupational classification system. The previous system, DOT, had various short-comings. Some of these were: focusing on the task-level did not lend itself to a cross-job organisational structure, focusing on tasks did not allow for an examination of the characteristics required by workers to perform the tasks of a given job, the system was cumbersome and expensive and some of the information was very job-specific (Peterson et al., 2000). Finally, and probably most significant from a South African OFO and Post-School Education and Training perspective, DOT did not provide much information on the skills and knowledge required to perform a job (Peterson et al.,2000). Although knowledge and skills were implicitly embedded in tasks and could be inferred through an analysis of said tasks the knowledge and skills associated with a job were far from implicit and clear. The thorough review

of DOT conducted by Cain and Treiman also surfaced various other short-comings not least of which being that DOT had a strong manufacturing bias which was becoming outdated as large segments of the US economy was entering a post-industrial phase of development (1981). It could be that the more ubiquitous use of technology currently being experienced warrants the review and re-examination of occupational classification systems—more especially so in the South African case.

An examination of the process that led to the development of O-Net is especially useful in the South African context as an examination and analysis of the OFO reveals that it potentially has the same short comings as DOT which O-Net replaced. The South African and USA contexts, at the level of the whole economy, sectors, industries, occupational families and individual occupations differs in numerous ways. This should at all times be borne in mind but does not foreclose on the possibility of learning from international best practice when it comes to occupational classification systems. The socio-political and historical contexts of the two countries are also substantially different. South Africa has an especially unique history and trajectory when it comes to the world(s) of work with Apartheid and thereafter the full force of globalisation/liberalisation (and increased competition) both leaving strong imprints on the worlds of work and education in particular. An example of the substantial difference between the South African and USA contexts would be IT professionals. An examination of IT occupations on the O-Net system reveals that there is a strong tendency towards narrow specialisation in the USA attributable to the fact that the IT industry is at a mature stage of development. In the South African context, potentially due to the lack of IT professionals in certain fields, there is a tendency by employers to seek technical specialists who are also generalists who can work across multiple domains. Contextual awareness and embedding is equally applicable when studying countries such as Singapore.

In the desktop phase of the international study tour the use of the O-Net content model proved to be especially generative. It was found that the content model could be used, if approached cautiously and critically, as a potentially core component in the development of a framework for analysing an occupational system. This is due to the fact that the content model contains various, although by no means exhaustive or always analytically distinct (Handel, 2016), categories of occupational information that allows for the generation of questions that can be used to analyse an occupational classification system—in this instance the OFO in South Africa. By selectively using the content model the research team was able to develop questions that seek to determine the extent to which the OFO in its present iteration captures certain core features of a given

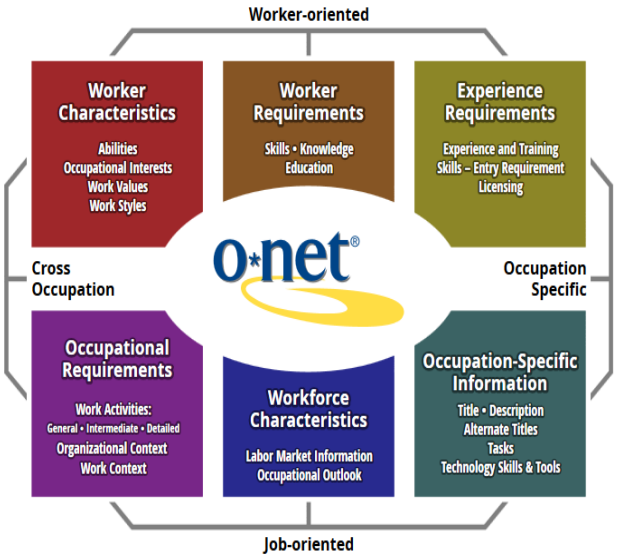
occupation or a set of closely related occupations clustered into occupational families (or "unit groups" in OFO terminology). The completed task sheets that have been used to analyse the OFO have been attached as annexures to this report.

The categories from O-Net that were selected were based on an examination of a selection of job descriptions for various occupations. Multiple job descriptions for a single occupation were examined. After examination of job descriptions the core features of an occupation were identified utilising the O-Net content model to generate analytic categories which align with O-Net occupational categories, but also with what employers were emphasizing based on multiple and varied desktop searches. The specific categories selected to analyse the South African occupational classification system will be discussed in greater detail in the final report, which is the primary deliverable for this stream of work, and which will be presented once the international study tour to Singapore has been completed.

The O-Net content model distinguishes between two broad categories of occupational information: job orientated and worker orientated. This is one of its main advantages over the DOT system of occupational classification. One of the analytic categories utilised to examine the OFO was based on this critical distinction. Each and every occupation on the OFO (approximately 1522) and all the tasks for each unit group (440 unit groups in total) were examined to determine whether the tasks were worker orientated or job orientated.

This process illustrated how O-Net could be productively employed to generate an analytic framework with which to analyse an occupational classification system.

Herewith the broad outlines of the O-Net content model.



Source: *https://www.onetcenter.org/content.html*

4.3 Skills Framework (Singapore)

The Singapore occupational classification system is still emergent. Furthermore the classification system draws on the US O-Net system but is different from the O-Net system in various ways. The Singaporean's are developing their classification system sector by sector as the collection of the requisite data can be time-consuming and resource intensive. As the system is still in development there is a lack of relevant literature and documentation which explains the process of developing their occupational classification system both conceptually and practically. By conducting an international study tour to Skills Future Singapore valuable lessons can be learnt in terms of updating and improving the South African occupational classification system. By learning from the US (desktop based as there is an established body of literature on the O-Net system) and Singapore (through an international study tour) South Africa will be able to determine the best way forward in terms of improving its own occupational classification system.

The Skills Framework is co-created by the following stakeholders: employers, industry associations, education institutions, unions and government. An important question to investigate during the study tour would be to ascertain the principles, mechanisms and structures that Singapore utilised in order to get all these stakeholders to collaborate and co-operate on the Skills Framework.

It is here where a critical awareness of contextual factors will be crucial. Singapore has been characterised as possessing a developmental state model of skills formation (Sung, Turbin and Ashton, 2000). In the developmental state model of skills formation countries utilise market forces for wealth creation but with the state playing a central and powerful role in terms of industrial policy and development (Sung et al., 2000). As and when required the state also plays a central role in skills planning and provision. In summary in this type of system the primary objective is economic development and advancement with the state playing a leading role. This type of skills formation system can be contrasted with a market model of skills formation. In a market model capital, and the short term needs of capital, plays a central and leading role with reduced roles for labour and the state (Sung et al., 2000). The clearest examples of countries with a market model, which is also embedded in a culture of individualism as opposed to collective action and effort and where the matching of skills supply and skills demand is left largely to the market, would be the UK and US (Sung et al.,2000).

South Africa on the other hand has a unique political and economic history and is therefore difficult to categorise although historically it had features that could be categorised as belonging to that of a neo-market model. Neo-market in the sense that the economy was heavily reliant on the primary sector (such as mining) and where the state was focused on and involved in the development of a selection of powerful and capital intensive industries as part of a process if import substitution (Sung et al., 2000). Post-1994 South Africa has had corporatist (where labour plays a much larger role and labour, capital and the state work closely together in terms of skills formation) as well as developmental aspirations but by and large it has strong features of a market model of skills formation.

Another vital contextual factor to consider is that South Africa struggles with horizontal coordination and planning (Kraak, 2011). The question is then: In the absence of inter-governmental and state-labour-capital coordination and planning what viable options are open to South Africa to substantively improve its occupational classification system? The international study tour will assist South Africa to answer this question.

The Skills Framework contains the following categories of information:

Source: *https://www.skillsfuture.sg/skills-framework*

The Skills Framework is designed to assist individuals, employers and training providers. In terms of skills and competencies a distinction is drawn between technical skills and competencies and generic skills and competencies. South Africa can potentially learn from this as previous research has indicated that employers, especially in the banking sector, place a high premium on technical skills and competencies and claim that the OFO does not adequately capture the technical skills and competencies required for certain jobs.

The key question to be posed to Skills Future would be: What criteria were used to determine how specific the technical skills and competencies included in the Skills Framework needed to be? If the technical skills and competencies were too job specific it can lead to the same situation that arose with DOT in the US. If the technical skills and competencies are too broad the same issues that employers have with the OFO in South African could potentially arise. As the South African occupational classification system only contains information on tasks at unit level a further question could be posed: Why did Singapore decided to include the category of technical skills and competencies related to individual occupations in the first place? The same question related to the reasoning informing the inclusion/exclusion of occupational information could be posed about all 5 main categories of information contained in the Skills Framework.

Another important question that the South African team would need to pose to Skills Future would be: Considering the ever changing world of work what systems and mechanisms are in place to ensure that occupational information is updated frequently and in a user-friendly and cost-effective manner?

For each category and for certain sub-categories on Skills Future there is information available for different types of users. For instance the sample of the sheet below is for new entrants who are

interested in or who plan to become management accountants. On the left is the common job role, in the middle is the training programme and on the right are the institutions which offer the training programmes.

Accounting Executive	Diploma in Accountancy and Finance	Nanyang Polytechnic
	Diploma in Business Practice (Accounting)	Nanyang Polytechnic
	Earn and Learn Programme Leading to Diploma in Business Practice (Accounting)	Nanyang Polytechnic
	Diploma in Accountancy	Ngee Ann Polytechnic
	Diploma in Accountancy	Singapore Polytechnic

Source: *https://www.skillsfuture.sg/skills-framework/accountancy*

In terms of specific technical skills and competencies these are broken down into core areas. For management accountants a sheet is provided for each core set of technical skills and competencies. The information sheet on the following page is an example of cost management technical skills and competencies as it pertains to management accountants.

SKILLS FRAMEWORK FOR ACCOUNTANCY
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT

TSC Category	Management Accounting					
TSC	Cost Management					
TSC Description	Analyse, plan and manage costs for cost efficiency and expense reduction					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			ACC-MAC-3003.1-1	ACC-MAC-4003.1-1	ACC-MAC-5003.1-1	ACC-MAC-6003.1-1
			Apply cost accounting and techniques to analyse and manage cost	Determine cost and profit variances using costing methods	Analyse variances through application of costing methods	Drive cost efficiency and expense reduction
Knowledge			• Types of cost • Methods of profit reporting and inventory valuation • Product and service costing using activity-based costing system	• Types of costs • Standard costing methods including the reconciliation of budgeted and actual profit margins • Planning and operational variances	• Material and labour costs • Variable and fixed overheads • Sales variances • Planning and operational variances • Organisation's costs locally, regionally and globally • Variance analysis	• Standard costing and its use in the contemporary business environment • Impact of just-in-time (JIT) manufacturing methods on cost accounting quality costing and environmental costing • Organisation's costs locally, regionally and globally
Abilities			• Apply marginal and absorption costing methods in respect of profit reporting and inventory valuation • Compare and contrast activity based costing with traditional marginal and absorption costing methods.	• Apply standard costing methods including the reconciliation of budgeted and actual profit margins. • Distinguish between planning and operational variances.	• Conduct variance analysis for direct material costs • Conduct variance analysis for labour costs • Conduct variance analysis for variable and fixed overheads • Interpret variances and understand the interrelationship between variances	• Articulate the advantages and disadvantages of standard costing in various sectors and its appropriateness in the contemporary business environment. • Explain the impact of just-in-time (JIT) production on cost accounting and performance measurement systems. • Discuss the role of quality costing as a part of total quality management (TQM) system. • Explain the role of environmental costing as part of an environmental management system • Guide finance teams to identify areas for cost and expense reduction

The Skills Framework is far from ideal and not allows very user friendly or intuitive. It does however offer an invaluable opportunity to examine and learn from an occupational classification system which is still in development. A potential focus area for the study tour could be to critically examine how the Skills Framework could be strengthened. This would also allow for the South African delegation to add value to Skills Future by creating the space for critical engagement and discussion.

Each of the Skills Framework categories will be examined and studied. After the study tour the South African delegation will be better able to determine which categories of occupational information need to be added to the South African system. They will also have a better understanding of how to develop an occupational classification system which contains multiple categories of occupational information.

4.4 OFO (South Africa)

The Organising Framework for Occupations (OFO) was originally the responsibility of the Department of Labour but was then moved to the Department of Higher Education and Training. The Department of Labour adopted the OFO in 2005 as a tool for identifying, reporting and monitoring scarce and critical skills and maintained it through an annual updating process. DHET took over this process in 2009 and as of 2019 (and for the foreseeable future; barring other developments) is the government department responsible for the OFO. The OFO 2011 released in March 2011 reflected the structure, definitions and tasks of ISCO – 08 including 1259 of the total of 1320 occupations of version 9 of the OFO (DHET, 2013).

The international standard classification of occupations 2008 (ISCO-08) provides a system for classifying and aggregating occupational information obtained by means of statistical censuses and surveys, as well as administrative records. It is a revision of the international standard classification of occupations 1988 (ISCO-88) which it replaces (ILO, 2012).

Considering the importance of context a critical examination and evaluation is required to determine to what extent the South African economy, the various sectors and sub-sectors thereof as well as occupational families and individual occupations are unique. If one is to take the arguments that occupations are socially embedded and historically determined (Standing, 2010) seriously then context is especially significant and one can ill afford to completely neglect it. The question is then: To what extent are occupations universal and to what extent are they contextually

bound and determined? In terms of occupational classification systems the question arises of: What level of detail does an occupational classification system need to accommodate and capture? Part of the review of the OFO that is being undertaken by the research team aims to determine (at least initially) to what extent the OFO accurately reflects the world(s) of work in South Africa. The international study tour to Singapore forms an integral part of this process.

The OFO currently exists in spreadsheet form. Currently there are no tasks for individual occupations on the OFO. Instead for each group of occupations known as unit groups (or "job families") there are on average 8 to 12 tasks commonly associated with the given occupations which fall under the unit group. For each individual occupation there is the following information: a brief one sentence purpose, specialisations and alternative titles.

The below provides an example of the occupational information contained on the OFO.

2017-3324	**Trade Brokers**
	Trade brokers buy and sell commodities and shipping services, usually in bulk, on behalf of their own company or for customers on a commission basis.
	Tasks include:
	Negotiating purchase or sale of commodities and commodity futures
	Buying and selling cargo space on ships
	Finding cargo and/or storage space for commodities and negotiating freight, shipping and storage charges
	Establishing contact between buyers and sellers of commodities
	Discussing buying or selling requirements of clients and giving advice accordingly
	Monitoring and analyzing market trends and other factors affecting the supply and demand for commodities and shipping services
2017-332401	Commodities Trader
	Operates as an independent agent to bring together buyers and sellers of commodities, negotiates private sales and arranges sales through established market places.
	Specialisations:
	Agricultural Produce Buyer
	Tobacco Trader / Valuator

	Skin Buyer
	Grain Buyer
	Media Buyer
	Livestock Trader
	Mineral Broker
	Commodities Broker
	Agricultural Procurer
	Wool Broker / Buyer / Trader
	Alternative Titles:
2017-332402	Finance Broker
	Operates as an independent agent in the course of financial negotiations and arranges loans of money on behalf of other persons.
	Specialisations:
	Mortgage Broker
	Investment Banker
	Lease Broker
	Investment Broker
	Home Loan Broker

Source: *OFO 2017*

The central question is then: Does the information on the OFO at occupational level allow for the capturing of enough information to portray the reality of occupations in South Africa? What is the balance that needs to be obtained to ensure that sufficient, but not exhaustive, occupational information is captured by the OFO which is a labour market intelligence tool? By examining the OFO and the occupational classification systems in the US (desktop based) and Singapore (through an international study tour and international collaboration) answers to these questions will be provided.

4.5 Conclusion:

The overarching purpose of the study tour is to critically examine the OFO and by learning from international best practice to determine the best way forward to improve the South African occupational classification system. It was decided that before other occupational classification systems could be examined and learnt from it was necessary to more fully understand and analyse the OFO. A review of all 1522 occupations was undertaken with completion of the process scheduled for January 2020 at the latest and substantial progress having been made by early December 2019.

Below are the questions, originating from engagement primarily with the O-Net content model but also based on the Singaporean Skills Framework and a desktop analysis of job descriptions by South African employers that were developed to analyse the OFO. It is divided into three categories: a functional review, an analysis of tasks at unit level and an analysis of the OFO in relation to the word of work.

Proposed Plan to review South Africa's Occupational System

A) Functional Review

1.1 Does the occupation have a six digit code?

1.2 Is the purpose of the occupation stated?

1.3 Are there specialisations listed for the occupation?

1.4 Are the alternate titles (different names) of the occupation listed?

B) Analysis of Tasks at Unit Level

2.1 Are there tasks at unit level?

2.2 Which tasks are specialised and specific to the unit group?

2.3 Which tasks are not specialised and not specific to the unit group?

2.4 Which tasks are job-orientated (work being done)?

2.5 Which tasks are worker-orientated?

C) Analysis of the OFO in Relation to the World of Work

3.1 What kinds of work experience do the job adverts require?

3.2 What are the educational requirements?

3.3 What generic skills do the job adverts require? (Provide examples)

3.4 What technological skills do the job require? (I.e. person must be able to operate/understand/use machine x or software system y? Exclude Excel, Word etc. as these fall under computer literacy)

The world of work is for ever evolving. The nature and extent of occupational change is a matter of intense debate and contestation with some arguing that change drivers such as 4IR are fundamentally changing the world of work (Effoduh, 2016) as we know it and others arguing that technology is much more gradually changing work (Drath & Horch, 2014). Irrespective of which position is adhered to it is difficult to argue with the need for an accurate, reliable and responsive occupational classification system.

5. Plan for the International Collaboration

The proposed collaboration is with Skills Future Singapore. This institution has tremendous interest for us in SA as their occupational system is in many ways emergent like South Africa's. Their work with skills planning, the blending the ONET (American occupational framework with ISCO conceptualisation and occupational frameworks is a fascinating endeavour and it offers many insights and lessons for us as we shape our post school sector in post-apartheid SA.

The work in Singapore focuses beyond supply, on how we can improve the way skills once created are effectively used in the economy, within organisations and workplaces. The work thus raises the importance of understanding skills utilisation within the workplace as an integral part of skills policy issues and gives us key insights into the practices that can characterise skills utilisation. Improving skills utilisation is predicated on policy coherence across employment, skills, economic development and innovation policies

Johnny Sung, Director (who will be invited) develops his thesis from the perspective that underutilisation and mismatch of skills within the workplace represents a lost opportunity for both organisations and individuals and ultimately the skills system. His work shows us how skills utilisaiton can be linked to overall organisational strategy, job quality and job related well-being and ultimately work redesign. Through this it has helped to comprehend the workplace dynamics that need to be in place for skills utilisation to succeed. And through this lays out a fundamental reconceptualisation of the nature of skills policy - a useful lesson to all the skills authority colleagues here today.

The empirical work in Singapore remain an important example of what practicing skills utilisation could look like and helped to show that the relationship between skills and productivity is more complex than a simple maxim of more skills equates to increased productivity', skills utilisation is more complex than merely how people do their jobs, or even the skills that they need for the job.

And importantly that MORE skills DOES not necessarily lead to better skills utilisation, particularly where there is mismatch, wastage or underuse.

This research collaboration hence explores the need for skills policy to be more integrative and the need for skills policy to link to social progress. It will attempt to explore what a move beyond the practices and discourses of skill acquisition and what skills people need and acquire. In SA within a skills system that has also been widely critiqued for having a supply side focus, these arguments remain directly relevant.

The proposed Collaboration is outlined below:

- The proposed collaborating institution is the Institute for Adult Learning (IAL) in Singapre. Established in 2008, IAL started with modest objectives of providing baseline training for adult educators and undertaking research in adult learning. Since its establishment, IAL has grown to be at the forefront of building capabilities and continuing professional development for the Training & Adult Education sector. Since April 2019, IAL has become an autonomous institute of the Singapore University of Social Sciences (SUSS). The partnership further strengthens the quality of the Continuing Education Training (CET) landscape in Singapore through synergistic collaborations and shared expertise in programme development, research and industry practic
- Key academic will be Johnny Sung - Centre Director for Skills, Performance and Productivity - Johnny is Director of the Centre for Skills Performance and Productivity (CSPP). He is an international expert in the areas of comparative analysis in national workforce development systems and the role of skills in high performance working organisations. He leads a variety of research projects at CSPP ranging from skills research, e.g. on skills utilisation, adult competencies, high performance working and organisational talent, with large national samples to small projects that evaluate the impact of workforce development policy
- Study tour – will involve a visit to IAL with five colleagues from WITS. We will be joined by colleagues from DHET, QCTO and BANK-SETA (contingent on them raising funds)
- Prof Sung will then by visiting South Africa – he will be doing a series of seminars on occupational systems, skills utilisation and reframing occupations. His will advise postgraduate students and advise on a conceptual framework for analysing the South African occupational system.

- The collaboration will involve the production of a handbook and several policy briefs from the engagements.

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