QCTO
Quality Council for Trades & Occupations

Issue 01

QCTO Research Bulletin 2020/21

Contents

Introduction to Occupational Classification Systems

Occupational classification systems emerged in the mid-18th century to address the growing need to identify the composition of the labour force. An occupational classification system, in its simplest form, attempts to classify occupations according to specific principles and can be used for different purposes. While on broad level occupational classification systems are designed to map the world of work, more specifically, the use of data on occupations collected depends on how the occupation is defined within the system. Occupations can be defined through tasks, duties, skills, earnings, job environment, cognitive abilities, educational requirements, etc. (Hoffmann, 2004; Tippins & Hilton, 2010). The definition of occupation in these systems drives how they are ultimately used. Occupational classification systems consist of two components that work together. Firstly, an occupational dictionary which includes descriptions of occupations within a set of titles of occupations and occupational groups. Secondly, the classification system provides guidelines by which occupations are classified into detailed groups and specifies how the detail within groups are aggregated into broad groups. The organisation of occupational classification systems often follows a hierarchical structure where occupations are coded and associated with a more general group of occupations. The hierarchical structure initially related to the geographic[1] and social context (Ganzeboom, 2005) and the relationship of the occupation to skills levels (International Labour Office, 2012).

Uses of Occupational Classification Systems

The data collected within an occupational classification system is generally used in two ways; statistical use and for client- oriented functions (Hoffmann, 1998a). The statistical usage relates to applications with a sorting function that organises occupations to provide insight into a specific area. The client-oriented function refers to users who advise individuals, for example recruiters who use a database and sorting function to match job seekers and vacancies. The bullet points below summarise some of the diverse uses of occupational classification systems internationally:

- 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. Included here is advice on secondary and further education training institutions (Hoffmann, 1998b). In the United States, the field of career development uses the O*NET occupational information (such as Knowledge, Skills and Abilities required for an occupation) with wage data and the age of user (Tippins & Hilton, 2010).

- The UK's work train information system contains recruitment, occupational and job training information (Hoffmann, 1998b; The Japan Institute of Labour, 2003). Its strength lies in its ability to make connections between different types of information such as recruitment, occupation and job training information that assists individuals with decisions and choices on occupation/career. (The Japan Institute of Labour, 2003).

- Similarly, the Dutch Central Bureau for Labour Exchange (CBA) who developed FIT, a system that matches vacant jobs and job seekers by the tasks and duties of a job rather than by occupation (Hoffmann, 1998b).

- The systems are used in migration control; for example, Australia uses a detailed set of codes for occupations for visa applications (Hoffmann, 1998b). The code is used to assess skill level

[1] Early occupational classification systems focused on understanding the labour composition in a particular geographical area such as the list of occupations 1851-1881 developed by William Booth for the city of London which he used to analyse occupational structure (Katz, 1972).

and points in order to grant permission to immigrate, and governments use systems like these to assess skills leaving the country and entering (Hoffmann, 1998b).

- In the UK, Sweden and Australia, occupational classification systems are used to track cancer occurrence related to occupations. This is done by analysing the occupational safety and monitoring where the occupation is listed on death certificates and forms the basis of evaluating the cause of death, accidents or illness in particular occupations (Hoffmann, 1998b). Another example is the Nordic Occupational Cancer (NOCCA) database which tracks cancer diagnosis in Denmark, Finland, Iceland, Norway and Sweden. NOCCA uses census surveys that contain a person identity linked cancer registries and national population registries for information on cancer, death and emigration (Hadkhale et al., 2017).

- In the United States they rely on O*NET, which provides detailed occupational intelligence in a common language to a number of stakeholders with different interests, such as many federal and state agencies, recruiters, career advisors etc. O*NET is used by employers for job definitions (O*Net Academy, 2016), for example to: expand the pool of candidates for job openings; workforce investment where board members' plans are influenced by the current skills of the local workforce; statistics on the projected growth of an occupation (O*Net Academy, 2016); workforce development professionals to help develop resumes and create skills match profiles for or within companies; and, job seekers to refine their job search by defining their skills and knowledge.

International Standard of Occupations (ISCO)

Most countries conduct a mapping of the world of work at a very aggregate level and then modify an occupational classification system to meet specific needs (Hoffmann, 1998a). The ILO developed the International Standard of Occupations (ISCO) through consultation with employers, workers and several stakeholders across countries to build the groupings and occupations (International Labour Office, 2012). Most European and other countries have used the ILO's International Standard of Occupations as a foundation for their own national occupational classification system (Elias, 1997; Mannetje & Kromhout, 2003).

The most updated version of the ILO's ISCO is called ISCO-08. ISCO-08's occupational definition is based on two concepts (International Labour Office, 2012). The first concept is the kind of work performed, which means that the classification unit is occupations while the classification variable is the tasks and duties under each occupation (or the work expected to be performed). Occupations are subsequently grouped together by similar tasks and duties in occupational groups. The second concept is skill and is understood in two dimensions: skill level and skill specialisation (International Labour Office, 2012). Skill level is related to the nature of the work performed, the level of formal education to competently perform these duties and tasks, and the amount of on the job training needed to be competent at the tasks and duties (International Labour Office, 2012). Skill specialisation is considered in terms of the field of knowledge required, tools and machinery that are used, materials that are worked on or with, and kinds of goods and services provided (International Labour Office, 2012). The main ISCO occupational groups and their skill level association are depicted in Figure 2 below.

Code	ISCO-08 Major groups	Skill Level			
		1	2	3	4
1	Managers			X	X
2	Professionals				X
3	Technicians and Associate Professional			X	
4 5 6 7 8	Clerical Support Workers Services and Sales Workers Skilled agricultural, forestry, and fishery workers Craft and Related Trades Workers Plant and Machine Operators and Assemblers		X		
9	Elementary occupations	X			
0	Armed forces occupations	X	X		X

Source: (International Labor Office (ILO) 2012). Skill levels correspond to the following International Classification of Educational Levels (ISCED-97) education levels: 1 - Primary level of education; 2 – Lower secondary level of education, Upper secondary level of education, Post-secondary non-tertiary education; 3 - First stage of tertiary education (short or medium duration); 4 - First stage of tertiary education, 1st degree (medium duration), Second stage of tertiary education (leading to an advanced research qualification).

Figure 2: Major ISCO-08 groups related to skill level. (Ospino Hernandez, 2018, p. 4)

European Skills/Competences, Qualification and Occupations (ESCO)

European Skills/Competences, Qualification and Occupations (ESCO) is the multilingual classification of skills competences, qualifications and occupations relevant to the EU labour market and education and training. It is intended to remove communication obstacles for information exchanged among stakeholders across the European Union by providing a reference vocabulary for the labour market and education institutions (Vrang et al., 2014). In ESCO, each occupation is mapped to an ISCO code and follows the same occupational pillar by using the four levels within a group, which means that ESCO occupations are at level 5 and below depicted in Figure 3 (ESCO - Occupations - European Commission, n.d.).

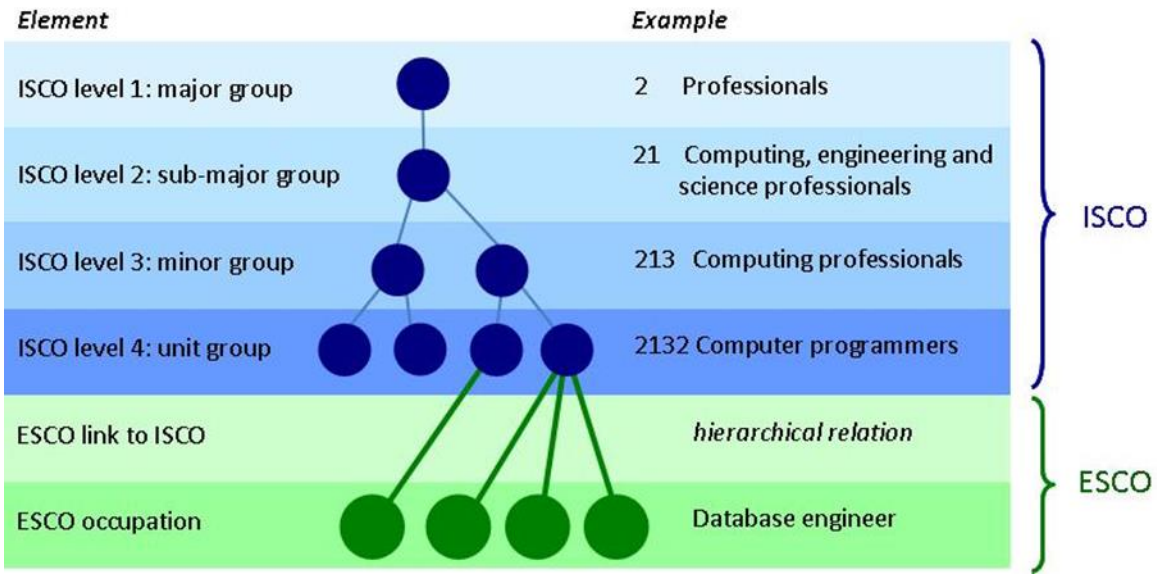


Figure 3: Example of ESCO occupational group and relationship to ISCO (ESCO - Occupations - European Commission, n.d.).

ESCO is an expert derived system where occupations are related to skills (Djumalieva & Sleeman, 2018). The European Commission made a public effort to systematise occupational information for the EU and map relationships between skills, qualifications and occupations that are aligned with the ISCO (Djumalieva & Sleeman, 2018). CEDEFOP is assisting EU member states in moving towards learning outcomes which are used in qualifications within the European Qualifications Framework (EQF) as descriptors and standards for assessment and curricula (Djumalieva & Sleeman, 2018). The learning outcomes are drawn from ESCO occupational definitions.

The EQF is a common reference used to make qualifications more visible and comparable across

different countries and systems. There was a need to compare and create equivalences between qualifications across several EU member states who had their national qualification frameworks, and education and training systems. ESCO is considered a complementary tool to the EQF (EfVET – European Forum for technical Vocational Education and Training et al., 2018). This means that while EU member states develop their own databases where they assign an NQF level to each qualification, they also relate qualifications to the EQF and describe expected learning outcomes (EfVET – European Forum for technical Vocational Education and Training et al., 2018). ESCO is intended to offer terminology that is standardised, which enables the understanding of descriptions of learning outcomes comparable across EU member states (EfVET – European Forum for technical Vocational Education and Training et al., 2018).

Occupational Information Network (O*NET)

The Occupational Information Network (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. The O*NET content model is based on a different logic to systems based on ISCO. O*NET was developed for use in the American workforce (Mannetje & Kromhout, 2003) and contains a detailed database of skills, abilities, knowledge, work activities and interests associated with a particular occupation (O*Net Academy, 2016). It contains job descriptions for both the public and private sector for the American workforce and is meant to provide a common language to define and describe occupations. O* NET occupational definitions focus on a worker's skills and attributes. Figure 4 shows the content model for O'NET with domains explained in the following paragraph.

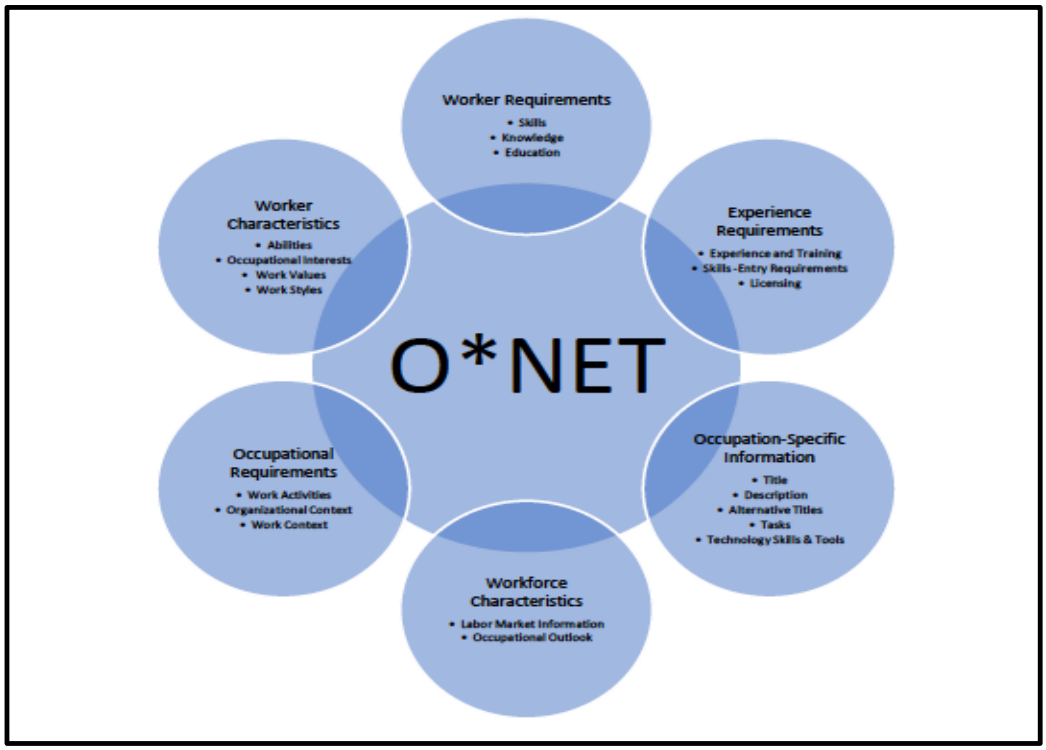


Figure 4: The content model of O*NET (Ospino Hernandez, 2018, p. 6)

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 Requirements, and Experience Requirements, while the job-oriented domains are Occupational Requirements, Workforce Characteristics and Occupation-Specific Information. Within O*NET, skills are defined as competencies developed through education and training and abilities are attributes that an individual needs to perform a specific task (Fleisher &

Tsacoumis, 2012). Figure 5 below captures the skills and abilities found in O*NET with examples.

Abilities	Definition	Examples
Cognitive	Abilities that influence the acquisition and application of knowledge in problem solving.	Verbal, Idea Generation and Reasoning, quantitative, memory, perceptual, spatial, attentiveness.
Psychomotor	Abilities that influence the capacity to manipulate and control objects.	Fine manipulative, control movement, reaction time and speed.
Physical	Abilities that influence strength, endurance, flexibility, balance and coordination.	Physical strength, endurance, flexibility, balance, and coordination.
Sensory	Abilities that influence visual, auditory and speech perception.	Visual, auditory, and speech.
Skills	**Definition**	**Examples**
Content	Background structures needed to work with and acquire more specific skills in a variety of different domains.	Reading comprehension, active listening, writing, speaking, mathematics, science.
Process	Procedures that contribute to the more rapid acquisition of knowledge and skill across a variety of domains.	Critical thinking, active learning, learning strategies, monitoring.
Social	Developed capacities used to work with people to achieve goals.	Social perceptiveness, coordination, persuasion, negotiation, instructing, service orientation.
Complex Problem Solving	Developed capacities used to solve novel, ill-defined problems in complex, real-world settings.	Complex Problem Solving- Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
Technical	Developed capacities used to design, set-up, operate, and correct malfunctions involving application of machines or technological systems.	Operations analysis, technology design, equipment selection, installation, programming, operation monitoring, operation and control, equipment maintenance, troubleshooting, repairing, quality control analysis.
Systems	Developed capacities used to understand, monitor, and improve sociotechnical systems.	Judgment and decision making, systems analysis, systems evaluation.
Resource Management	Developed capacities used to allocate resources efficiently.	Time management, Management of financial resources, Management of material resources, Management of personnel resources.

Figure 5: Skills and abilities on O*NET (Fleisher & Tsacoumis, 2012)

For Worker Characteristics, there are four 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). Each occupation that has deductive reasoning will contain a rating for the importance and level of skill needed. The job-oriented domain has Occupational Requirements, which is the title of the job, descriptions, and tasks.

Methodology

For the first section, 12 countries were selected to provide international perspectives on how occupational classification systems are used in varying international contexts, as well as to determine their relationship to occupational qualification development in each country. A range of countries were selected in order to try and gain a representative sample from various socio-economic contexts. However, it is important to note that language constraints meant that only countries with literature available in English were included. Thus, although attempts were made to include Latin American countries, there was insufficient literature available to include these countries with the exception of Mexico. The countries selected were:

- Australia
- Bangladesh
- Botswana
- Germany
- Hong Kong Special Administrative Region (HKSAR)
- India
- Japan
- Mexico
- South Korea
- Uganda
- United Kingdom (UK)
- United States of America (USA)

A desktop analysis was conducted based on documents available in electronic formats. A search was conducted to identify the publicly available literature for the 12 identified countries. Literature on the country's occupational classification system and qualification framework included grey literature drawn from government websites and reports, as well reports from institutions such as the International Labour Organization (ILO), and UNESCO-UNEVOC. Where possible academic literature was included, but this varied from country to country as more research and reviews were conducted in certain countries than others.

All available literature was consulted to develop an overview of the systems used in each country, with a focus on answering the question "How is the occupational classification system related to occupational qualifications?". The following sub-questions were considered in attempting to answer this:

1. How does signalling take place? I.e., how does the occupational classification system speak to the occupational qualification system(s) and signal demand?
2. How does curriculum design take place?
3. How is curriculum developed for occupational qualifications?
4. How does assessment take place? What are the criteria for assessment?
5. How are priority occupations identified?

The data gathered was then synthesised into a table in order to identify similarities and differences between the countries that could contribute to further analysis. Countries were categorised in the discussion according to the perceived strength of the relationship between their occupational

classification system and occupational qualifications. Countries which demonstrated the strongest relationship were those that used the occupational classification system for both signalling demand and curriculum development, while those who used the system for one of the two functions were considered to have a weak relationship. Where neither of these were present, the countries were considered not to have a relationship between their occupational classification system and occupational qualifications.

Based on the preliminary findings, a decision was made to gather further data on 5 countries. These countries are presented as case studies in order to highlight the key findings for further discussion. The countries selected for the case studies were:

- Bangladesh
- Germany
- Japan
- South Korea
- United Kingdom

For the case studies, an attempt was made to probe deeper into the way in which the country made use of the occupational classification system and its relationship to the curriculum development process. For those countries who did not appear to have a relationship between their occupational classification system and curriculum development, their curriculum development process was presented to determine alternative ways of developing curriculum. For both groups, where possible, critiques were also considered to present a clearer picture for further consideration.
The second section reflects on data gathered that is part of a more extensive study examining the connections between education and work made in occupational qualifications and their associated curriculum framework. The data is drawn from official occupational qualification documentation, interviews and workshop observations. In specific sections, the details of the sources of documentation, interviews and observations will be provided. The larger group of interview data includes:

- two senior officials from the Department of Higher Education and Training (DHET)
- three senior officials from Quality Council of Trade and Occupations (QCTO).
- two facilitators from a social partner organisation.
- three members of the community of experts and practitioners from the electrician occupational qualification.
- two members of the community of experts and practitioners for plumber occupational qualifications.
- field notes from observations of 3 occupational qualification development workshops(based on an IT qualification) and informal conversation facilitators and department officials attending the workshop in an advisory capacity.
- Interviews conducted with qualification development facilitators (QDFs) and communities of experts and practitioners (CEPs) which form part of a larger project on the Organising Framework of Occupations.

- Data on the South African occupational classification systems, as well as the intended role of occupational classification systems in the South African context, was used to draw comparisons with the reported actual implementation, particularly with regards to the

development of occupational qualifications for the Quality Council for Trades and Occupations (QCTO). The above-mentioned interviews with QDFs and CEPs were drawn on to provide data for case studies on qualifications developed by two Sector Education and Training Authorities (SETAs), namely the Banking SETA (BankSETA) and Public Service SETA (PSETA). The case studies provide further insights into how the occupational qualification development process was implemented, and the role of occupational classification systems in this regard.

Section 1: International Perspectives

The aim of this section is to present an overview of various countries' occupational classification systems the relationship between those systems and their occupational qualifications, particularly in terms of the identification of priority occupations and curriculum development. The data presented comprises a synthesis of the literature for 12 countries, together with more detailed case studies for certain countries. Although the countries that form part of this analysis are covered alphabetically in the tables for ease of reference, the relationship between their occupational classification systems and occupational qualifications varies substantially.

International Occupational Classification Systems

Of the 12 countries, 9 have occupational classification systems that are based on the International Standard Classifications of Occupations (ISCO-08). 2 of those countries (HKSAR and Uganda) do not have contextualised occupational classification systems but simply implement the ISCO-08 as is. The recommendation of the International Labour Organization (ILO) is that the ISCO-08 is used as a basis and then contextualised for each country, since countries vary in their occupational structures, national labour markets and national policy concerns. For the ILO, it is unlikely that using ISCO-08 without modification will adequately satisfy the range of national requirements for occupational statistics and data (International Labour Office & International Labour Organization, 2012, p. 49). The stated purpose of the occupational classification system in HKSAR and Uganda is for statistical data and administrative purposes.

The remaining 7 countries who base their occupational classification system on the ISCO system are Bangladesh, Botswana, India, Japan, Mexico, South Korea, and the UK. However, there are differences between how closely aligned to the ISCO-08 different countries' systems are. For example, Japan's labour market differs from occupational structures of the labour markets on which ISCO is based and therefore the ISCO-08 occupational classifications are more difficult to implement in the Japanese labour market.

The 3 countries that do not base their system on the ISCO-08 are Australia, Germany, and the USA. Australia has implemented an occupational classification system in conjunction with New Zealand (Australia New Zealand Standard Classification of Occupations (ANZSCO)) in order to allow for comparability between the two nations. Although not based on the ISCO-08, work has been done to allow for comparison to be drawn between the ISCO-08 and ANZSCO. Similarly, work has been done to allow for comparison between the German KldB-2010 and the ISCO-08, although KldB-2010 has a distinctly different approach to classification as it is based on job titles rather than the ISCO-08 approach of classification, which is based on occupations.

The USA Standard Occupational Classification (SOC) system is a stand-alone system and is a task-based classification system (Hernandez, 2018). The purpose of the SOC is classifying workers and jobs into occupational categories with the aim of collecting, calculating, analysing or disseminating data (Standard Occupational Classification (SOC) System, n.d.).

Across all 12 countries, there are differences between countries in the purpose for implementing an occupational classification system. While most countries have the stated purpose of labour market intelligence, particularly for statistical data and administrative uses, the enacted purpose and the level of implementation varies. Some countries, such as Bangladesh, Japan, South Korea, the UK, and, through O*NET, the USA, make use of their occupational classification system for the identification of priority occupations whilst the remaining countries appear to instead make use of information from industry bodies or government policies to guide their identification of priority occupations.

Several countries have made attempts to expand their use of their occupational classification system by making information available to the public through online databases. The classification system forms the basis for a system that allows users to gain access to information on careers, educational pathways, and employment opportunities. The most successful example of this is the USA's O*NET platform. Other countries that have attempted to create similar online databases include Botswana's

Labour Market Observatory and South Korea's KNOW On-Line.

Relationships between Occupational Classification Systems and Occupational Qualifications

10 of the 12 countries in this analysis make use of a qualification framework in some way, with only Japan and the USA not doing so. The link between the occupational classification system and occupational qualifications varies from countries with strong links, where the occupational classification system is used to signal demand (for example Bangladesh and South Korea), to countries where the reverse occurs, and the occupational classification system is updated based on industry input (for example Australia). Overall, 3 countries have a clear relationship between their occupational classification system and occupational qualifications (Bangladesh, South Korea, and the UK), 3 countries have a possible or limited relationship (India, Mexico, and the USA), while the rest of the countries analysed do not appear to have a relationship between their occupational classification system and their occupational qualifications. The relationship between the occupational classification system and occupational qualifications in all 12 countries is reported in tables 1 and 2 that follow.

Bangladesh, South Korea, and the UK all use their occupational classification system for the identification of priority occupations, as well for signalling demand for the development of new qualifications. All 3 countries have national occupational standards, based on the occupational classification system. These are separate to the qualifications and are used for curriculum development. The national standards for each country are linked to occupational classifications. These countries will be examined further in the case studies.

India, Mexico, and the USA appear to have some form of relationship between their occupational classification system and occupational qualifications, although the link is not always clear. In India, the National Classification of Occupations (NCO-2015) is the basis for the development of National Occupational Standards, which are then used in the development of occupational qualifications, but the NCO-2015 is not used to signal demand. Mexico has a similar relationship between their Sistema Nacional de Clasificación de Ocupacione (SINCO) and occupational qualifications where the SINCO is used for the National System of Competency Standards. These standards are in turn used for the development of certain occupational qualifications. Mexico also does not appear to use the SINCO for demand signalling.

In contrast to India and Mexico, the USA's Standard Occupational Classification (SOC) system underpins their online platform, O*NET, which is used to identify priority occupations and support demand signalling. However, due to the federal government structure, the development of occupational qualifications is the prerogative of individual states and is determined based on regional labour market needs. States, counties, and even individual institutions undertake their own curriculum development processes and there is no clear reference to the SOC in these processes.

For the remaining 6 countries, there is no evidence of a relationship between their occupational classification systems and occupational qualifications. Demand signalling in these countries appears to either be industry driven (Australia, Germany, HKSAR, and Japan) or driven by a combination of industry needs and government policy requirements (Botswana). In terms of both qualification and curriculum development, these countries implement a variety of methodologies, with varying degrees of government or industry input. The tendency does appear to be to rely on some form of industry collaborative body, for example the chambers in Germany, and Industry Skills Councils in Australia. Curriculum development in Botswana and Mexico is driven by government bodies, the Department of Technical and Vocational Education and Training (DTVET) and Colegio Nacional de Educación Profesional Técnica (CONALEP) respectively.

Uganda is an exception both in terms of demand signalling as well as qualification and curriculum development. According to the UNESCO Institute for Lifelong Learning (2013), Uganda lacks a systematic labour market intelligence system. Thus, it appears that no demand signalling occurs in the Ugandan system. The Ugandan Vocational Qualifications Framework currently only has 70

occupations listed and a second, older, system is also in use. Curriculum development processes vary according to the system with some being developed in conjunction with government departments while other curricula are developed by individual institutions. For both systems, the occupational classification system is not used.

As can been seen in the above data, a variety of occupational classification systems and occupational qualification development processes are used by countries. The relationship between the former and latter also differs substantially with only a limited number of the countries sampled demonstrating substantive relationships between their occupational classification systems and occupational qualification development processes. Detailed information on the occupational classification systems and occupational qualifications of the 12 countries is contained in Annexure A.

Table 1: Australia, Bangladesh, Botswana, Germany, Hong Kong Special Administrative Region (HKSAR), and India

	Australia	Bangladesh	Botswana	Germany	Hong Kong Special Administrative Region (HKSAR)	India
Is there a relationship between the occupational classification system and occupational qualifications?	No	Yes	No	No	No	Limited - the NOC-2015 is linked to the NVEQF through the National Occupational Standards developed for every occupation classified, and which form the basis of occupational qualifications.
If not, what are they using?	Developing bodies, such as Industry Skills Councils, develop training packages which are then used to develop accredited courses. Accredited courses are, however, required to provide the ANZSCO occupational reference on the application form.	N/A	The BNVQF allowed industry and training providers to collaborate in the development of qualifications. Priority occupations are drawn from industry and government strategies and policies.	Regional Standards are issued by the various chambers according to the requests of the regional labour market. The various chambers' tripartite training committees are responsible for making decisions on these. Employers and trade unions are seen as the main stakeholders of the dual system and are the drivers of the National Occupational	Industry Training Advisory Committees (ITACs) or Cross-Industry Training Advisory Committees (CITACs) are established by industries with the assistance of the Education Bureau and serve to identify skills gaps as well as develop occupational qualifications.	The Sector Skills Councils (SSCs) work in partnership with the National Skills Development Corporation (NSDC) to identify skills gaps and develop occupational qualifications.

	Australia	Bangladesh	Botswana	Germany	Hong Kong Special Administrative Region (HKSAR)	India
				Standards (NOS). The Federal Government is unlikely to proceed with an NOS without agreement from the social partners. NOS are developed and issued by a combination of the Federal Government (represented by the Ministry of Education and Science), Social Partners, and the Federal Institute for Vocational Training (BIBB).		
Curriculum design and development drivers	The Australian Government Department of Education, Skills and Employment, in consultation with the states and territories, is responsible for the AQF. Curriculum is developed through a national consultation process involving industry	The Directorate of Technical Education is responsible for upgrading skill standards (with the support of the BTEB), establishing training curricula, and facilitating the implementation of the qualifications framework. The BTEB identifies experts from	The Department of Technical and Vocational Education and Training (DTVET) is responsible for the planning and implementation of all institutional-based vocational programmes. Limited information was available on how curricula are designed	Curriculum design and development is done in consultation with all social partners, however the responsibility for curriculum design rests strongly with VET college lecturers and the master artisans/technicians responsible for workplace teaching	The Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ) accredits qualifications. Industry Training Advisory Committees (ITACs) or the Cross-Industry Training Advisory Committees (CITACs)	One of the functions of the Sector Skills Councils (SSCs) is to develop skill competency standards and qualifications which form National Occupational Standards (NOS). These are bundled into Qualification Packs that include all elements of the

	Australia	Bangladesh	Botswana	Germany	Hong Kong Special Administrative Region (HKSAR)	India
	representatives and other VET stakeholders. Industry participates closely in setting the national training agenda for schools and VET/higher education institutions through 'developing bodies' such as Industry Skills Councils and qualifications are designed to meet the skill needs of industry first.	the ISCs and they are linked with curriculum developers who lead the teams. Curriculum is developed and linked closely to the national competency standards accepted by industry.	and developed.	and learning.	play a leading role in the implementation of the HKQF and the development of Specification of Competency Standards (SCS) which are industry or sector-specific competency standards that can be grouped to form a qualification at a particular level on the HKQF.	occupational qualification, which is then registered on the NVEQF.

Table 2: Japan, Mexico, South Korea, Uganda, United Kingdom (UK), and United States of America (USA)

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
Is there a relationship between the occupational classification system and occupational qualifications?	No	Limited - National System of Competency Standards (NSCS), based on the SINCO, is used for the development of certain occupational qualifications.	Yes	No	Yes	Potentially through O*NET
If not, what are they using?	Japan uses an employer-led model whereby decisions on vocational qualifications and skills required are decided by individual employers.	N/A	N/A	It is unclear what is being used for labour market intelligence and to signal demand for new occupational qualifications although the Directorate of Industrial Training states that occupational competencies identified in the labour market are used to develop competence-based curricula for the qualifications.	N/A	N/A
Curriculum design and development drivers	The JSOC is not used for curriculum design or development. A Vocational Ability	To respond to skills needs, a dual system based on the German model was	The occupational classification system is used for the design and development of	The Directorate of Industrial Training's occupational classification system is	Awarding Organisations (AOs) are responsible for the development of new	There is no indication that O*NET or the SOC are used to design or develop curricula.

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
	Development Measures (VADM) system was developed by the Ministry of Labour, Health and Welfare (MLHW). This system is used as a guideline for capacity development and provides a scale for skills acquired nationally. MHLW and the Japan Vocational Ability Development Association (JVADA) have also developed the Vocational Capability Evaluation Standards (VCES) to organise knowledge and skills that are needed in the labour market and to categorise competencies required for occupational standards. Firms have long-standing relationships	implemented. However, this was not widely adopted due to the limited capacity of companies. Content for the dual system occupations was developed by Colegio Nacional de Educación Profesional Técnica (CONALEP), although training institutions can develop their own content if it is certified by the Secretariate of Public Education (SEP). For other VET qualifications, curricula are designed by CONALE) and certification is awarded by the SEP. Curricula are designed based on the National System of Competency Standards (NSCS) which were developed by the Consejo Nacional de Normalización y	curricula. South Korea has identified broad industry areas to develop into the NQF while priority fields in the VET system have been identified for the development of National Competency Standards (NCS). The Human Resource Development of South Korea, part of the Ministry of Employment and Labour, together with Industry Skills Councils develop the NCS. The NCS are the basis of occupational qualifications. The VET system was modified to align with German dual system and includes industry in the design of competency-based curricula. Institutions can also develop their own curricula which must be certified by	not used for curriculum design and development. The UVQF is used to design and develop curricula for the programmes offered at vocational colleges. However, some programmes, for example some engineering programmes at universities, are allowed to develop their own curricula and are then quality assured by the DIT. For institutions using the older BTVET system, curriculum design and development is coordinated by the Industrial Training Council, which forms part of the DIT, in collaboration with training centres and other industry stakeholders.	qualifications. They are required to follow the requirements laid down by the Office of Qualifications and Examinations Regulation (Ofqual) and to consult qualifications users to ensure that there is support for the qualification. AOs make use of National Occupational Standards linked an SOC code for the development of a vocational qualification.	TVET programmes are aligned according to National Career Clusters. Institutions have the primary responsibility for developing and implementing postsecondary standards. These standards are developed and enforced with reference to policies administered by state agencies, accrediting agencies' requirements, expectations of professional associations and employers, and the practices of other institutions. In-company training is a significant proportion of TVET and is provided by companies without any link to external government agencies

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
	with schools to ensure that their skills needs are met.	Certificación de Competencias Laborales (CONOCER). Curricula are, however, not designed centrally and decentralised institutions have a high level of independence in setting their curricula.	the government. Assessments are conducted against the NCS.			or education institutions.

Case studies - countries with a relationship between their occupational classification system and occupational qualifications

Bangladesh

The Bangladesh Standard Classification of Occupations (BSCO) was published in 2012 and was adapted from the ISCO, although which version is unclear. Its purpose appears to be labour market intelligence and it has assisted with demand signalling and the identification of priority occupations. The BSCO has also been used to inform the development of the National Training and Vocational Qualifications Framework (NTVQF).

Bangladesh is still in process of developing a unified National Qualifications Framework, however the NTVQF is already in place. The NTVQF was developed to be job-oriented and focused on market-driven skill formation, and to respond to the challenges facing the TVET sector in Bangladesh (UNESCO, 2012). The NTVQF is a competency-based education system, with qualifications based on National Competency Standards.

Bangladesh also has a National Skills Data System, developed to be a key source of labour market intelligence, which is managed by the National Skills Development Council (NSDC) Secretariat. In conjunction with the Bangladesh Technical Education Board (BTEB) and the Industry Skills Councils (ISCs), the data is analysed to identify skills demand in the labour market. This information is then used by the NSDC and ISCs to make decisions on new qualification development.

Priority occupations are identified as sectors linked to export-oriented sectors as well as those identified by the ISCs. Skills shortages are reflected in the specific ISC reports and the ISCs then work with the BTEB to develop the standard competencies (skills, knowledge, and attitudes) required to perform tasks in that occupation (TVETR, 2015; ILO, 2010). These National Competency Standards are used to guide the development of standardised occupational qualifications and their curricula. ISCs appoint Standards and Curriculum Development Committees who are responsible for the development of standards.

The BTEB is responsible for curriculum development and curricula are designed according to Competency-Based Training (CBT) principles. Industry experts from the ISCs are identified by the BTEB and form part of a committee led by CBT curriculum developers. The completed curriculum is validated by the relevant ISC's Standards and Curriculum Development Committee before being submitted to the BTEB to be uploaded for use.

While there is a clear relationship between the BSCO and occupational qualification development, it is worth noting that there are multiple bodies involved in implementing the NTVQF. Aside from the BTEB and NSDC, the Bureau of Manpower Employment and Training, the Bureau of Non-Formal Education, the Directorate of Technical Education, as well as several other ministries, NGOs, and training institutions are all involved. UNESCO (2012) indicates that there is also limited coordination among them. There is also an indication that there are weaknesses in the coordination between the BSCO and the NTVQF.

South Korea

South Korea has two occupational classification systems - the Korean Standard Classification of Occupations (KSCO) and Korean Employment Classification of Occupations (KECO). The former is based on the ISCO-08 and is used for statistical purposes (Statistics Korea, n.d.). KECO was developed by the Ministry of Labour and Employment and is directly matched to the KSCO but its aim is to help people utilise and connect with occupations. It is also updated to reflect current local labour market dynamics (Ministry of Labour and Employment, 2017).

In South Korea, occupational qualifications are designed to integrate the competencies required in the changing occupations of South Korea's labour market (KRIVET, 2018). New qualifications are developed according to the skills demand in industry, as identified by the occupational classification systems. The TVET policy on qualification development emphasises the identification of competencies required by industry and then using those to develop new qualifications in order to

supply skills to the labour market (KRIVET, 2018).
The Korean Qualifications Framework was established in 2003 by the Korean Research Institute for Vocational Education and Training (KRIVET) and sets out an integrated system of levels common to both academic and vocational qualifications. The Ministry of Employment and Labour, through the Human Resources Development Service of Korea (HRD Korea), has made efforts to reform the KQF through the development of National Competency Standards (NCS). The aim is to strengthen industry, TVET, and the qualifications system in order to raise the status and significance of TVET (Seung II Na, 2012). There is also a Technical Qualifications Framework which consists of both national and private technical qualifications, and which is managed by HRD Korea.
NCS are aligned to the occupational classification system and have been developed in 16 broad industry areas, which are being used to develop the National Qualifications Framework. The NCS include the competencies (knowledge, skills, and attitudes) required to perform a job or task in an industry and were developed by merging the National Occupational Standards and the Korean Skills Standards (Lee, 2016). The new NCS are used for the development and alignment of curricula for occupational qualifications. The Korean VET system was modified to align with the German 'Dual System' model. In doing so industry is included in the design of curricula, and the government has attempted encourage employer engagement through the development of Sector Councils. Institutions can develop their own curriculum, but these must be certified by the government (Lee, 2016).
It is evident that South Korea has a strong relationship between its occupational classification systems, the KECO in particular, and occupational qualifications. The continuous updating of the KECO to reflect local labour market dynamics is used to signal demand for the development of new occupational qualifications. NCS are developed based on the occupational classifications and these are used for the development of occupational qualifications on the KQF, as well as in the standardisation of curriculum development for those occupational qualifications.

United Kingdom

The United Kingdom (UK) Standard Occupational Classification (SOC) system is based on the ISCO-08. It is used for labour market intelligence, such as the classification of workers by their occupations, classification of jobs, and career information. It is also used for statistical analysis of trends to guide qualification development and labour market policies (Office for National Statistics, 2020). The Institute for Employment Research produces a series called Working Futures which identifies priority occupations based on the SOC classifications.
Although emphasis is placed on the use of the SOC for labour market intelligence, Dickerson and Wilson (2017) state that the "SOC has been criticised for being uni-dimensional, hierarchical, and static, and thus incapable of capturing either the breadth or the changing nature of skills used in different jobs over time" (p. 3). Dickerson and Wilson further critique its backward-looking perspective, and the labour market intelligence it provides as not providing clear guidance on future skills demand in the UK.
Despite this, the SOC is used to signal demand for qualification development. The SOC is used to signal demand based on occupational and skills analyses that are used to determine skills shortages. Sector Skills Councils (SSCs) develop Sector Qualification Strategies (SQS) which include information on the priority occupations and skills shortages in the sector (Misko, 2015). This information is then used by the Awarding Organisations (AOs) to determine the qualifications that need to be developed and to motivate for the qualification's development. AOs are required to engage stakeholders as well in order to ensure that there will be sufficient uptake on the qualification.
AOs are responsible for developing and providing qualifications in line with government policy requirements and labour market demand (European Commission, 2019). Vocational qualifications are registered on three qualification frameworks, based on which country the awarding organisation is in. Due to the structure of the government in the UK (a central government with devolved government structures in Northern Ireland, Wales, and Scotland), there are four qualification frameworks in use:

- Regulated Qualifications Framework (RQF) for England and Northern Ireland
- Scottish Credit and Qualifications Framework (SCQF)
- Credit and Qualifications Framework for Wales (CQFW)
- Framework for Higher Education Qualifications for England, Wales and Northern Ireland (FHEQ)

The link between the SOC and the development of curricula is the National Occupational Standards (NOS). These occupational standards are linked to the SOC code for the occupation and consist of learning outcomes, based on the knowledge, skills and understanding required for a particular occupation. Northern Ireland, Scotland, and Wales make use of the NOS in the development of vocational qualifications, while England has shifted away from the NOS to apprenticeship standards. Responsibility for the administration of the NOS and maintaining the database is the responsibility of the Scottish Qualifications Authority (SQA). The NOS are developed through close collaboration between government, industry stakeholders, professional experts, and training providers. Misko (2015) does, however, suggest that while involving stakeholders in the design and assessment of qualifications is a key feature of the system, this involvement may be constrained by the ability and availability of stakeholders to participate in the process. This in turn could impact on the integrity of the qualification.

It is evident that the relationship between the SOC and occupational qualifications in the UK covers both demand signalling and the curriculum development process. Awarding Organisations make use of labour market intelligence to determine which qualifications develop, while the National Occupational Standards used by the AOs for vocational curriculum development are also based on the SOC.

Case studies - countries without a relationship between their occupational classification system and occupational qualifications

Germany

The Classification of Occupations 2010 (KldB-2010) makes use of a different approach to occupational classification than the ISCO-08. While ISCO-08 uses an occupational classification system based on occupations, the KldB-2010 classifies according to job titles (Züll, 2016). Although focused on reflecting the occupational structure of the German labour market, it was also updated in the latest version to allow for greater comparability between KldB-2010 and ISCO-08 (Paulus & Matthes, 2014). The purpose of the KldB-2010 is labour market intelligence through providing statistical data and analysis. The Federal Employment Agency uses a supplementary tool called the Dokumentations-kennziffer (DKZ), which is derived from the KldB-2010, for job placements. The DKZ-database is continuously updated and contains all occupation and vocational training names used currently in Germany together with further occupation-specific information (Schierholz, 2014). Although the term 'priority occupations' does not appear in German literature, the Institute for Employment Research (IAB) conducts yearly Job Vacancy Surveys to identify vacant positions which does give an indication of demand for occupations. Statistical data is also collected based on vacancies reported by the Federal Employment Agency (BA), although this data only captures vacancies where employers chose to make use of the BA (Bossler *et al.*, 2020).

Demand signalling for qualifications does not, however, appear to be based on the above-mentioned information but, rather, is based on the skills demand identified by regional business/industry chambers. As per Weigel et al (2007), the process of determining demand is one of continuous engagement and negotiation at an industry level. State, employer, and labour representatives are all involved in decision-making on occupational qualifications.

The KldB-2010 is not used for occupational qualification development, although training regulations are linked to a code on the KldB-2010. There are approximately 320 regulated occupations in the dual system, with occupations clustered into 16 occupational fields (Bauer, W., 2021, personal

communication). Occupational programmes, called training regulations, are developed in conjunction with sector, employer, and employee organisations and supported by the Federal Institute of VET (BIBB) (Lester & Religa, 2017). The BIBB coordinates and takes part in the development of training regulations (occupational standards) and curricula for initial and continuing training, maintains and publishes the register of recognised training occupations and promotes pilot schemes, including monitoring and evaluation to shape innovation in the TVET sector. In the development department of the BIBB there are around 50 experts facilitating the development process of occupations. The core syllabus, as provided at national level, provides the basic contents for teaching at VET schools but details are worked out at Lander (federal state) level. There is coordination between the Federal Government and the Lander in terms of finalising the core syllabus and final approval is given at national level (Lester & Religa, 2017).

Although curriculum design involves all social partners, the two main drivers are VET lecturers (for the theoretical component) and the master artisans responsible for workplace teaching and learning. Critiques of the curricula by industry, however, are that it is too closely tied to a specific *Beruf,* which results in a certain amount of claimed irrelevance and redundancy (Brockmann et al, 2007).

While Germany does have a national qualifications framework, the German Qualifications Framework for Lifelong Learning or Deutsche Qualifikationsrahmen für lebenslanges Lernen (DQR), it is not a regulatory framework (Federal Ministry of Education and Research, 2020). Its role is rather to provide orientation and transparency in the education system. There are also challenges regarding the positioning and articulation of vocational qualifications in the framework (Helgøy & Homme, 2015).

In considering the German VET system, it is necessary to take into account the impact of the dual system on which most of the system is based. This system involves all social partners, such as chambers, employer organisations, and employee organisations including trade unions, together with both the national and Lander government structures in the process of both demand signalling and curriculum development. While the KldB-2010 has a role in labour market intelligence, there is no relationship between the classification system and occupational qualifications, other than providing an occupational code, either in terms of signalling demand for new qualifications or during qualification and curriculum development.

Japan

The occupational classification system is the Japan Standard Occupation Classification (JSOC). The purpose of the JSOC is to the classification of occupations based on job similarities and statistical representations of occupational data (Director-General for Policy Planning (Statistical Standards), n.d.). The JSCO is generally aligned to ISCO. Japan has, however, had some form of occupational classification system for longer than the ISCO has been available. Also, although it is aligned to ISCO, the international occupational classification structure is not an accurate reflection of the labour market and occupational structure in Japan.

The JSOC is used for Labour Force Surveys conducted by the Statistics Bureau and Director-General for Policy Planning (Statistical Standards). It is used for the identification of priority occupations through the publication of job vacancy statistics by the Ministry of Labour, Health and Welfare. However, the JSOC is not used for signalling demand. The Ministry of Education, Sports, Culture, Science and Technology shares responsibility for the provision and supervision of skills demand with the Ministry of Labour, Health and Welfare but the system is not well-coordinated and codetermined at national level, and it is mostly organised at firm level (Taşli, 2018). Signalling takes place between schools and employers and firms often have long standing collaborations with schools to ensure company specific skills are delivered.

Taşli (2018) draws on Rubery and Grimshaw (2003) in categorising Japan as an Internal Labour Market (ILM) where firms design training programmes according to their specific needs to train new employees according to their requirements, rather than relying on external certifications from the school system. This is in contrast to an Occupational Labour Market (OLM) where nationally

recognised qualifications are created according to industry skills needs and employers rely on standardised vocational certificates.

The determination of skills demand at firm-level is a reflection of overall structure of skill formation in Japan which mostly occurs at firm level. One of the key features of the Japanese vocational education and training system consists of a combination of on-the-job (OJT) and off-the-job (OffJT) training, conducted by private firms (Iredale et al, 2014). Employees are selected based on aptitude, quality of education, and general attitudinal skills rather completed vocational qualifications. Firms take on employees with only a general education from either colleges or schools. Firms conduct company-specific training in order to develop the required skills and prepare them for 'lifelong' careers within the company. The Japanese market is highly competitive, and firms use this approach in attempt to avoid 'poaching' of employees by other firms.

OffJT is classroom based while OJT, as the name suggests, is based within the employee's workplace. OJT is focused both on current and new employees and forms a central part of large Japanese firms' human resource development strategies, contributing extensively to company skill formation. OJT gained further prominence in Japan with the increased emphasis on quality and 'zero defects', and the related productivity programmes that drive those ideals. Within the manufacturing sector in particular, the focus is on multi-skilling according to the firm's skill requirements (Hayashi, 2008).

While firms remain in control of skill formation, recent trends indicate that the labour market in Japan is changing. This has a corresponding effect on the vocational education system. The historically stable position of the Japanese employee is changing as employers seek to reduce personnel costs by increasing the number of non-regular workers and asking employees to pay for their own training. (Ito, 2012). This, together with the reduction in employment prospects, creates a space for public vocational training. There was an attempt in 2003 to implement a Japanese 'dual system' based on the German model in attempt to bring enterprises and training providers together to design programmes that promoted industry-specific skills instead of company-specific skills. However, this was not successful as companies were not willing to take on the apprentices without shaping the content of the on-the-job training, thereby defeating the aims of the programme and merely repeating the previous *status quo.* Ito (2012) also suggests that Japan lacks any concept of well-defined occupational categories on which to base the national standard for vocational training programmes.

There is no national qualifications framework in Japan. Japan uses Vocational Ability Development Measures (VADM) system as guidelines for capacity development in private entities and to provide a scale for skills assessed nationally. The system was developed by the Ministry of Labour, Health and Welfare in conjunction with the Japan Vocational Ability Development Association (JAVADA) and aims to create a clear vision of the abilities and competencies required by industries and occupations (Liang, 2016). The VADM includes National Trade Skill Testing and the creation of vocation capability evaluation standards (VCES). The VCES reflect the knowledge and skills needed in the labour market, as well indicating competencies needed. These form occupational standards, although it is not clear how they are implemented. The JAVADA is responsible for implementing vocational ability evaluation tests which serve as "a guideline for proper personnel evaluation criteria and appropriate human resource allocation" (JAVADA, n.d.), although their link to the VCES is not explained.

Japan does also use a system of occupational licenses which are credentials that are obtained by individual in certain professions, for example physicians, lawyers, schoolteachers, and hairdressers, without which they are not allowed to operate (Masayuki, 2017; Morikawa, 2018). Occupational licenses are distinct from occupational qualifications and play more of a quality assurance role in the professions. Licensing regulations are set at national level although they are also administered by private organisations.

Overall, the Japanese vocational education and training system differs from other countries due to the very distinct labour market and occupational structure within Japan. Even though the JSOC has been used to identify priority occupations, there is no relationship between the JSOC and occupational qualifications in Japan. As an Internal Labour Market, occupational qualifications and

curriculum development in Japan occurs mostly at firm level. This is as a result of the competitive Japanese market, which drives firms to try and retain employees and prevent 'poaching'. Although the changing labour market in Japan is forcing shifts in the vocational education and training system, and government ministries are attempting to implement national occupational standards, the current approach to occupational qualifications and curricula remains a fragmented one driven by companies and market demands.

Summary of Findings: International Practices

As is evident from both the overview and case studies, in the two areas considered for this analysis - demand signalling and the development of qualifications and curricula - the relationship between the various countries' occupational classification systems and their occupational qualifications varies substantially. While the majority of countries demonstrate at least some link between the two, it the occupational classification system is clearly not the only methodology for signalling qualification demand or developing qualifications and curricula.

In terms of demand signalling, the occupational classification system is used by some countries as the basis for labour force or job vacancy surveys. These surveys are used to provide insights into the labour market of the country and to feed into skills demand planning. The alternative approach used for skills demand planning when not using the occupational classification system relies on an industry-led model where employers and other industry bodies, generally through skills councils or similar fora. The need for qualifications is reported and driven by these fora and they often also have a role in the development of qualifications and curricula.

The role of industry in qualification and curriculum development varies per country, as does the extent to which government oversight influences how and what qualifications are developed and how the curriculum is structured. On the one extreme is a country like Japan, where qualification and curriculum development are so strongly industry-driven that individual companies hold the power to prescribe to schools what skills they require taught, based on their company's needs. What is worth noting in the Japanese context is that, while companies drive on-the-job training with a high degree of specialisation, Japanese employees have already received a certain level of general education before entering the labour market. However, as discussed previously, this company-driven approach leads to a fragmented system of occupational qualifications with little to no standardisation. On the other extreme is a country such as Uganda where the system appears to be driven solely by the government and, therefore, is reported to be unresponsive to industry needs.

The majority of countries rest somewhere between these two extremes. Countries such as South Korea and the United Kingdom, as discussed in the case studies, have a system of national occupational standards that are used for occupational qualification and curriculum development. These occupational standards are based on the occupational classification system. This approach is also used by India and Mexico. Although not directly linked to their occupational classification system, other than by using the occupation code for identifying the occupation on the qualification, Australia and Germany also make use of a form of occupational standard, albeit with different nomenclature. Australia refers to training packages which are used to make up qualifications while Germany uses training regulations. The distinction between Germany and the rest of the aforementioned countries, however, appears to be the underpinning structure on which they are based as the German training regulations are clustered into 16 occupational fields rather than developed for single occupations.
In considering the German VET system, it is necessary to take into account the impact of the dual system on which most of the system is based. This system involves all social partners, such as chambers, employer organisations, and employee organisations including trade unions, together with both the national and Lander government structures. The structure and development of

training regulations provide challenges in linking these to a qualifications framework such as the European Qualifications Framework (EQF) and, consequently, an occupational classification system such as the ESCO (European Skills/Competences, Qualification and Occupations).

Deissinger (2015) is critical of EQF and its associated tools in the German context. His critique considers the incompatibility of the competence approach in the EQF with the traditional framework for VET in Germany that is based on a dual system and stakeholders. Two specific issues with the EQF were experienced in Germany. First, the trade unions, employers and craft associations insisted that a German understanding of competence was included as a guideline by working groups to the German ministry when discussing qualification levels. The fear was that a fragmented understanding of competence could be introduced in the German system, which would ultimately degrade the learning sites and programmes. Second, there was no agreement between the school system, higher education and non-government stakeholders on the allocation of qualifications from the German framework to the EQF. The argument was that it was challenging to compare qualifications from the German framework to qualification on the EQF because they were based on a different understanding of competence.

Critiques of ESCO use in the EQF provide more details on problems encountered in the use of occupational classification systems in education. Clarke & Winch (2015, p. 593) state that the EQF is designed on a learning outcome approach where "task-based construction of occupational profiles is exemplified by the European Skills, Competences and Occupations tool". They explain that ESCO, with its focus on easily identifiable skills that could be rapidly developed and validated through practical forms of assessment, carry a robust conception of human capital theory. For them, the narrow concept of skills and labour ignores the complex arrangement of skill formation at a social and organisation level, which ultimately results in a distorted form of assessment (Clarke & Winch, 2015). They draw similarities between the design of National Vocational Qualification (NVQ) in the United Kingdom and the ESCO methodology, which is task and outcomes-based. Clarke & Winch (2015) highlighted that ESCO is not concerned with a qualification, which makes relating technical and transversal skills to ESCO challenging as skills are an important consideration in qualification development. Technical skills are abilities associated with carrying out discrete tasks in the workplace, and transversal skills are associated with abilities needed to work on longer-term activities within an occupation related to planning, coordination and evaluation. They argue that it is "difficult to locate transversal abilities within the analytical decomposition and workplace-based methodology, employed by ESCO, which focuses on observable behaviours (Clarke & Winch, 2015, p.601).

While, as discussed above, the use of occupational classification systems for developing occupational qualifications and curricula is not unproblematic, it has been used by countries such as South Korea and the United Kingdom. Its use is most apparent in the development of occupational standards that are then used to guide the development of qualifications and curricula. The use of occupational standards for developing occupational qualifications and curricula does, however, also extend to countries that do not use the occupational classification system as part of the development process. Allais et al. (2014) reviewed the occupational standards from six English speaking nations and identified several important lessons for policy in countries aiming to establish or revise their standards. The recommendations include that

> Standard setting should take place for core occupations with broad profiles and should refer to the major tasks and processes of an occupational field and not to specific workplaces. Standards should include the core work activities and relevant competencies for key production and service activities, but should avoid creating a detailed profile for each specialisation. Between four and seven occupations per occupational group is generally sufficient, and the development of new occupational profiles for each new highly specified task should be avoided. (Allais et al., 2014)

This ties in with Clark & Winch's (2015) critique of task-based occupational profiles. If occupational standards, whether linked to an occupational classification system or not, are to be used for

qualification and/or curriculum development, it is important to ensure that they are developed in a way that considers industry needs but also does not further contribute to the fragmentation of the occupational qualification system.

Section 2: Occupational Qualification Development in South Africa

This section focuses on occupational qualification development in South Africa. It draws on policy documents and manuals as well as interviews to report on the intended approach to qualification development, as well as give general insights on qualification development practices. This is followed by case studies, based on interviews with those involved in the implementation of the qualification development process, which provide further detail on how the qualification development process is being applied and whether it is being used as intended.

Occupational Classification Systems in South Africa

There are two occupational classification systems in South Africa, South African Standard Classification of Occupations (SASCO) and the Organising Framework of Occupations (OFO), which are used for different purposes. First published in 1986, the current 2012 version of SASCO is based on ISCO-08 and is used by Statistics South Africa to provide a national framework for the identification of occupations and as a basis for international comparability (Lehohla, 2012). SASCO serves as the systematic basis for the classification of occupations obtained through the Population Census, Causes of death, marriages and divorces, and the Quarterly Labour Force Survey (QLFS).

The OFO emerged from the Department of Labour (DOL) in 2004, supported by GTZ (German Agency for Technical Cooperation) (Department of Higher Education and Training, 2013). It is a coded hierarchical occupational classification system based on the International Labour Organisation's International Standard of Occupations (ISCO-08) (Department of Higher Education and Training, 2013). Questions are often raised on why the OFO was developed separately from SASCO. A DOL official who was part of the team that developed the OFO in the early 2000, explained that SASCO, at the time, was drawing on older occupational definitions and the development of the OFO would include current occupations. They clarified that within the conceptualisation of the OFO was the idea that employers would update occupations on the OFO through the employer skills plans, which would lead to occupational definitions being a more accurate reflection of the labour market. However, in retrospect, a respondent who currently works with the OFO at the DHET acknowledged that employers rarely make significant updates to the definitions on the OFO and work within the structure. It was unclear why employers did not update the OFO occupational definitions.

The OFO contains standardised definitions for occupations that are organised in groups and hierarchically and was developed within the Department of Labour (DOL) to support national skills planning. The DOL in the early 2000s was experiencing difficulties with matching employer requirements for skills with graduates trained in educational institutions. There are several reasons found in academic literature for this perceived skills mismatch (Allais & Nathan, 2014; Streeck, 2012; Winch, 2011). One respondent, a policymaker, observed that the introduction of the OFO into national skills planning was because senior officials at the DOL felt strongly that the mismatch was related to the different definitions of occupations used throughout industry in job specifications. The DOL intended using the OFO to standardise occupational definitions and their up-to-date associated practice requirements, which would then be used by educational institutions to develop their training programmes.

For the DHET, the OFO was a common language that would allow all actors (educators, employers, trade unions and professional bodies) to discuss requirements for training programmes (Department of Higher Education and Training, 2013). During the same period, a significant policy reform within the National Qualification Framework (NQF) saw the addition of sub-frameworks to provide more relevant quality assurance to parts of the education and training system (Minister of Education and Minister of Labour., 2007; National Qualifications Act, 2008 (Act No 67 of 2008): Occupational Qualifications Sub-Framework [OQSF] Policy, 2014). The Occupational Qualifications Sub-Framework that was overseen by the Quality Council for Trades and Occupations (QCTO) introduced a new type of qualification into the system (National Qualifications Act, 2008 (Act No 67 of 2008): Occupational

Qualifications Sub-Framework [OQSF] Policy, 2014). While not explicitly legislated, the OFO occupational definitions were to be used by a state body (the QCTO) for the creation of the new occupational qualifications to prepare learners for the workplace (Department of Higher Education and Training, 2013). The DHET described the OFO as a bottom-up approach which means:

- analysing jobs and identifying similarities in terms of tasks and skills;
- categorising similar jobs into occupations; and
- classifying these occupations into occupational groups at increasing levels of generality. (Department of Higher Education and Training, 2017)

The OFO designates skills levels relative to the NQF and uses the four ISCO-08 skill levels to define occupational skills levels relative to the NQF. Level 1 on ISCO includes NQF levels 1 and 2, skill level 2 links to NQF levels 3-5, and skill levels 3 and 4 to NQF 6-10 (Reddy et al., 2017).

The identification of qualifications

Bauer et al., in their 2015 review of the QCTO, reported on how qualifications were identified for development under the QCTO. Based on their findings, they indicated that the OFO was used to identify occupations for the development of qualifications. The QCTO model is based on individual occupations and a policy of one occupation = one qualification was applied (Bauer et al., 2015). There are debates about whether the one qualification per occupation model is satisfactory with, on the one side, concerns that there would be too many fragmented qualifications and a myriad of extraneous occupations while, the on the other side, there were concerns about contextual specialisations. Observations about qualification development in the report included that:

- There is a high acceptance of the principle approach of qualification development which is regarded as demand-driven and work-related. However, the need for different types of qualifications is raised as a possibility that may need to be revisited.
- The direct linkage of developing occupational qualifications to the Organising Framework for Occupations (one-to-one-model) is an obstacle for designing need-based occupations.
- The implications of the funding model can result in a DQP that is not as representative as anticipated. It is considered critical that industry plays a key role, however, in reality many SETAs dominate the development process, which may result in qualifications that are focused on the needs of a single industry rather than the industries that require the qualification.

(Bauer et al., 2015)

How individual qualifications are identified for development relies on the Development Quality Partner (DQP) involved. Qualification development is delegated to the DQP by the QCTO, although the QCTO quality assures the process. In their review, Bauer et al. also reported on a challenge raised by one the SETAs involved in qualification development with regard to how qualifications are identified for development. Which qualifications should receive priority for development was not always clear as demand data was not available from the Department of Labour (Bauer et al., 2015).

QCTO Qualification Development

The discussion in this section centres on the QCTO qualification process, with a particular focus on the use of the OFO in the process, and draws on several sources of data to do this. Policy documents and QCTO manuals are referred to in order to explain how the OFO was intended to be used in occupational qualification development as well as in the development of occupationally-directed curricula. Interviews were also conducted with a senior official from the Department of Labour who participated in the introduction of the OFO, a senior official from DHET who works directly with the OFO, a senior official from the QCTO, and a Qualification Development Facilitator from a social

partner organisation. These provide insights into the intended use of the OFO in qualification development, as well as some of the rationale for its use.
Further data is from observations of 3 workshops organised to develop occupational qualifications at various stages in the development process, informal conversations with a facilitator in attendance as an advisor at these workshops, and an interview with a senior official at the QCTO. Together with data from transcripts of interviews conducted as part of a larger project on the organising framework of occupations, this data provides insights into the actual implementation of the QCTO qualification development process.
The QCTO was tasked with developing occupational qualifications. The process for developing qualifications is reflected in figure 6 below, drawn from the Qualification Development Facilitator's manual.

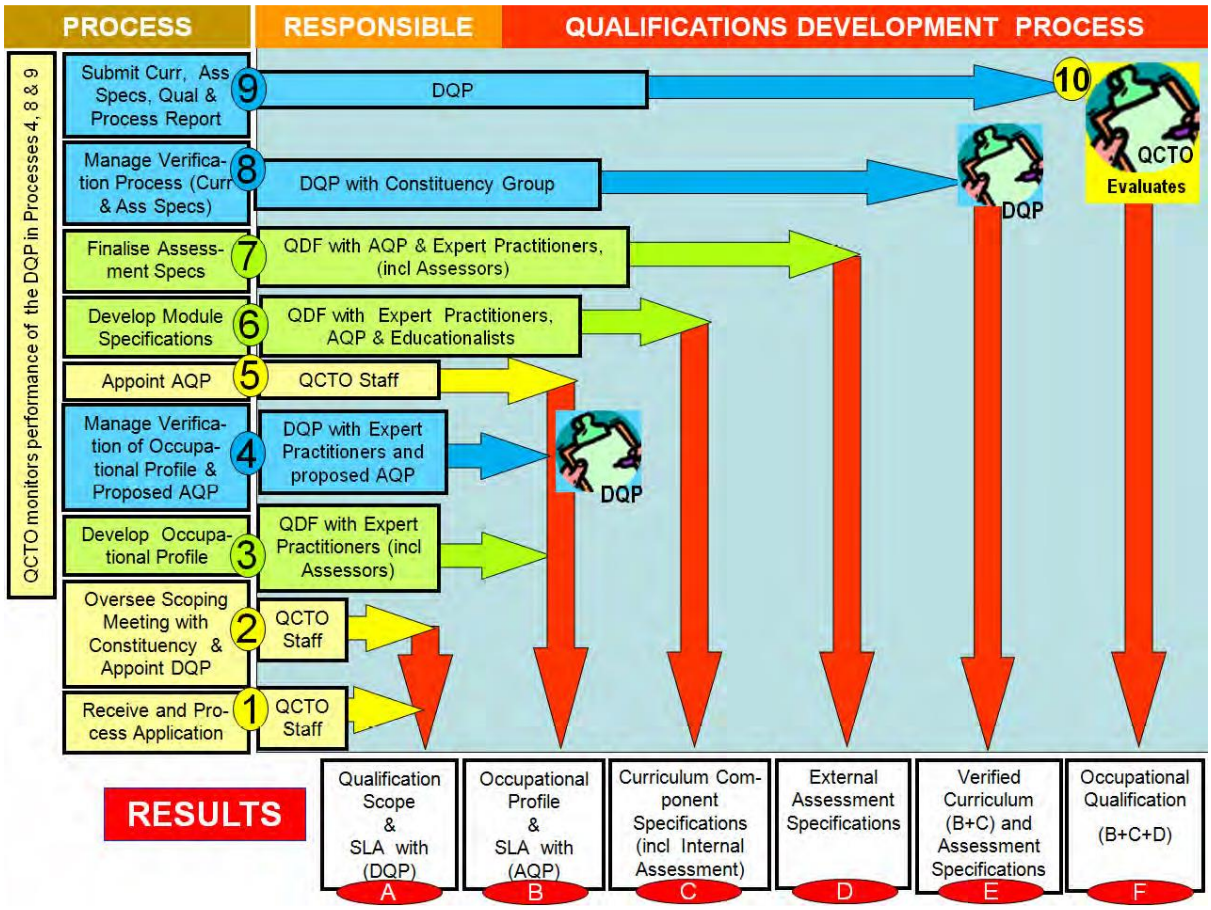


Figure 6: QCTO occupational qualification development process (Quality Council for Trades and Occupations, 2014)
The first part of developing an occupational qualification is an educational institution or employer putting forward a proposal for the creation of a qualification. The facilitator's manual states that the QCTO staff then evaluate this proposal and find the occupational definition on the OFO (Quality Council for Trades and Occupations, 2013). The Development Quality Partner (DQP) then appoints a panel to serve as the community of experts and practitioners (CEPs) for the next part of the process of development (Quality Council for Trades and Occupations, 2013). This panel of experts is made up of employers, educators, and assessors in the field related to the qualification (Quality Council for Trades and Occupations, 2013). The CEPs participate in a series of workshops under the auspices of the DQP, and facilitated by the QDF, during which the required qualification documents are developed. These include an occupational profile, curriculum framework, and assessment specifications. The following sections will focus on steps 1, 3, and 6 of figure 6 - new qualification applications, occupational profile development, and curriculum development (referred to as module specifications) - as these are the steps that involve the OFO.

New qualification applications

The first use of the OFO code is in the application process for an occupational qualification. This is step 1 in the process shown in figure 6 from the QCTO's QDF manual. One of the policymakers interviewed explained the reasons behind the use of the OFO code (associated with an occupation) on the occupational qualification development application and why an OFO code was assigned to a qualification by the QCTO. The OFO code in the QCTO context confirmed that the occupation was found in the South African labour market. The assigning of the OFO code to the qualification allows the process of occupational qualification development to begin. Ideally, among policymakers the OFO could also be a starting point in the occupational profile development (Participant V, 2019). In line with the QCTO use of the OFO in occupational qualification development:

> *For want of a better word, the Organising Framework of Occupations is being used as a legitimising tool to start the development of a qualification.* (Participant V, personal communication, January 21, 2019)

A respondent who is a member of the organisation that put in an application for the development of an occupational qualification and a Qualification Development Facilitator (QDF), reflected on the requirement of the OFO code in occupational qualification applications:

> *Because if you can't link the skills development to a particular job under the OFO code, your application can't be accepted. So, based on that, we saw that there were many gaps in the OFO code at the time. Then we prepared a full list of the jobs that were missing under the OFO code, and the SETA then made application to the DHET to have those jobs or qualifications included.*
> (Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

One respondent indicated that the intention behind linking an application for a new qualification to an OFO was "to reduce the proliferation of occupations and I don't think people understood that, that purpose enough". Another respondent, however, suggests that this is not occurring as new occupations are being included on the OFO without being carefully considered:

> *there's this great big push from SETAs and so on and interest groups to push occupations into the OFO willingly. So there's a category in the OFO which is always signalled with a nine, it stands for not elsewhere classified. So where it's got a very vague relationship to other occupations, you just ram everything in there and then some of these cases you know the unit group nine of a particular occupation, you'll find all sorts of things that don't belong together but nobody knows where to put them. And if you now use your rules of thumb. So if you now use this rule to must have an occupation on the OFO, the people working in the OFO came to just shovel everything into the nine group, not elsewhere classified. So that's where the priority, identifying priority qualifications, one really needs to think through that proves far more carefully and one needs to look at not just what is said on the OFO, but you now need to start to look at across what is already been developed in the occupational sub frame work.*
> (Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

As discussed above, although a requirement for every application to develop a new qualification, the use of the OFO in this step is not without challenges. While it ensures that all qualifications are linked to an OFO code, there are difficulties at times due to gaps in the OFO codes. It is also only useful for streamlining the qualification system if unnecessary occupations are not added to it.

Development of the occupational profile

The development of the occupational profile is step 3 in the qualification development process reflected in figure 6. In this step the Development Quality Partner (DQP) draws on the community of experts and practitioners (CEP), under the direction of the Qualification Development Facilitator

(QDF), to develop the occupational profile. This done through participation in qualification development workshops.
The first part of the qualification development workshop involves aspects of pre-scoping and introducing the occupational qualification to the CEPs, and this process does not directly deal with the OFO. The facilitator's manual states that the second part of the workshops with the CEPs is to establish an occupational profile to decide if the OFO occupational definition is accurate. The accuracy of the OFO occupational definition is established by comparing it to the CEP's knowledge of the occupation in the South African labour market and they make changes to this definition if necessary (Quality Council for Trades and Occupations, 2013). The occupational profile, with its agreed-upon occupational standards, is then finalised and used to design the knowledge, practical skills and work experience modules that make up the curriculum framework (Quality Council for Trades and Occupations, 2014). Occupational standards are legislated alongside the occupational qualifications in the OQSF Policy and are the responsibility of the QCTO (National Qualifications Act, 2008 (ACT NO 67 OF 2008): Occupational Qualifications Sub-Framework [OQSF] Policy, 2014). According to the QCTO facilitator's manual, as discussed in the second part of the workshop above, the occupational profile with its occupational standards describes the main tasks performed by practitioners in the workplace, as decided by the CEPs.
The structure of occupational standards includes components specified by the QCTO facilitator's manual. The occupational standards are referred to as occupational tasks, and occupational standards and occupational tasks are used interchangeably (Quality Council for Trades and Occupations, 2014, p. 22). The QDF manual explains that

> *Each task also incorporates a related product or service, one or more occupational responsibilities and one or more occupational contexts.* (Quality Council for Trades and Occupations, 2014, p. 10)

This definition is supported by a further specification of what is meant by product, service, and occupational responsibilities and contexts. In this definition, three tasks in compiling occupational tasks can be identified:

- *The first task is to define occupational task statements such as the "physical or digital product or the service rendered" (Quality Council for Trades and Occupations, 2014, p. 14). The facilitators' guide specifies that the occupational tasks identify the knowledge focus areas which refer to "the disciplinary or conceptual knowledge, theory and information required to produce the product or service" (Quality Council for Trades and Occupations, 2014, p. 17). The construction rules state that occupational tasks must be able to specify "conceptual knowledge" to be taught at an educational institution. Examples of conceptual knowledge are provided, such as textile production processes or tools, equipment and components for solar installations* (Quality Council for Trades and Occupations, 2014, p. 17).
- *The second task is to identify the occupational responsibilities, which are a cluster of practical skills that are required to produce a specific product or service* (Quality Council for Trades and Occupations, 2014).
- *The third task is to identify the occupational contexts for each occupational task. More than one occupational context can be specified for a product or service in a business process* (Quality Council for Trades and Occupations, 2014, p. 25).

The quotations above from the facilitator's manual suggest a broader definition to occupational tasks than an occupational descriptor in an OFO occupation definition, and the table below shows a comparison of an occupational descriptor on the OFO and occupational standard/task in the occupational profile for the electrician.

ISCO definition: ISCO 08 Code	Occupational Standard/Task drawn from Electrician Occupational Qualification and curriculum framework.

7411 Title EN Building and related electricians (International Labour Office, 2007, p. 4)	(Local Government Sector Education and Training Authority, n.d., p. 21)
• Inspecting electrical systems, equipment, and components to identify hazards, defects, and the need for adjustment or repair. • testing continuity of circuit.	Testing and inspecting electrical equipment, control systems and installations Unique Product or Service: Compliant electrical equipment, control systems and installations Occupational Responsibilities: i) Conduct pre-commission inspection (power on and off;) and test for new and existing installations ii) Conduct fault finding and test for existing installations and modified installations Occupational Contexts: iii) Processes of testing and inspecting of electrical equipment, control systems and installations

During the qualification development workshop observations, there was an opportunity for an informal conversation with a facilitator in attendance as an advisor at these workshops who provided insight into the process when the OFO occupational definition was available (Alphonsus, 2018). What arose from the observation was that there were two methods of deriving the occupational standards for the occupational profile where the OFO could be potentially used. The first method was a brainstorming session with participants (CEPs) who were broken into smaller groups to establish critical tasks that occupational practitioners must perform in the workplace. The tasks established by each smaller group were then discussed within the broader group, where the facilitator sought agreement on a final list of occupational tasks for the profile that guides the development of the qualification. The occupational profile was then compared to the relevant OFO occupational definition by the facilitator who would then raise questions on gaps or additions to the occupational profile. The facilitator in attendance as an advisor to the occupational development workshop confirmed that the brainstorming was typical in workshops. However, facilitators could either start from scratch as in the first method and then compare to the OFO definition or start with a series of occupational definitions. The facilitator explained another process of deriving the standards for the occupational profile. The second method begins with occupational definitions from ISCO, O*NET, Payscale etc. that are circulated within the group of participants (CEPs) and then a brainstorming session finalises the final list of tasks for the occupational profile with additions or subtractions applicable to the South African context.

In some cases, there was no apparent use of the OFO because it was challenging to find the occupation on the OFO. Two of the QDFs interviewed, when asked directly about the use of the OFO as occupational descriptions in the process, explained:

No, not at all because each occupation we develop which is a specialisation of the thing that

is in the OFO for example, won't share that full descriptor for an occupation. It will have its own description. (Participant 6)

In this particular occupation the OFO was not helpful because it did not specify specialisations. We had to come up with specialisations" (Participant 7)

(Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

The above quotations highlight the QDFs' problem, which is that not all occupations are found in the OFO and this required the development of an occupational profile within the process. The issue of specialisations raised here speaks to the level of detail each occupation is broken down into within the structure of an occupational group. The example used by one of the respondents was that the General Manager could be found on the OFO, but it was difficult to find a sector-specific general manager profile for qualification development. Two respondents from the CEP acknowledged that they did not use the occupational descriptors in the OFO because they were too broad for the occupation. As one of the QDFs, explained the use of the OFO in occupational profile development:

Well, as I indicated to you, it lists tasks that are broad for the occupation; most of those tasks they don't resonate well with the SMEs, so I find it difficult even using the tasks that are registered under the occupation that I am busy developing so I end up not even using or following those tasks.

(Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

Similar to the previous respondent, a further QDF provided a reason for not using the occupational descriptors:

OFO tasks and the OFO occupational descriptors won't talk to QDFs (facilitators) because these three qualifications that I have developed, I did not use the descriptors that are associated with my tasks as they were not necessarily aligned to what the people on the ground the people who are busy in the industry, they have been telling me.

(Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

The use of the OFO occupation descriptors and occupational tasks during the development of the occupational profile depends on the qualification being developed, as well as the methods used by the QDF. Although the descriptors and tasks are the basis for this step, they are not always sufficient, and deviations are sometimes made from the espoused process described in the QDF manual.

Curriculum development

The next stages in the qualification development workshops involve developing module specifications with learning components, qualifications assessment specifications, and verified curriculum in the areas of theory, practice, and workplace experience for the qualification (Allais, 2016; Quality Council for Trades and Occupations, 2013). The QDF manual provides a specific template for drawing the knowledge, practical skills and work experience modules for the curriculum framework from the occupational standards contained in the occupational profile.

Occupational qualifications have an integrated design where knowledge, practical skills and work experience modules are specified. The OFO guidelines in 2017 explain that the OFO will be used in occupational qualification development process for the "development of occupationally directed curricula that meet the job-related skills requirements for occupations in the OFO" (Department of Higher Education and Training, 2017, p. 19). The guidelines also state that the "curriculum components are developed relative to the occupation descriptors and tasks as defined in the OFO" (Department of Higher Education and Training, 2017, p. 19).

While the OFO 2017 guidelines above seem to indicate that the OFO would be used substantially in occupational qualifications, the document does caution users of the OFO that:

there is often confusion when course developers attempt to "force" a qualification to match an OFO code. While there is value in aligning qualifications to occupations, it is not a one-to-

one relationship and should therefore be given a fair amount of latitude.
(Department of Higher Education and Training, 2017, p. 21)

In contrast, the QCTO's QDF manual focuses on the use of the OFO descriptors and occupational tasks for the development of the occupational profile. Once this is in place, it is the occupational profile that is used for curriculum development. The occupational tasks were used to guide the development of the curriculum framework of the occupational qualification and provide a foundation on which to build the curriculum framework. In one curriculum development process, tasks were used to identify skills and knowledge that needed to be included. The use of the OFO did, however, depend on how closely the QDF and CEP considered the link between the occupation and curriculum needed for the qualification to be.

Overview of the use of the OFO for QCTO qualification development

The appeal of using the Organising Framework of Occupations (OFO) in occupational qualification development stems from perceptions that graduates failed to meet to employer expectations of workplace readiness (Participant F, personal communication, November 9, 2018; Participant V, personal communication, January 21, 2019). Policymakers believed that the lack of employer attendance meant a continuation of the old process of developing qualifications where training providers would determine what was in a qualification motivated by what training providers could offer at the time (Participant M, personal communication, December 11, 2018). In line with the lack of employer attendance, to some policymakers, the appeal of using the OFO in the occupational qualification and curriculum framework development was supported policymakers' belief that the "voice of the employers was strongest" in the OFO (Participant M, personal communication, December 11, 2018). By using the OFO, it seemed that the occupational qualification would meet the labour market demands of employers.

An additional appeal of using the Organising Framework of Occupations (OFO) for policymakers was that it provided a "minimum set of descriptors of tasks" that a graduate was required to perform in order to work in an occupation (Participant V, personal communication, November 9, 2018). The respondent acknowledged that "the Organising Framework of Occupations set up these basic skills that are required", while another respondent further explained that the OFO contained the "the minimum set of tasks which would provide comfort to the employer" that graduates from colleges and universities can perform specific tasks in the workplace. One of the issues having a minimum set of tasks as requirements within a qualification seemed to address was that previous qualifications were viewed as too "academically focused"(Participant V, personal communication, January 21, 2019). By using a minimum set of tasks, the qualifications could avoid being too theoretical and be positioned as applicable to the workplace (Participant V, personal communication, January 21, 2019). For policymakers, the use of the OFO would reposition qualifications to train to groups of tasks under occupation rather than what they viewed as training to an isolated task performance through unit standards (Participant F, personal communication, November 9, 2018). For policymakers, the use of the OFO seemed to set a minimum group of broad work tasks practised in an occupation that qualification and curriculum could be developed to address within a learning programme.

The QCTO documentation from the QDF's manual on the use of the OFO seems to be slightly different from the DHET OFO guidelines of 2017. The DHET OFO guidelines envisaged the use of the OFO occupational definitions for the creation of the new QCTO occupational qualifications, in particular for the development of the curriculum based on the OFO occupational descriptors and tasks. QCTO documentation reveals three ways in which the OFO would be used. Firstly, the OFO code is stated in the application for the development of occupational qualification (Quality Council for Trades and Occupations & GIZ on behalf of the German Government, 2013). Secondly, the occupational qualification is assigned to an OFO code before the development of the occupational qualification and curriculum framework (Quality Council for Trades and Occupations, 2014). Thirdly, the manual suggests that the facilitator for the occupational qualification and curriculum workshops use the OFO definition to confirm that all aspects of the occupational profile are covered (Quality

Council for Trades and Occupations, 2014). The QCTO's use of the OFO in occupational qualifications seems to be less extensive than the DHET's OFO guidelines outline.
The QCTO also seems to have moved further away from the use of the OFO in 2020. The National Qualification Act: Revised Occupational Sub-Framework only mentions the OFO under examples of Occupational Qualification Descriptors and Qualification Types:

> Occupational title or specialisation title as per the OFO document which is used as a guiding document. Example: General Occupational Certificate: Footwear Hand Lacer and Hand Inter -lacer, NQF Level 1 (National Qualifications Act: Revised Occupational Qualifications Sub-Framework, 2020, p. 29)

The use of the OFO occurs in two ways. Firstly, the OFO code is a requirement in the application process for the development of occupational qualification to validate the existence of the occupation in the South African labour market and reduce the number of similar qualifications in existence. Secondly, the OFO is at times used as a reference for the main tasks of the occupational profile which forms the basis for the curriculum framework. The limited use of the OFO in the development of occupational qualifications within the process stands in stark contrast with the high expectations of the OFO as a common language between educators and employers found in the OFO guidelines 2017 and interviews with policymakers. It seems that the main problem is that it is difficult to connect an occupational qualification to an occupation on the OFO.
One report suggests that the process of assigning codes to qualifications has not been straightforward. The Local Government Seta acknowledges in its guide to OFO coding for workplaces that there is not necessarily a direct link between occupation and qualification (Enterprises University of Pretoria (Pty) Ltd, 2018). It highlights that the OFO is defined by what employees do in various sectors or industries rather than their qualification (Enterprises University of Pretoria (Pty) Ltd, 2018). A senior official at DHET working with the OFO expressed a similar problem to this report and suggested that the lack of OFO use in the occupational qualification may most likely result from the OFO occupational definitions by employers which represent jobs in the workplace rather than occupations. Here the observations by the report and the respondent reflect that SETAs struggle to apply the envisioned link between the OFO occupational definitions and qualification by policymakers SETAs.
The previous paragraph suggests that the challenges with using the OFO in occupational qualifications may relate to how employers define occupations. Two of the policymakers interviewed discussed in detail how, when employers are pressed to discuss an occupation, they will revert to what they know about jobs. One respondent, when talking about why the OFO does not connect well to education, said that when engaging with employers: "…they start going into the granular detail of what is happening in a job …". The respondent went into detail about how employers want an individual who can perform jobs immediately and were mostly communicating short term skills demand which makes the focus of the OFO challenging to translate into qualifications that have a longer-term view of training for the workplace. They noted that:

> *The world of work wants you to deal with this specialisation, the detail- because they are saying we don't want somebody with a whole qualification we just want someone who is going to go into training - get a quick top-up or learn to be ready to come into the workplace so when they come in we don't have to teach them how to switch on a computer or switch on the lights -They are all ready for that. So, there is this balanced view about what employers want right now to what we perceive in the education system as more longer-term skills that someone will have to go through some top-up. Hence, finding that balance between these two different parties is not, its results in the discussion of what task. What task has changed then we can see whether it is covered in general or whether it is dealing with a specialisation.*
> (Participant M, personal communication, December 11, 2018)

This highlights the limitations in the actual use of OFO in occupational qualification development due to how occupations are defined in the OFO, which is not easily translated into occupational

qualifications and their associated curriculum frameworks.

Case studies on the Process of Qualification Development

Banking SETA (BankSETA)

Respondents interviewed were involved in the development of an anti-money laundering qualification. Three respondents came from companies in the banking sector and were HR managers and/or skills development facilitators who were involved in the community of experts and practitioners (CEP). The fourth respondent is a Qualification Development Facilitator (QDF).

Registering new OFO codes

The banking sector is experiencing change as new jobs and careers emerge. This requires new OFO codes to accommodate them. Anti-money laundering required the development of a new qualification, but this had to be preceded by the creation of a new OFO code which took approximately 6 months as it had to be submitted to the DHET's OFO code committee for approval. A respondent involved in the CEP as an employer representative raised the impact of the OFO code registration process in terms of delaying the development of occupational qualifications, particularly as the QCTO application requires the OFO code in order to start the qualification development process.

> *And the thing is, is that the QCTO application will say to you, you cannot start an occupational qualification without an OFO code. And it make sense what they say because if we think that the OFO code is a systematic system authentication of occupations and you want to not design something that is an occupational qualification that is, but what should be in place should be a parallel process that you can access DHET, sort out, submit the application for the development of the qualification, and then get your approval from the QCTO. But it tends to be ad hoc processes, and it is not as streamlined, it is not like I can have a meeting with somebody from the QCTO to say, this is the application I want to do. We need this particular OFO code, tell me what I will do. And I will do it. And that was very frustrating I must say.*
>
> (Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

Role of the OFO

Two respondents also made the point that the OFO code is the starting point for qualification development. The linking of a qualification to an OFO code relates to what one respondent identifies as the intention behind using the OFO, which was "to reduce the proliferation of occupations" as well as stating that "one of the reasons for using a standardised naming system was that you then don't get multiple qualifications for the same kind of thing in a slightly different context" (Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020). This point was repeated by another respondent who indicated that the role of the OFO should be to create a coherent system and streamline qualifications.
When asked about the further role of the OFO in the qualification development process, particularly in terms of its use in clustering qualifications, both employer based respondents indicated that the major groups and sub-major groups were only used for background and for reference in the initial discussions in the CEP. The OFO was used to guide decisions regarding qualification levels and what qualifications were needed, in conjunction with the subject matter expertise of the CEP.

Occupational profile development

As per figure 6, once the application to develop the qualification has been approved by the QCTO, the next step is to develop the occupational profile, followed by the curriculum. A member of the CEP explained that "before you start with the qualification, you develop the occupational profile and that occupational profile must map to what people are doing at the moment". The development process began by looking at the OFO code and descriptor, before moving down to occupational task level to draw out the tasks required for the occupation. Another CEP member described the process

of developing the occupational profile:

> *So, our first start is at the occupation level in order to identify which OFO code we will be looking at, but also to verify if we are am headed in the right direction, then go down to task level to make sure it is as close as possible to the occupational qualification that we want to develop*
>
> (Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

The QDF for the qualification, explained the role of the occupational tasks as

> *… a guideline, because once again, as I said, that it will, it will give you an occupational tasks will give you a this is the kind of work we do. So, my specific task might not be there. But it is the kind of work when I do, you know, it gives you that indication of it. So, in developing occupational qualification, it's nice to go back to that and to say, this is the kind of work now which specific tasks do we do in our specific occupation job that we're developing your occupation that we're developing? Yeah. So, it is a guideline. And it is it is a check, it is a check back to say, you know, are we are we missing something? Or what about this, that is how you use occupational tasks in developing the, the curriculum. So, it is it because the occupational tasks, there is a summary of the kind of work that people will do within that occupation. It will not look at the specifics and specifics will come out later. But it is a guideline, it gives you guidance, and it helps you to double check to see haven't I missed anything?*
> (Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

Although the occupational tasks are used in the process, one respondent stated that one of the challenges they found in using the OFO is that the descriptors and occupational tasks are only found at unit group level and not at occupation level which means that

> *one has to search through the occupational tasks at unit group level and identify those tasks which relate to the particular occupation that you dealing with and a lot of people didn't understand that. So that was also one of the points where things went wrong.*
>
> (Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

> *A further challenge identified was that if there was a need to deviate from the occupational tasks some people became very rigid, when I say some people, some QCTO people became very rigid and said you had to have occupational tasks in the qualification, otherwise there was no coherence or whatever phrase they used at the time.*
> (Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

Curriculum development

The occupational tasks were used to guide the development of the curriculum framework of the occupational qualification and "the tasks provide a foundation or a framework for people to start working on the actual qualification". The usefulness of the identified occupational tasks is further elaborated by a member of the CEP who states that

> *the tasks help us to identify the skills and knowledge that we need to include as part of the curriculum. So, when you break it out to task level, we identify the knowledge pieces that need to go in there and the skills that need to be built. So that is the way you look at tasks in the OFO codes and development of the curriculum.*

(Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

The QDF referred to how they made use of occupational tasks as a reference point or "key unit of analysis" in determining what needed to be included in the modules of the curriculum. One of the challenges that they identified was that use of the occupational task in the curriculum development process was not always understood and that, particularly for the knowledge modules, those who developed the modules "go straight back to text books or indexes of textbooks and they just copy that into the curriculum".

Conclusion

Within the BankSETA context, it is apparent that that the OFO and the occupational tasks contained therein were used for qualification development. However, this was not without challenges during the process as a result. There were also some differing opinions between respondents on the role of the OFO in the qualification development process, with some seeing it as only useful for occupational classifications and others suggesting the need for an alternative system. Its role in qualification development was suggested to be more related to avoiding duplication of qualifications and as a tool for linking occupations to qualifications.

Public Service SETA (PSETA)

Respondents interviewed were involved in the development of a general manager public service qualification. One respondent is a Qualification Development Facilitator (QDF), and another was a member of the CEP. The third respondent is a QCTO specialist.

Qualification context and the OFO code

The general manager public service qualification was developed for use across a range of middle manager occupations in the public service. The QCTO specialist explained that

We were developing a qualification across all of these occupations. We had to develop a qualification that will satisfy anybody who gets appointed in any of these positions in the red squares. That was what the qualification was meant to achieve.

(Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

The QDF elaborated further that "the whole idea for this qualification to develop something that would help all managers to understand what the broader department of the public service is all about and becoming a general manager in it". This, however, provided a challenge when using the OFO as

it's very difficult to classify as an occupation rather an appointment and that's the difficulty you have the higher up in the OFO you go the higher level of employment taking place. That made it very difficult because you have these general managers which is the wrong term in the OFO. It is a big problem in the OFO when it comes to that. That's still got to be rectified but anyhow, so being a general manager is just an appointment because you have a manager for IT…, you have a manager for finance, you have a manager for personnel, you have a manager for … and you have for the operational stuff, you have several managers in some departments and in smaller departments you have less. So you have very specialised managers but they are all general managers… So that's not actually an occupation it's just a title if I could call it that and that makes it difficult when you work with the OFO to make sure that you not dealing with that but you do have it.

While the CEP member, reflecting on the process, stated that

I think the first point of it coming into the discussion was in terms of the code. What the codes were, what the sub codes were, what the major groups were and so on. It wasn't used, I don't think to give us an in-depth outline of what the deliverables or what the job description were, to use a better term

(Transcripts of Interviews as Part of a Larger Project on the Organising Framework of

Occupations, November 2020)

The OFO code and corresponding occupation used for the qualification did not meet the requirements of the sector in terms of what they needed in the qualification and was too broad but, as the QDF commented "there was no other space in the OFO to develop a qualification for the middle managers". They also indicated that only part of the occupation descriptor was used in the development process as not everything aligned with the specific needs of their context.

Development process

In line with the QCTO guidelines, the qualification development process began with the development of the occupational profile. As per the QDF, this required obtaining 'buy in' from all those involved in the development of the qualification. The profile was developed using the OFO code and then by referring to the occupation descriptor. The QDF describes the process followed:

> *the first thing I then did was to have a look, okay what is the code and what's the occupation and what do they say the occupation does? Now you have to go back because in an occupation itself it just gives a descriptor of what's being done in that occupation, very very brief. So what you then do is you then go back to the unit group under which that occupation is reflected and see what sort of tasks are that's being dealt with by these people. It was very clear to me that there was a disjunction with this qualification and especially because there was a previous arrangement to have a qualification developed.*
>
> (Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

Although the process made use of the OFO's occupational descriptor and tasks, due to the scope of the qualification it was necessary to consider a wider range of occupational tasks. The QCTO specialist explained that they started by identifying

> *…the sort of broad task being carried out in a department. … So can you see we need to know one another's business very well and I've got to apply some of it. So those became our tasks that we had. Now that you could not find in the unit group… so very specific but that's what we said, let us give them a broad base of an understanding of SCM, finance, their own operational work, how to run their operational office, HR, we all running staff, have to manage staff in our section. … We made those our broad tasks that we had to work with and if you go to the unit group you'll find that in the unit group, it does give an indication of those. You could find it in the unit group but not as specific as we eventually made it when we developed the profile*
>
> (Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

It was necessary for them to move beyond just the specific occupation linked to the OFO code but to also consider the tasks at unit group level as well as draw on tasks from a higher occupational level and other similar occupations. These were then adapted to what was required for the particular occupational profile.

The occupational tasks from the OFO were, however, not sufficient for their needs and they also drew on other frameworks in use in the sector, such as the DPSA competency framework. These were used in the curriculum development process as well. The QCTO specialist explained that

> *…we used we use the tasks, but also we had to add more tasks as well, from what is happening within the sector, because the sector also explained to us that there is more that is happening that is not on the OFO code, you know, so for the qualification to be more relevant, and more current. And talking to what is happening, we had to add more things to it to the towards the curriculum. And we were using their frameworks in for competency their competency frameworks within DPSA, on what a manager has to be, what their responsibilities, the strategic planning, who, you know, all those type of things, because it had it had, when we designed the curriculum, we were looking at it in a sense that we want to develop a manager who's able, like some sort of like a middle or junior manager, that's able to manage resources, human resources, and financial resources, as well as, um, supply*

chain resource supply chain processes. And you may find that in the tasks that's not there, but we need in the public service sector, we need a manager that is able to understand all those processes, okay, you know, to be able to be to run with their units. And she also like even things like the strategic plan. You know, developing performance agreements, those things, those nitty gritty things are not in the tasks. So we had to borrow some of what the competency framework of the sector is saying this is what the manager needs to know in this so we borrowed some of those things, and we added them into the curriculum.
(Transcripts of Interviews as Part of a Larger Project on the Organising Framework of Occupations, November 2020)

The CEP member referred to the need to ensure that the qualification covered all elements, including sufficient practical application of the knowledge and workplace experience. As the quote above suggests, it was necessary to use the other frameworks to ensure that this was achieved.

Conclusion

It is evident that the qualification development process made use of the OFO extensively, although it was highlighted that the OFO code and corresponding occupation linked to the qualification had limitations. This meant that they had adapt the occupation descriptor to their requirements, as well as consider a wider range of occupational tasks beyond just the occupation and unit group. It was also necessary to draw on other sources of occupational information to inform the development of the occupational profile and the curriculum framework.

Summary of Findings

According to the OFO guidelines, it should be used extensively in the development of occupational qualifications. Occupational descriptors and tasks, drawn from the OFO, should be used for the development of an occupational profile. The occupational profile should then be used for the development of the curriculum framework. However, the QCTO's use of the OFO in occupational qualifications seems to be less extensive than the DHET's OFO guidelines outline.

There were several challenges related to using the OFO that were identified by interviewees. The first was that the OFO was outdated and did not reflect new occupations arising from the changing workplace. This was evident in the BankSETA case as the anti-money laundering qualification development process was delayed by the need to apply for a new OFO code for the occupation. However, the concern was also raised by one of the QDFs that too many new occupations are being introduced under unit group 9 in order to develop qualifications. The result of this is multiple, potentially very similar, occupations registered on the OFO with corresponding similar qualifications. This relates back to the Bauer et al. report from 2015 who recommended that

The qualification system should deliver a manageable number of occupational qualifications and avoid the proliferation of qualifications where there are multiple points of overlap across qualifications. This requires that occupational qualifications are developed on the basis of occupational clusters or families within one process, rather than having a discreet process for each and every single qualification.

(Bauer et al., 2015)

Secondly, occupations on the OFO were not always fit for purpose and there was not always a direct link between occupation and qualification. The occupation was either too broad or did not accurately reflect what was happening in the workplace. This is most evident in the PSETA case study. It was noted, however, that the latter may also be related to how employers define occupations. If employers define occupations based on the tasks in a particular job role or title, they would not see the link between the occupation and the qualification they think is required. The resulting occupational profile and qualification may also not accurately reflect the occupation of the OFO it is linked to.

The data from the workshop observations and interviews shows that, even though the OFO occupational descriptors and tasks are referenced, more emphasis is placed on the CEP subject

matter experts' knowledge and understanding of the occupation. Other sources of occupational information, such as O*NET and competency frameworks are also used in the development of qualifications, particularly for the occupational profile and curriculum framework.
The role of the OFO in the qualification development process differed based on the context. It was used to assist in identifying the occupational tasks for the occupational profile and was also used to guide the development of the curriculum framework. Although it was used, as detailed in the case studies, the process was not straightforward and occupational tasks needed to be adapted and new tasks included in the occupational profile based on the context's requirements and the guidance of the subject matter experts who formed part of the CEP. The final qualification therefore does not always directly correspond to the original occupation specified by the OFO code. It does appear that the most accurate description of the OFO's use is that of a "starting point" for the qualification development process that was then used to build on. These findings indicate that the OFO is used as a legitimising and "light touch" referencing tool within occupational qualification development, as opposed to its proposed use as a common language for different actors to derive requirements for training programmes.

Section 3: Options for Occupational Qualifications Development

Key findings

International Practices

- While the majority of countries demonstrate at least some link between their occupational classification system and occupational qualifications, the occupational classification system is not the only methodology for signalling qualification demand or developing qualifications and curricula.

- An alternative approach used for skills demand planning when not using the occupational classification system relies on an industry-led model where employers and other industry bodies, generally through skills councils or similar fora. The need for qualifications is reported and driven by these fora and they often also have a role in the development of qualifications and curricula.

- In a country with an occupational qualification system driven solely by industry, such as Japan, the resulting system is highly fragmented whereas a country in which the system is driven solely by government, such as Uganda, the system is unresponsive to industry needs. In order for an occupational qualification system to be both standardised and responsive to industry needs, an approach needs both government oversight and industry involvement.

- The use of a system of national occupational standards which underpin occupational qualification development, whether linked to the occupational classification system or not, appears to be the most common approach to occupational qualification development. Whether linked to the classification system or not, there is an organisational structure that the occupational standards are developed according to.

- The use of occupational classification systems for occupational qualification development is not unproblematic and can lead to difficulties in defining occupations, as well occupational standards or qualifications that are task-based and focus too much on specific skills and tasks rather than the holistic occupational context.

Occupational Qualification Development in South Africa

- The envisaged role of the OFO in the occupational qualification development process differed even between the DHET OFO guidelines and the QCTO's espoused qualification development methodology as the QCTO's use of the OFO in occupational qualifications seems to be less extensive than the DHET's OFO guidelines outline. Although it was used in line with the QCTO's process, it was not always possible for this to occur as extensively as the QDF manual directed.

- The delays in registering a new OFO code led to delays in the qualification development process.

- There are concerns regarding the number of new occupations being registered unnecessarily in order for new qualifications to be developed.

- Occupations on the OFO were not always fit for purpose and there was not always a direct link between occupation and qualification. The occupation was either too broad or did not accurately reflect what was happening in the workplace. The latter may also be related to how employers define occupations. If employers define occupations based on the tasks in a

particular job role or title, they would not see the link between the occupation and the qualification they think is required. The resulting occupational profile and qualification may also not accurately reflect the occupation of the OFO it is linked to.

- Even though the OFO occupational descriptors and tasks are referenced, more emphasis is placed on the CEP subject matter experts' knowledge and understanding of the occupation. Other sources of occupational information, such as O*NET and competency frameworks are also used in the development of qualifications, particularly for the occupational profile and curriculum framework.
- The role of the OFO in the qualification development process differed based on the context. It does appear that the most accurate description of the OFO's use is that of a "starting point" for the qualification development process that was then used to build on.
- The OFO is used as a legitimising and "light touch" referencing tool within occupational qualification development, as opposed to its proposed use as a common language for different actors to derive requirements for training programmes.

References

Allais, S., C. Marock, and P. Molebatsi. 2014. The Development of Occupational Standards in English-Speaking Countries.

Allais, S., & Nathan, O. (2014). Skills? What Skills? Jobs? What Jobs? An overview of research into education/labour market relationship. Education, Economy and Society.

Alphonsus, N. S. (2018). Field notes from observation of occupational qualification-national occupational content curriculum [Field note].

Bangladesh Technical Education Board and Sudokkho (2012). Competency Based Training (CBT) Curriculum Framework. [Online]. Available at: http://btebcbt.gov.bd/Utility/list_cbt_curriculum_framework [Accessed 26th September 2020].

Bauer, W., Marock, C., & Durango, L.. (2015). Analysis and Application of the QCTO Model, Recommendations and Vision for Qualification. GFA Consulting Group.

Bossler, M., Gürtzgen, N., Kubis, A. et al. (2020). The IAB Job Vacancy Survey: design and research potential. J Labour Market Res 54, 13. https://doi.org/10.1186/s12651-020-00278-6.

Brockmann, M., Clarke, L., & Winch, C. (2008). Knowledge, skills, competence: European divergences in vocational education and training (VET)—the English, German and Dutch cases. Oxford review of education, 34(5), 547-567.

Clarke, L., & Winch, C. (2006). European skills framework- but what are skills? Anglo- Saxon versus German concepts. Journal of Education and Work, 19(3), 255–269.

Clarke, L., & Winch, C. (2015). Have Anglo-Saxon concepts really influenced the development of European qualifications policy?: Research in Comparative and International Education. https://doi.org/10.1177/1745499915613247

Deissinger, T. (2015). International education policy: Its influence on the conception of VET and the VET system in Germany. Research in Comparative and International Education, 10(4), 607–621. https://doi.org/10.1177/1745499915613248

Department of Higher Education and Training. (2013). Guidelines: Organising Framework for occupations (OFO) 2013. Department of Education.

Department of Higher Education and Training. (2017). OFO_GUIDELINE_2017. Department of Higher Education and Training. https://www.samra.co.za/wp-content/uploads/OFO_GUIDELINE_2017-2.pdf

Dickerson, A., & Wilson, R. (2017). How Should We Consider Future Skills Demand?

Director-General for Policy Planning (Statistical Standards). (n.d.). The History of the Japan Standard Occupational Classification. https://www.soumu.go.jp/english/dgpp_ss/seido/shokgyou/co09-1.htm.

Djumalieva, J., & Sleeman, C. (2018). An Open and Data-driven Taxonomy of Skills Extracted from Online Job Adverts (Economic Statistics Centre of Excellence Discussion Paper 2018-13 I SSN 2515-4664). Economic Statistics Centre of Excellence National Institute of Economic and Social Research.

EfVET – European Forum for technical Vocational Education and Training, USRV – Ufficio Scolastico Regionale per il Veneto, IFOA – Istituto Formazione Operatori Aziendali, & Dr Antonio Mocci – Freelance expert. (2018). Identification of policies to improve usage of EU tools in HVET: ECVET, ECTS and ESCO. SHINE – Share, improve, develop: today's excellence for tomorrow's HVET (Project n°. 2015-1-IT01-KA202-004792). http://www.projectshine.eu/wp-content/uploads/2018/07/O7-Identification-of-policies.pdf

Elias, P. (1997). Occupational Classification(ISCO-88): Concepts, Methods Reliability, Validity and Cross-National Comparability. OECD Publishing.

Enterprises University of Pretoria (Pty) Ltd. (2018). Local Government Organising Framework For Occupations (OFO) Code Handbook Technical Report. Local Government Sectoral Education Training Authority. http://cdn.lgseta.co.za/resources/ofo/Comprehensive%20OFO%20Code%20Report.pdf

ESCO - Occupations—European Commission. (n.d.). Retrieved November 16, 2020, from https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fisco%2FC7411&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/isco/C7411

Federal Ministry of Education and Research. (2020). The DQR. Retrieved from

https://www.dqr.de/content_en/60.php
Fleisher, M. S., & Tsacoumis, S. (2012). . "O*NET® Analyst Occupational Abilities Ratings: Procedures Update." and "O*NET® Analyst Occupational Skills Ratings: Procedures Update."
Friedson, E. (2001). Professionalism The Third Logic. Blackwell Publishers.
Ganzeboom, H. B. G. (2005). On the Cost of Being Crude: A Comparison Of Detailed And Coarse Occupational Coding. In J. H. P. Hoffmeyer-Zlotnik, Methodological Aspects of Cross-National Research: Vol. Special Issue #10. ZUMA-Nachrichten.
Hadkhale, K., Martinsen, J. I., Weiderpass, E., Kjaerheim, K., Sparen, P., Tryggvadottir, L., Lynge, E., & Pukkala, E. (2017). Occupational exposure to solvents and bladder cancer: A population-based case-control study in Nordic countries. International Journal of Cancer, 140, 1736–1746.
Hayashi, E. (2008). Skill Formation in the Japanese Manufacturing Industry: An Empirical Analysis of Diversified Regular Workers. 国際経営論集 [International Management Journal]. No.36. https://kanagawa-u.repo.nii.ac.jp/?action=repository_uri&item_id=1876&file_id=18&file_no=1&nc_session=tvl76k8fk81eeal5gj1f0jftu2 [Accessed 29 December 2020]
Helgøy, I., & Homme, A. (2015). Path-dependent implementation of the European Qualifications framework in education. A comparison of Norway, Germany and England. Journal of comparative policy analysis: research and practice, 17(2), 124-139.
Hernandez, C. (2018). Occupations: Labour Market Classifications, Taxonomies, and Ontologies in the 21st Century.
Hoffmann, E. (1998a). Mapping the world of work: An International Review of the Work with Occupational Classifications and Dictionary. Bureau of Statistics, International Labour Office.
Hoffmann, E. (1998b). Mapping the World of Work: An International Review of the Work with Occupational Classifications and Dictionaries. International Labour Office.
Hoffmann, E. (2004). International Statistical Comparisons Of Occupational and Social Structures: Problems, Possibilities and The Role of ISCO-88. International Labour Office.
Iredale, R. R., Toner, P., Turpin, T., & Fernández-Esquinas, M. (2014). A Report on the APEC Region Labour Market: Evidence of Skills Shortages and General Trends in Employment and the Value of Better Labour Market Information Systems.
International Labour Office. (2007). Updating the International Standard Classification of Occupations (ISCO) Draft ISCO-08 Group Definitions: Occupations in Electrical. Department of Statistics. https://www.ilo.org/public/english/bureau/stat/isco/docs/d4b.pdf
International Labour Organisation (2010). Qualifications Frameworks: Implementation and Impact. Pdf. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/genericdocument/wcms_126590.pdf [Accessed 10th October 2020].
International Labour Office, & International Labour Organization. (2012). International Standard Classification of Occupations: ISCO-08. International Labour Office. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf
Ito, T. (2012). Japan's Public Youth Training Programs, Enterprise-sponsored Training and the Society of Control. In M. Pilz (Ed.), The Future of Vocational Education and Training in a Changing World (pp. 113–126). VS Verlag für Sozialwissenschaften. https://doi.org/10.1007/978-3-531-18757-0_8
JAVADA. (n.d.). Japan Vocational Ability Development Association - English Page. Retrieved December 15, 2020, from https://www.javada.or.jp/english/index.html
Katz, M. B. (1972). Occupational Classification in History. The Journal of Interdisciplinary History, 3(1), 63–88.
Korea Research Institute for Vocational Education and Training (KRIVET). (2018). TVET country profile; Republic of Korea. Pdf. Available at: https://unevoc.unesco.org/wtdb/worldtvetdatabase_kor_en.pdf [Accessed 07 November 2020].
Korea Research Institute for Vocational Education and Training (KRIVET). (2001). Qualification System in Korea.

http://www.eksp.kr/common/donwload.jsp?fidval=2%2Fxz4pF8toJZOOBXS2vNvw%3D%3D [Accessed 28 December 2020].
Lee, J. Y. (2016). Vocational Education and Training in Korea: Achieving the Enhancement of National Competitiveness. PDF). KRIVET.
Lehohla, P. (2012). South African Standard Classification of Occupations (SASCO) 2012. Statistics South Africa. http://www.statssa.gov.za/classifications/codelists/SASCO_2012.pdf
Lester, S., & Religa, J. (2017). "Competence" and occupational standards: observations from six European countries. Education+ Training.
Liang, X. A. (2016). National Qualification Framework and Competency Standards Skills Promotion and Job Creation in East Asia and Pacific. World Bank.
Local Government Sector Education and Training Authority. (n.d.). Curriculum Document: Occupational Certificate: Qualification: Electrician. Retrieved September 26, 2019, from http://www.qcto.org.za/index.php/electrician.html
Mannetje, A., & Kromhout, H. (2003). The use of occupation and industry classifications in general population studies. The International Journal of Epidemiology, 32(3), 419–428.
Masayuki, M. (2017). Occupational Licenses and Labor Market Outcomes. 24. https://www.rieti.go.jp/jp/publications/dp/17e078.pdf
Minister of Education and Minister of Labour. (2007). Enhancing the efficacy and efficiency of the National Qualifications Framework. Pretoria: Department of Education and Department of Labour. https://www.saqa.org.za/docs/pol/2007/polstatement.pdf
Misko, J. (2015). Developing, Approving and Maintaining Qualifications: Selected International Approaches. Research Report. National Centre for Vocational Education Research Ltd. PO Box 8288, Stational Arcade, Adelaide, SA 5000, Australia.
Ministry of Labour and Employment (2017). MOEL fully revises Korean Employment Classification of Occupations to meet future labor demand. (Online). Available at: http://www.moel.go.kr/english/mobile/view.jsp?idx=1479 [Accessed 06 November 2020].
Morikawa, M. (2018). Occupational licenses and labor market outcomes in Japan. The World Economy, 12. https://doi.org/10.1016/j.japwor.2018.07.002.
National Centre on Education and the Economy. (n.d.). South Korea: Career and Technical Education. (Online). Available at: https://ncee.org/what-we-do/center-on-international-education-benchmarking/top-performing-countries/south-korea-overview/south-korea-school-to-work-transition/ [Accessed 3rd November 2020].
National Crosswalk Service Center. (2007). O* NET Occupations Reference Guide. National Crosswalk Service Center. http://www.workforceinfodb.org/ftp/download/onet12/ONET12UserGuide.pdf
National Qualifications Act: Revised occupational qualifications sub-framework, 239 43062 34 (2020).
National Qualifications Act, 2008 (ACT NO 67 OF 2008): Occupational Qualifications Sub-Framework [OQSF] Policy, Notice 597 OF 2014, 37879 (2014). http://www.fpmseta.org.za/downloads/QCTO_OQSF_Policy_Version_25_02_2013.pdf
Office for National Statistics. (2020). SOC 2020 Volume 1: structure and descriptions of unit groups. https://www.ons.gov.uk/methodology/classificationsandstandards/standardoccupationalclassificationsoc/soc2020/soc2020volume1structureanddescriptionsofunitgroups
O*Net Academy. (2016, November 2). What is O* NET? O*Net Academy. http://www.onetacademy.org/view/What_is_ONET/info
Ospino Hernandez, C. G. (2018). Occupations: Labor Market Classifications, Taxonomies, and Ontologies in the 21st Century | Publications. Inter-American Development Bank. https://publications.iadb.org/publications/english/document/Occupations_Labor_Market_Classifications_Taxonomies_and_Ontologies_in_the_21st_Century_en_en.pdf
Participant F. (2018, November 9). Policymaker [Personal communication].
Participant M. (2018, December 11). Policymaker [Personal communication].
Participant V. (2019, January 21). Policymaker [Personal communication].

Paulus, W. & Matthes, B. (2014). The German classification of occupations 2010 : structure, coding and conversion table. FDZ Methodenreport 201308_en, Institut für Arbeitsmarkt- und Berufsforschung (IAB), Nürnberg [Institute for Employment Research, Nuremberg, Germany].
Quality Council for Trades and Occupations. (2014). OCCUPATIONAL QUALIFICATIONS DEVELOPMENT FACILITATOR MANUAL. Quality Council for Trades and Occupations. https://www.fpmseta.org.za/downloads/QDF_Manual.pdf
Quality Council for Trades and Occupations, & GIZ on behalf of the German Government. (2013). DQP AND POTENTIAL DQP PROCESS MANUAL AUGUST 2013. Quality Council for Trades and Occupations. http://www.qcto.org.za/images/procedures/dqp_guide_-_dqp_and_potential_dqp_process_manual.pdf
Reddy, V., Wildschut, A., Luescher, T. M., Petersen, I., Rust, J., & Kalina, M. (2017). Skills Development Legislation as a Lever of Change to Reduce Poverty, Inequality and Unemployment. Human Sciences Research Council.
Seung Il Na. (2012). Trends and Challenges of Vocational Education and Training in Korea. in Pilz, M. (ed.), The Future of Vocational Education and Training in a Changing World. Weisbaden, VS Verlag für Sozialwissenschaften/Springer Fachmedien.
Schierholz, M. (2014). Automatic Survey Coding for Occupations. FDZ Methodenreport.
Standard Occupational Classification (SOC) System. (n.d.). Retrieved 6 November 2020, from https://www.bls.gov/soc/home.htm
Standing, G. (2009). Work after Globalization Building Occupational Citizenship. Edward Elgar.
Statistics Korea. (n.d.). Guide Program. Retrieved 26 July 2020, from http://kssc.kostat.go.kr/ksscNew_web/ekssc/common/selectIntroduce.do?part=2&top_menu=101&bbsId=isco_s&categoryNameCode=030&categoryMenu=001#
Streeck, W. (2012). Skills and Politics: General and Specific. In The Political Economy of Collective Skill Formation. Oxford University Press.
Taşli, V. (2018). National skill systems: A comparative analysis of vocational education and training in Germany, Japan, and Turkey. OPUS Uluslararası Toplum Araştırmaları Dergisi, 9(16), 1660-1698.
Technical and Vocational and Education Training (TVET) reform project in Bangladesh (TVETR). (2015). National Skills Development System in Bangladesh. International Labour Organisation.
The Japan Institute of Labour. (2003). Research on a New Occupational Information Network Designed to Place the right person in the right job- Survey on the needs of corporations and individuals; on the systems used in other countries; and on developing a Japanese-style system (Research Report No. 151). The Japan Institute of Labour.
Tippins, N. T., & Hilton, M. L. (2010). A Database for a Changing Economy: Review of the Occupational Information Network (O* NET). The National Academies Press.
Transcripts of interviews as part of a larger project on the Organising Framework of Occupations (T. Tshabalala & K. Mlauzi, Interviewers). (2020, November). [Personal communication].
UNESCO Institute for Lifelong Learning (UIL) (Germany). (2013). Uganda. [Pdf]. Available at: http://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/Uganda.pdf [Accessed 24th October 2020].

UNESCO (2012). Bangladesh. Available at: https://uil.unesco.org/fileadmin/keydocuments/LifelongLearning/en/UIL_Global_Inventory_of_NQFs_Bangladesh.pdf [Accessed 25th September 2020].

U.S. Bureau of Labor Statistics. (2017). 2018 Standard Occupational Classification User Guide.
Vrang, M. le, Papantoniou, A., Pauwels, E., Fannes, P., Vandensteen, D., & Smedt, J. D. (2014). ESCO: Boosting Job Matching in Europe with Semantic Interoperability. Computer, 47(10), 57–64. https://doi.org/10.1109/MC.2014.283
Weigel, T., M. Mulder & K. Collins (2007). The concept of competence in the development of vocational education and training in selected EU member states. Journal of Vocational Education and

Training, 59, 1,51-64.
Winch, C. (2011). Skill- a concept manufactured in England. In M. Brockmann, L. Clarke, & C. Winch (Eds.), Knowledge, skills and competence in the European Labour market What's in a vocational qualification (pp. 85–101). Routledge.
Züll, C. (2016). The Coding of Occupations. GESIS Survey Guidelines. Mannheim, Germany: GESIS – Leibniz Institute for the Social Sciences.

Annexure A

Table 1: Australia, Bangladesh, Botswana, Germany, Hong Kong Special Administrative Region (HKSAR), and India

	Australia	Bangladesh	Botswana	Germany	Hong Kong Special Administrative Region (HKSAR)	India
Occupational Classification System						
Name	Australia New Zealand Standard Classification of Occupations (ANZSCO)	Bangladesh Standard Classification of Occupations (BSCO)	Botswana Standard Classification of Occupations 2008 (BOSCO-2008)	Classifications of Occupations 2010 (KldB-2010)	International Standard Classification of Occupations 2008 (ISCO-08)	National Classification of Occupations (NCO-2015)
Stated Purpose	Labour market intelligence - comparability of data between Australia and New Zealand	Labour market intelligence - classifying and aggregating occupational information and identifying priority occupations.	There is no clear purpose indicated but it appears to have been designed as purely statistical and for international comparability.	Labour market intelligence utilised for a wide range of purposes.	National labour market intelligence tool.	The NCO-2015 functions as a repository for labour market intelligence including maintaining of standards in occupations, international comparability, and statistics.
Enacted Purpose	Labour market intelligence	It is used for occupational classification during the Labour Force Surveys but also informed the development of the National Training and Vocational Qualifications Framework (NTVQF).	It does not appear to be widely used as there is also another tool (the Labour Market Observatory) which was intended to play a critical role in monitoring changes in labour market trends and to produce information of occupations in demand.	The Federal Employment Agency uses the Dokumentations-kennziffer (DKZ), derived from the KldB-2010, for job placements. However, it is only a considered a supplementary tool.	Labour market intelligence	Labour market intelligence
International basis	None indicated	Based on the International Standard Classifications of Occupations (ISCO)	Based on the International Standard Classifications of Occupations (ISCO-08)	Not directly linked to ISCO-08 although provision is made	HKSAR has adopted the ISCO-08 without any modification for its own context.	Based on the International Standard Classifications of Occupations (ISCO-

	Australia	Bangladesh	Botswana	Germany	Hong Kong Special Administrative Region (HKSAR)	India
				for comparative analysis.		08).
Identification of priority occupations	The Australian Government Department of Education, Skills and Employment consults with Industry Skills Councils to develop occupational qualifications, which are then recorded on the AQF. The Australian Bureau of Statistics uses the information from the qualifications listed on the AQF to update the ANZSCO occupation classifications.	The BSCO is used to categorise priority occupations. Priority occupations are identified by the Industry Skills Councils (ISCs) and are reflected in each specific ISC's report for their sector.	Priority occupations are identified in line with the priorities outlined in the Botswana Government's VISION 2036, National Development Plan (NDP-11) and long term strategies of different economic sectors. The Human Resources Development Council (HRDC) publishes the top occupations in high demand, together with a sectoral breakdown on the criteria for prioritisation. The Labour Market Observatory (LMO) was intended to produce information on priority occupations, based on changing labour market trends. It was not clear, however, if this was actually happening.	The term 'priority occupations' does not appear to be used. Despite this it seems that they are identified through a negotiated and continuous process with all social partners. The Institute for Employment Research (IAB) conducts a yearly Job Vacancy Survey which provides information to the Federal Employment Agency on all vacant positions and this gives an indication of demand for occupations.	The ISCO-08 is not used to identify priority qualifications. It appears that the Industry Training Advisory Committees (ITACs) or Cross-Industry Training Advisory Committees (CITACs) may be involved in the identification of priority occupations through their engagement with the development of Specification of Competency Standards (SCS) for their sectors.	The NOC-2015 is not used for identification of priority occupations. The Ministry of Labour and Employment, through the National Skills Development Corporation (NSDC), works with industry, represented by the Sector Skills Councils (SSCs), to determine skills gaps and shortages in each sector.
Occupational Qualifications						
Qualification framework	Australian Qualifications	National Training and Vocational	National Credit and Qualifications	Deutsche Qualifikationsrah	Hong Kong Qualifications	National Skills Qualification

	Australia	Bangladesh	Botswana	Germany	Hong Kong Special Administrative Region (HKSAR)	India
	Framework (AQF)	Qualifications Framework (NTVQF)	Framework (NCQF) Botswana National Vocational Qualifications Framework (BNVQF)	men für lebenslanges Lernen (DQR) (however not regulatory - see note below)	Framework (HKQF)	Framework (NSQF) National Vocational Education Qualification Framework (NVEQF)
If not, how are occupational qualifications managed?	N/A	N/A	N/A	Although the DQR is in place, vocational education and training in Germany is still based on the dual system. There are clearly defined training standards and training qualifications are recognised throughout the country. The DQR is used for transparency and orientation in the VET system but is not regulatory.	N/A	N/A
Relationship						
Is there a relationship between the occupational classification system and occupational qualifications?	No	Yes	No	No	No	Limited - the NOC-2015 is linked to the NVEQF through the National Occupational Standards developed for every occupation classified, and which form the basis of occupational qualifications.

	Australia	Bangladesh	Botswana	Germany	Hong Kong Special Administrative Region (HKSAR)	India
If not, what are they using?	Developing bodies, such as Industry Skills Councils, develop training packages which are then used to develop accredited courses. Accredited courses are, however, required to provide the ANZSCO occupational reference on the application form.	N/A	The BNVQF allowed industry and training providers to collaborate in the development of qualifications. Priority occupations are drawn from industry and government strategies and policies.	Regional Standards are issued by the various chambers according to the requests of the regional labour market. The various chambers' tripartite training committees are responsible for making decisions on these. Employers and trade unions are seen as the main stakeholders of the dual system and are the drivers of the National Occupational Standards (NOS). The Federal Government is unlikely to proceed with an NOS without agreement from the social partners. NOS are developed and issued by a combination of the Federal	Industry Training Advisory Committees (ITACs) or Cross-Industry Training Advisory Committees (CITACs) are established by industries with the assistance of the Education Bureau and serve to identify skills gaps as well as develop occupational qualifications.	The Sector Skills Councils (SSCs) work in partnership with the National Skills Development Corporation (NSDC) to identify skills gaps and develop occupational qualifications.

	Australia	Bangladesh	Botswana	Germany	Hong Kong Special Administrative Region (HKSAR)	India
				Government (represented by the Ministry of Education and Science), Social Partners, and the Federal Institute for Vocational Training (BIBB).		
Information flow	Bottom up - ANZSCO is updated to report on developments in the AQF	Top down - the BSCO informed the development of the NTVQF to match the BSCO and respond to occupational and industrial skills needs.	The BOSCO-2008 occupation codes are used to indicate occupations that are considered in demand. However, there is no further indication of information flow between the BOSCO and the BNVQF.	Information on occupations is implemented from the bottom up as employers and trade unions feed information to their associations on a federal level.	The HKQF and ISCO-08 exists independently. The HKQF is more dominant in the HKSAR education and labour markets. Due to the lack of Context specific modifications of ISCO-08 for the HKSAR context, it is not possible for the HKQF to even influence the occupations classified by the ISCO-08.	National Occupational Standards developed by the Sector Skills Councils are mapped on all occupations classified by the NOC-2015. The NOC is updated to report developments in the NVEQF in a bottom-up approach.
How does signalling take place?	ANZSCO does not signal demand. Demand is based on industry requirements.	The BSCO signals demand for occupational qualifications by categorising priority occupations. The ISCs identify the priority sectors and occupations and produce reports indicating these skills shortages. They then work with the	Signalling is done by the HRDC as they are responsible for publishing the document with the criteria for prioritising occupations, as well as the list of top occupations in demand. The LMO was meant to be a tool that was continually updated with the	Signalling occurs at industry level through the involvement of state, employer, and labour representatives in an ongoing process of determining which occupations are in demand.	ISCO-08 is not used to signal demand. The Industry Training Advisory Committees (ITACs) or Cross-Industry Training Advisory Committees (CITACs) signal demand. They identify the skills gaps in their sectors, using sector or industry surveys, and develop	There is no indication of the NCO-2015 being used for skills planning or determining skills in demand. Signalling is done by the Sector Skills Councils who develop a sectoral framework for each sector, which is used to conduct skills audits and signal demand for new occupational

	Australia	Bangladesh	Botswana	Germany	Hong Kong Special Administrative Region (HKSAR)	India
		Bangladesh Technical Education Board (BTEB) to develop the standard competencies (skills, sets of knowledge, and attitudes) required to perform tasks in identified occupations.	changing labour market trends in order to provide the latest information on priority occupations but not all occupations are currently listed on the website and it is not clear whether it is actually being used as intended.	Occupations in demand can differ between regional labour markets as there are still distinct differences between the regions.	qualifications accordingly.	qualifications.
Curriculum design and development drivers	The Australian Government Department of Education, Skills and Employment, in consultation with the states and territories, is responsible for the AQF. Curriculum is developed through a national consultation process involving industry representatives and other VET stakeholders. Industry participates closely in setting the national training agenda for schools and VET/higher education institutions through 'developing bodies' such as Industry Skills Councils and qualifications are	The Directorate of Technical Education is responsible for upgrading skill standards (with the support of the BTEB), establishing training curricula, and facilitating the implementation of the qualifications framework. The BTEB identifies experts from the ISCs and they are linked with curriculum developers who lead the teams. Curriculum is developed and linked closely to the national competency standards accepted by industry.	The Department of Technical and Vocational Education and Training (DTVET) is responsible for the planning and implementation of all institutional-based vocational programmes. Limited information was available on how curricula are designed and developed.	Curriculum design and development is done in consultation with all social partners, however the responsibility for curriculum design rests strongly with VET college lecturers and the master artisans/technicians responsible for workplace teaching and learning.	The Hong Kong Council for Accreditation of Academic and Vocational Qualifications (HKCAAVQ) accredits qualifications. Industry Training Advisory Committees (ITACs) or the Cross-Industry Training Advisory Committees (CITACs) play a leading role in the implementation of the HKQF and the development of Specification of Competency Standards (SCS) which are industry or sector-specific competency standards that can be grouped to form a qualification at a particular level on the	One of the functions of the Sector Skills Councils (SSCs) is to develop skill competency standards and qualifications which form National Occupational Standards (NOS). These are bundled into Qualification Packs that include all elements of the occupational qualification, which is then registered on the NVEQF.

	Australia	Bangladesh	Botswana	Germany	Hong Kong Special Administrative Region (HKSAR)	India
	designed to meet the skill needs of industry first.				HKQF.	
Notes			Limited information was available electronically on either the BOSCO or the BNVQF. Botswana has attempted to create a system that seems similar to O*Net in the Labour Market Observatory (LMO) website, but it is unclear how this relates to the BOSCO and it has no apparent influence on the BNVQF. It is also incomplete as not all occupations are listed.	Germany is currently implementing the German Qualifications Framework for Lifelong Learning or Deutsche Qualifikationsrahmen für lebenslanges Lernen (DQR). However, it is a non-regulatory framework and is still in the process of being integrated into the policies of different sectors of the education system.		

Table 2: Japan, Mexico, South Korea, Uganda, United Kingdom (UK), and United States of America (USA)

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
Occupational Classification System						
Name	Japan Standard Occupation Classification (JSOC)	Sistema Nacional de Clasificación de Ocupacione (SINCO)	Korean Standard Classification of Occupations (KSCO) Korean Employment Classification of Occupations (KECO)	International Standard Classification of Occupations 2008 (ISCO-08) A second occupational classification has been designed by the Directorate of Industrial Training (DIT) but only has 70 occupations listed.	Standard Occupational Classification system (SOC)	Standard Occupational Classification (SOC) system
Stated Purpose	To classify occupations based on job similarities and the systematically arrange occupations for statistical purposes.	To reflect the occupational structure and for international comparability.	The purpose of the KSCO is to compile official statistics and classify jobs into occupational categories. The KECO aims to help people access and utilise information on occupations. KECO was revised to reflect labour market dynamics.	ISCO-08 is used as a framework for the Uganda Bureau of Statistics' statistical data and administrative purposes.	Classification of workers by their occupations, classification of jobs, career information, and statistical analysis for qualification development and labour market intelligence.	Classifying workers and jobs into occupational categories, with the aim of collecting, calculating, analysing or disseminating data.
Enacted Purpose	Labour market intelligence, particularly the dissemination of statistics.	Used in the development of the National System of Competency Standards (NSCS).	Labour market intelligence, however the KECO is also used to provide job placement services and the occupational classification system is used as a basis for the development of National Competency Standards (NCS).	Limited statistical data and administrative purposes.	As per the stated purpose, however it is also used for locating qualifications available in the UK and by Awarding Organisations (AOs) for labour	Federal agencies use the SOC system to collect occupational data. The Occupational Information Network (O*NET) was developed as a primary source of occupational information and is

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
					market intelligence.	based on the SOC. State and local labour market specialists in public workforce development offices frequently link O*NET data to SOC data.
International basis	Generally aligned with the International Standard Classification of Occupations (ISCO), however the original Japanese system appears to predate the ISCO. The contents of individual jobs in the Japan are not as clear as in Europe and the USA which makes implementation of international occupational classifications problematic.	Developed based on the ISCO-08.	The KSCO is based on the ISCO-08. The KECO complements the KSCO, is based on the ISCO and is modelled after the US Standard Occupational Classification.	Uganda does not have an occupational classification system that is specific to their labour market. It uses the ISCO-08 as well as a second, smaller, classification based on the Ugandan Vocational Qualifications Framework, which was developed based on ISCO-08.	The SOC is based on the ISCO-08.	None indicated although there are some similarities to the ISCO occupational classification system. The SOC is a task-based classification system.
Identification of priority occupations	The JSOC is used to identify priority occupations through the labour force surveys conducted by the Statistics Bureau and the Director-General for Policy Planning (Statistical Standards) of Japan.	The SINCO does not appear to be involved in the identification of priority occupations. Priority occupations are identified through market research conducted by Colegio Nacional de Educación Profesional Técnica (CONALEP) and other institutions.	The KECO reflects labour market dynamics and the occupational classification system is used to identify priority sectors and occupations.	The UVQF was used by the Directorate of Industrial Training (DIT) to develop an occupational classification framework with 70 occupations listed. However, although the DIT states that its mandate is to use labour market intelligence to develop	The SOC is used for identifying priority occupations. The UK has a labour market intelligence gathering process which includes gathering information and intelligence	O*NET, based on the SOC, is used to identify priority occupations. O*NET gathers information using surveys and interviews to identify skills shortages and rates occupations to identify which jobs are in demand.

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
				qualifications, it is not clear whether the 70 occupations are considered priority occupations.	about future skills demand to inform skills planning.	
Occupational Qualifications						
Qualification framework	N/A	Marco Mexicano de Cualificaciones (MMC)	National Qualifications Framework (NQF) under development Technical Qualifications Framework	Ugandan Vocational Qualifications Framework (UVQF)	Regulated Qualifications Framework (RQF) for England and Northern Ireland Scottish Credit and Qualifications Framework (SCQF) Credit and Qualifications Framework for Wales (CQFW)	N/A
If not, how are occupational qualifications managed?	There are official national licenses for certain occupations. These are awarded by bodies that are accredited by the government ministries. Most schools for vocational and practical skills education are privately run but the curricula are controlled by the Ministry of Education,	N/A	N/A	N/A	N/A	The federal government has no direct governance of state and local education. Responsibility rests with each individual state to create a legislative framework. Local educational agencies have the primary responsibility for governance of TVET.

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
	Culture, Sports, Science, and Technology (MEXT). Academic and Degrees and University Evaluation (NIAD-UE) examines candidates for graduation after TVET institutions apply for approval to offer certifications.					
Relationship						
Is there a relationship between the occupational classification system and occupational qualifications ?	No	Limited - National System of Competency Standards (NSCS), based on the SINCO, is used for the development of certain occupational qualifications.	Yes	No	Yes	Potentially through O*NET
If not, what are they using?	Japan uses an employer-led model whereby decisions on vocational qualifications and skills required are decided by individual employers.	N/A	N/A	It is unclear what is being used for labour market intelligence and to signal demand for new occupational qualifications although the Directorate of Industrial Training states that occupational competencies identified in the labour market are used to develop competence-based curricula for the qualifications.	N/A	N/A

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
Information flow	There is no flow of information between the JSOC and occupational qualifications in either direction.	Top down - occupational qualifications are developed based on the competencies in the SINCO.	Top down - the occupational classification system is used to identify broad industry areas for the development of the NQF, as well as priority fields in VET for the development of National competency standards (NCS).	Uganda developed the existing 70 occupations based on the UVQF. The DIT occupational classification system, therefore, follows the UVQF which is then the occupation originator - i.e., a bottom-up approach.	Top down - Awarding Organisations (AOs) make use of labour market intelligence from the SOC to make decisions on new qualifications.	O*NET provides occupational information that includes details of skills and knowledge requirements for occupations. However, it is not immediately evident if this is used in occupational qualification development.
How does signalling take place?	The Ministry of Labour, Health and Welfare (MLHW) and the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) share responsibility for the provision and supervision of skills demand. This system is not well-coordinated however and most signalling occurs between schools and employers to ensure company-specific skills needs are met.	It is not clear how, or if, the SINCO signals demand for new occupational qualifications. It is reported that VET qualifications are not regularly updated, have limited recognition in the labour market, and that there are only weak links between the VET system and participating employers. Although some VET qualifications have been developed as a result of demand from industry and the introduction of the dual system was motivated by the development of key sectors of the labour	The occupational classification system signals demand for new qualifications. Qualifications are developed based on labour skills demand. The KECO was specifically revised to meet the future skills demand. Qualifications are developed by first identifying the competencies required by the industry and then using them to develop new qualifications.	It is not clear how signalling takes place between the occupational classification system and the UVQF. The DIT occupational qualification system may have been based on the market analysis conducted for the development on the UVQF. The ISCO-08 also does not appear to signal demand for occupational qualifications in Uganda's labour market as it has not been contextualised.	The SOC includes occupational and skills analyses which results in an understanding of skills gaps and aligning of the supply of and demand for occupations and skills in the labour market. Signalling for the changing demand for skills is done by indicating the changing distribution of skills that are being used in employment. Qualifications are developed	The O*NET model may provide a certain degree of signalling between the SOC and occupational qualifications. One of the aims of O*NET was to gather information on skills shortages and feed that information into related government initiatives. However, as O*NET was not originally designed for research, the validity and accuracy of the data may be questionable. Each state has their own TVET objectives depending on the regional labour needs.

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
		market, most existing VET qualifications are not aligned to the realities of the labour market. Colegio Nacional de Educación Profesional Técnica (CONALEP) and the Centres for Industrial Technical Education and for Research and advanced studies of IPN (Instituto Politécnico Nacional) belong to a group of institutions supported by the federal government and help to gather information on the labour market for use in developing competencies and occupational qualifications.			and delivered to meet government policy requirements and the changing skills requirements in response to labour market demands.	
Curriculum design and development drivers	The JSOC is not used for curriculum design or development. A Vocational Ability Development Measures (VADM) system was developed by the Ministry of Labour, Health and Welfare (MLHW). This system is used as a guideline for capacity development and	To respond to skills needs, a dual system based on the German model was implemented. However, this was not widely adopted due to the limited capacity of companies. Content for the dual system occupations was developed by Colegio Nacional de Educación	The occupational classification system is used for the design and development of curricula. South Korea has identified broad industry areas to develop into the NQF while priority fields in the VET system have been identified for the development of National Competency	The Directorate of Industrial Training's occupational classification system is not used for curriculum design and development. The UVQF is used to design and develop curricula for the programmes offered at vocational colleges. However, some	Awarding Organisations (AOs) are responsible for the development of new qualifications. They are required to follow the requirements laid down by	There is no indication that O*NET or the SOC are used to design or develop curricula. TVET programmes are aligned according to National Career Clusters. Institutions have the primary responsibility for developing and implementing postsecondary

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
	provides a scale for skills acquired nationally. MHLW and the Japan Vocational Ability Development Association (JVADA) have also developed the Vocational Capability Evaluation Standards (VCES) to organise knowledge and skills that are needed in the labour market and to categorise competencies required for occupational standards. Firms have long-standing relationships with schools to ensure that their skills needs are met.	Profesional Técnica (CONALEP), although training institutions can develop their own content if it is certified by the Secretariate of Public Education (SEP). For other VET qualifications, curricula are designed by CONALE) and certification is awarded by the SEP. Curricula are designed based on the National System of Competency Standards (NSCS) which were developed by the Consejo Nacional de Normalización y Certificación de Competencias Laborales (CONOCER). Curricula are, however, not designed centrally and decentralised institutions have a high level of independence in setting their curricula.	Standards (NCS). The Human Resource Development of South Korea, part of the Ministry of Employment and Labour, together with Industry Skills Councils develop the NCS. The NCS are the basis of occupational qualifications. The VET system was modified to align with German dual system and includes industry in the design of competency-based curricula. Institutions can also develop their own curricula which must be certified by the government. Assessments are conducted against the NCS.	programmes, for example some engineering programmes at universities, are allowed to develop their own curricula and are then quality assured by the DIT. For institutions using the older BTVET system, curriculum design and development is coordinated by the Industrial Training Council, which forms part of the DIT, in collaboration with training centres and other industry stakeholders.	the Office of Qualifications and Examinations Regulation (Ofqual) and to consult qualifications users to ensure that there is support for the qualification. AOs make use of National Occupational Standards linked an SOC code for the development of a vocational qualification.	standards. These standards are developed and enforced with reference to policies administered by state agencies, accrediting agencies' requirements, expectations of professional associations and employers, and the practices of other institutions. In-company training is a significant proportion of TVET and is provided by companies without any link to external government agencies or education institutions.
Notes	The Japanese education and training system is characterised by a combination of on-		South Korea has a career information system called KNOW that provides diverse career information. It	According to the UNESCO Institute for Lifelong Learning, Uganda lacks a systematic labour	Within the UK there are slightly different education and training systems	

	Japan	Mexico	South Korea	Uganda	United Kingdom (UK)	United States of America (USA)
	the-job-training (OJT) and off-the-job-training (OffJT). Vocational education is not a requirement for new employees. At a later stage as training is required, it is done within the company. An attempt was made to implement a Japanese dual system based on the German model; it does not, however, appear to have been particularly successful. This is suggested to be due to the lack of the historical tradition associated with the dual system, as well the well-defined occupational categories required as a basis for the system.		is also available online as KNOW On-Line. It includes information on occupational job competencies required for various job categories as well as other occupational information.	market intelligence system, and this is one of the contributing factors to their TVET system being unresponsive to the needs of industry or skills demand (UNESCO Institute for Lifelong Learning (UIL), 2013)	(as evidenced by the multiple qualification frameworks) for England and each of the devolved administrations of Northern Ireland, Scotland, and Wales.	

REPORT 2: Qualification Development Across the NQF

QCTO
Quality Council for Trades & Occupations

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

real
centre for researching education and labour

Qualification Development Across the NQF:

An Investigation of Qualifications Development and Quality Assurance Processes Undertaken in the Three Sub-Frameworks of the National Qualifications Framework (NQF)

Research team:

- **Jeanne Gamble**
- **Marco MacFarlane**
- **Kate Mlauzi**
- **Marianne Spies**
- **Colette Tennison**
- **Glynnis Vergotine**

Quality Council for Trades & Occupations (QCTO)
Mr. Marco MacFarlane
Director: Research & Analysis,
256 Glyn Street, Hatfield, Pretoria, 0083,
Email: macfarlane.m@qcto.org.za

University of the Witwatersrand, Centre for Researching Education & Labour (REAL)
Presha Ramsarup (Technical) Director, Centre for Researching Education & Labour
Wits School of Education, 27 St Andrews Road, Parktown, 2193, Johannesburg, South Africa
Email: presha.ramsarup@wits.ac.za

Acknowledgements

The research team would like to thank all the respondents who agreed to be interviewed for this project. Without your valuable insights this research would not have been possible.

Particular thanks go to Mr Marco McFarlane from the QCTO who was responsible for commissioning this research, and whose input was key in ensuring the success of the project.

Abbreviations and Acronyms

AQP	Assessment Quality Partner
BUSA	Business Unity South Africa
CAT	Credit Accumulation
CEP	Community of Experts
CEO	Chief Executive Officer and Transfer
CHE	Council on Higher Education
DBE	Department of Basic Education
DHET	Department of Higher Education and Training
DQP	Development Quality Partner
DRR	Registration and Recognition Directorate
EISA	External Integrated Summative Assessment
FET	Further Education and Training
FLC	Foundational Learning Competence
GFETQSF	General and Further Education and Training Qualifications Sub-Framework
HEQSF	Higher Education Qualifications Sub-Framework
IEB	Independent Examinations Board
NAMB	National Artisan Moderation Body
NATED	National Accredited Technical Education Diploma
NC(V)	National Certificate (Vocational)
NQF	National Qualifications Framework
NLRD	National Learners' Records Database
NSF	National Skills Fund
OFO	Organising Framework for Occupations
OQSF	Occupational Qualifications Sub-Framework
QC	Quality Council
QCTO	Quality Council for Trades and Occupations
QDF	Qualifications Development Facilitator
QRG	Qualifications Reference Group
QSC	Qualifications Standards Committee
RPL	Recognition of Prior Learning

SAQA	South African Qualifications Authority
SDP	Skills Development Provider
SEIAS	Social and Economic Impact Assessment System
SGB	Standards Generating Body
SLA	Service Level Agreement
TVET	Technical and Vocational Education and Training
USAf	Universities South Africa

Introduction

> The regulation of post-school education in South Africa is governed by an array of legislation and statutory bodies. Quality Councils oversee qualifications, standards, assessment and certification systems across three key bands of the qualifications system – general, further and higher education. The National Qualifications Framework Act (No. 67 of 2008) provides the overarching context in which all regulation takes place. The NQF provides the context for provision, assessment, certification and quality assurance.
>
> …The primary bodies with a direct role in governing quality assurance and certification are the Quality Councils. Through their responsibility for setting standards, they are also responsible for curriculum and assessment. There are three Quality Councils – the Council on Higher Education (CHE), Umalusi, and the Quality Council for Trades and Occupations (QCTO). They are responsible for: defining the three sub-frameworks of the NQF; quality assuring the provision, assessment and (in the case of Umalusi and the QCTO) certification of qualifications on their respective frameworks; and maintaining a database of learner achievements.
>
> (DHET, 2013, pp. 69-71)

It is against this background that this research study investigates qualification development and quality assurance in the three Quality Councils. The aim was to provide a clear picture of how the different Quality Councils develop qualifications for their respective sub-frameworks, what the role of each Quality Council is in the curriculum development and assessment processes, as well as how these processes are quality assured.

Methodology

This research was conducted by three teams who were each allocated a particular sub-framework to investigate. The teams were divided as follows:

1. General and Further Education Qualifications Sub-Framework:
    - Marco MacFarlane
    - Colette Tennison

2. Occupational Qualifications Sub-Framework:
    - Jeanne Gamble
    - Marianne Spies

3. Higher Education Qualifications Sub-Framework:
    - Kate Mlauzi
    - Glynnis Vergotine

Each team conducted interviews with stakeholders to investigate the qualification development and quality assurance processes as they occurred in the particular sub-framework. A standard set of questions was used in the interviews, with a series of sub-questions for each main question. Questions asked were:

1. How are qualifications designed, developed and quality assured on that particular NQF sub-framework?
2. What is the curriculum development logic that operates on the sub-framework?
3. How is a national qualification standard ensured?

4. What is SAQA's role in relation to qualifications development and quality assurance?
5. What qualification development and assessment models were in place prior to the current system?
6. What challenges or blockages exist in current systems of qualification design, development and assessment?

Provision was made for respondents to elaborate on their answers and further probing questions were asked based on the respondents' experience in the sub-framework. These interviews provided the majority of the data for the sub-reports presented in this report.

A variety of documents generated by the Quality Councils, as well as by the South African Qualifications Authority (SAQA), were referenced to gain further insights into the systems and processes. Supporting documents were also provided by interview respondents and these were used where necessary in order to clarify and further unpack what was surfacing in the interviews.

Data from the interviews and documents was then collated using the original questions to develop the reports for each sub-framework. These investigations are presented individually in this report in order to ensure that each sub-framework's qualification development and quality assurance processes are dealt with clearly and in sufficient detail.

Section 1: Qualifications Development and Quality Assurance in the GFETQSF

Quality Council: Umalusi

Introduction

This sub-report investigates qualifications development and quality assurance in the general and further education sub-field which is overseen by Umalusi, who are the Quality Council for the General and Further Education and Training Qualifications Sub-Framework (GFETQSF).

1. Qualifications

This section addresses the development of new qualifications for the GFETQSF. It addresses the types of qualifications that can be registered, the initiation and approval of new qualifications, as well funding and time frames for these processes. An example of a new qualification that was developed is provided, although it must be emphasised that the registration of new qualifications on the GFETQSF is rare as the system is quite stable.

1.1. Types of qualifications

As per the Umalusi policy, qualifications that can be registered on the General and Further Education and Training Qualifications Sub-Framework (GFETQSF) are:

- Level 4: National Certificate (e.g. NSC, NASCA, SC as amended)
- Level 3: Intermediate Certificate (e.g. NCV Level 3)
- Level 2: Elementary Certificate (e.g. NCV Level 2)
- Level 1: General Certificate (e.g. GEC)

Umalusi qualifications are mainly academic although there are some occupational subjects that fall under the National Certificate (Vocational). All qualifications are full qualifications and the GFETQSF does not allow for part qualifications. The National Accredited Technical Education Diploma (NATED) qualifications are part qualifications, but they are the exception as they were inherited from the previous qualification system.

1.2. Qualification initiation

Although anyone can propose a qualification, new qualifications are discouraged as general education is seen as closely tied to schools. The focus is on keeping qualifications national and related to schools or colleges, particularly since Umalusi's limited funding means that it would be difficult to quality assure any new qualifications.

A new policy that formalises qualification development for the GFETSQF is about to be gazetted. According to the new policy "Departments of Education, accredited private assessment bodies and private education providers are eligible to propose the development of new qualifications for the GFETQSF" (Umalusi, 2020). The first step in developing a new qualification is the submission of a written proposal to the Chair of the Umalusi Council. The proposal must include a feasibility study that includes:

a. Details of the proposer and those persons selected by it to assist with the development of the proposed new qualification.

b. The unique purpose to be served by the new qualification, and a motivation for its establishment in the form of a completed feasibility study.

c. The feasibility study is required to provide information on at least the following:

   i. Justifiable need for the development of a new qualification

   ii. Mapping that has been done against existing qualifications (on the GFETQSF, and if need be, on both/ either of the other Higher Education Qualifications Sub-Framework [HEQSF] and the Occupational Qualifications Sub-Framework [OQSF], which will provide information on the purpose of the proposed qualification; how the purpose of the proposed qualification differs from those of existing qualifications, and how the proposed qualification would articulate with other qualifications on the GFETQSF (and/or qualifications in the HEQSF and the OQSF, and its relationship to existing qualifications on the GFETQSF);

   iii. The number of learners who are likely to enrol for the qualification annually and their institutional location (schools, colleges, community learning centres, etc.)

   iv. A draft implementation plan for the qualification proposed, and

   v. If the proposer is not a Department of Education, the accredited assessment body that will assess the proposed qualification. (Umalusi, 2020, pp. 14)

As per point b. above, critical to any new qualification proposal is the concept of 'justifiable need'. If the proposer cannot show that there is a justifiable need for their qualification, the proposal will not be approved.

1.3. Qualification approval

Once the proposal is approved by Umalusi, the qualification proposer is responsible for developing the qualification. It is then submitted to Umalusi for evaluation. Umalusi has a particular structure that proposers must adhere to in the design of the qualification. A Qualifications Reference Group (QRG) is appointed by the Qualification Standards Committee (QSC). The QRG is a group of experts who evaluate the qualification according to Umalusi's criteria. Once it is approved by the reference group, it goes through an internal Umalusi process for overall approval before being submitted to SAQA for registration and publication in the Government Gazette. This is depicted in Figure 1 below:

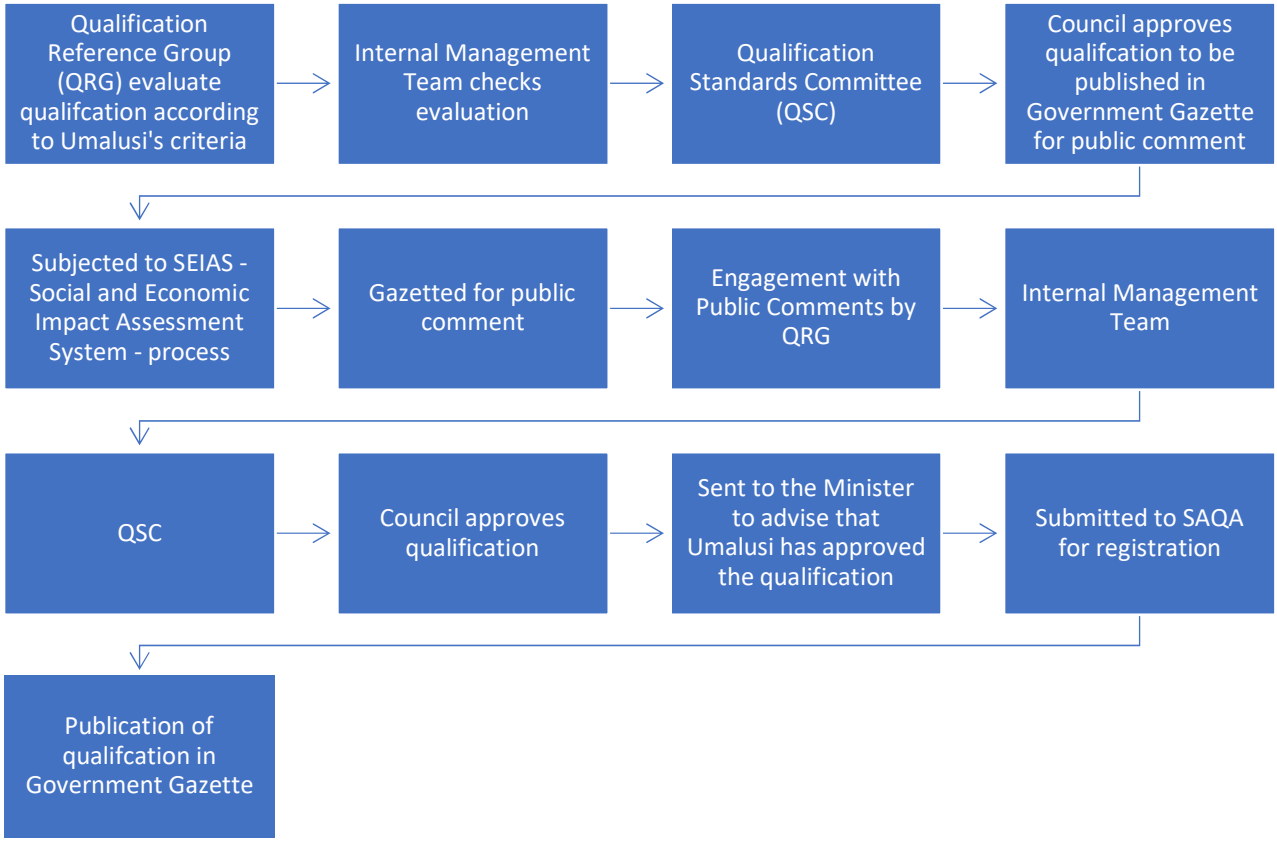


Figure 1: Process of registering a new qualification on the GFETQSF

1.4. Prevention of qualification proliferation

Umalusi deals with a number of inherited qualifications such as the National Senior Certificate (NSC), General Education and Training Certificate (GETC), and Senior Certificate. There are very few new qualifications developed for the GFETQSF, although currently the General Education Certificate (GEC) is being developed by Umalusi in conjunction with DHET.

Any proposer can approach Umalusi to develop a new qualification and, if it fits on the GFETQSF, Umalusi will evaluate it. However, the provider has to demonstrate that there is a justifiable need for the qualification. Furthermore, qualifications cannot be provider based qualifications - they have to be national qualifications and, once registered, can be offered by any provider and will be assessed by an accredited assessment body.

1.5. Key partners/participants in qualifications development

Either Umalusi develops the qualification or it could be developed by another proposer and Umalusi will evaluate it. The proposer is generally either the DBE or DHET, although it could be an accredited assessment body or a private education provider. An accredited assessment body must be in place to assess the qualification if it is not a DBE or DHET qualification. Once the qualification has been approved by Umalusi,

it must be submitted to SAQA for registration on the NQF. Umalusi's policy indicates that SAQA is responsible for publishing the final qualification in the Government Gazette.

1.6. Time frames

The time frame from registration to implementation is about 1 -2 years, although it is dependent on the different fora who must approve the qualification. It generally takes about 18 months.

1.7. Funding

Previously the development and evaluation of new qualifications was paid for by Umalusi as they were seen as national qualifications for the NQF, and the proposer was either Umalusi or the DBE. However, the new policy to be gazetted indicates that, going forward, the proposer of a qualification will be responsible for funding both the development and appraisal processes.

1.8. Quality assurance of qualification development

A GFETQSF sub-framework document has been gazetted that deals with qualification development. If they take on a new qualification , Umalusi have to quality assure the new qualification and, by inference, they have to register it with SAQA. Umalusi's criteria for qualification evaluation are aligned with SAQA's criteria.

1.9. Example of Qualification Development: National Senior Certificate for Adults (NASCA)

Context

The NASCA was developed directly by Umalusi. The development process was instigated by an individual (Peliwe Lolwana) within Umalusi as a result of changes to other qualifications on the GETQF that created a need for this specific qualification - in particular, the phasing out of the old Senior Certificate and introduction of the new National Senior Certificate (NSC) that was school-based and did not make provision for adults. Benchmarking was done based on the USA's General Education Diploma (GED) qualification, but the South African context did require adaptations particularly in terms of requirements for two languages instead on just one as per the GED.

The Department of Higher Education and Training (DHET) was involved in conceptualising the NASCA and developing the qualification and associated curriculum. DHET is also the accredited assessment body for the qualification.

Process

A call was put out for people to participate in a qualifications committee to develop the NASCA. This committee met about 6-8 times over a period of about 15 months, however the actual qualification was written by 2 people and the committee then validated and adapted, where necessary, what had been written. While this was occurring, consultation with DHET occurred as they were responsible for the 'adult matric'. Buy-in from DHET was obtained and DHET staff formed a small sub-committee to finalise the draft. Higher Education South Africa (HESA), now known as Universities South Africa (USAf), was also approached to confirm their approval for access to universities. Concerns were raised by DBE however these were addressed and, after a number of meetings with SAQA, the NASCA was put on to the NQF. The development of the qualification took from 2008 until 2014.

At this point the qualification has not been taken up as DHET has not yet implemented the qualification. The IEB has indicated that they would be interested in developing the assessments, but this has not yet happened.

2. Curriculum Development

This section deals with the development of new curricula for qualifications registered on the GFETQSF. Umalusi has a strong focus on curriculum development. As per Umalusi's policy "development of a new qualification for consideration by Umalusi must be accompanied by the development of its underpinning curricula" (Umalusi, 2020, p. 23).

2.1. Curriculum developers

As with new qualifications, anyone can propose a new subject or curriculum for inclusion in an existing qualification (for example, the Marine Sciences subject on the NSC was proposed by the Two Oceans Aquarium) but they must be able to demonstrate a justifiable need for the new curriculum or subject. Generally, the DBE develops curricula for the NSC.

2.2. Curriculum Composition

Qualifications submitted to Umalusi for evaluation must be accompanied by the intended and assessed curricula for the qualification. The curriculum is evaluated on a range of curriculum points. The intended curriculum refers to the CAPS document and includes points such as content, pacing, and cognitive levels. The assessed curriculum refers to exemplars of questions papers, the standard of assessment, and examination levels.

The curriculum for the NSC is based on the CAPS document available on the DBE website. The Department of Basic Education's curriculum policy indicates that, for the NSC, the qualification resides in the curriculum.

The National Certificate (Vocational) (NC(V))has fundamental subject areas and then areas of specialisation.

2.3. Quality assurance of curriculum development

According to their policy, "Umalusi will give guidance to curriculum developers or reviewers on curriculum dimensions to be considered during the evaluation process" (Umalusi, 2020, p. 24). Once the new curriculum is developed, it is evaluated by Umalusi to ensure that it complies with their requirements.

2.4. Funding

If the DBE or Umalusi develops the qualification and curriculum, the appraisal is funded by Umalusi. An external proposer will need to fund the cost of the appraisal.

2.5. Example of Curriculum Development: Marine Sciences

Marine Sciences was proposed as a new subject on the NSC by an external proposer, namely the Two Oceans Aquarium. They put together a development group comprising of academics and teachers (geography/natural sciences) with an interest in marine sciences. The development group looked at the CAPS document requirements and then developed a curriculum in that format (took about 1 year).

Once the curriculum had been developed, they approached DBE who then referred it to Umalusi. Umalusi put together a group to look at it, as well as seeking input from the IEB. Once the required changes were made, it was submitted to DBE.

The original curriculum was submitted to Umalusi at around the end of 2016/early 2017 and submitted to the DBE at around the end of 2017/mid 2018. The gazetting process took quite a long time - the curriculum was finally gazetted in November 2020.

In terms of funding, the original development costs were carried by the external proposer. Only the internal quality assurance processes at Umalusi were paid for by Umalusi.

3. Assessment of Qualifications

This section deals with the assessment of qualifications on the GFETSQF. It considers that forms of assessment used for qualifications, as well as how the standard of assessment is maintained and how it is funded.

3.1. Forms of assessment

Assessment of qualifications on the GFETQSF consists mainly of two forms of assessment: Site-Based Assessment (SBA) and examinations.

3.2. Moderation and quality assurance

Quality of assurance of assessments involves:

1. Moderation of the standards of examination papers
2. Moderation of the standards of internal assessment
3. Monitoring the administration of national examinations and marking processes
4. Moderation of the standard of marking
5. Monitoring and verification of resulting
6. Standardisation of results
7. Certification

Part of the standard for assessment resides in the curriculum in terms of the range and extent of what is covered in the curriculum, but also specifically in a table included in the curriculum that specifies the allocation of levels of cognitive demand. This also includes reference to levels of difficulty. Examiners and external moderators take this very seriously but beyond that it is not always well understood, particularly by teachers. However, the table does not change through the 12 years of schooling which does create some difficulties for the design of the assessments. IEB works quite successfully with these in their assessment design in a very constructive way by understanding the levels of difficulty.

The second place that the standard resides is in the examinations and theoretically Umalusi is the 'keeper of assessment'. Examinations are based on curriculum and cognitive levels and rely on moderators and the quality of assurance of assessments. This is considered the critical point for maintaining the standard of assessment.

The DBE and DHET, as assessment bodies, deal with school and adult qualifications, respectively. There is nothing stopping another company from applying to be an assessment body and any assessment body can apply to assess further qualifications. New applicants for assessment bodies must demonstrate that there is a justifiable need for them in the space. Currently there are only 3 accredited assessment bodies other than the Departments, as shown in the table below.

Table 1: Table of Umalusi Accredited Assessment Bodies

Assessment Body	Qualification	Accreditation Status
Independent Examinations Board (IEB)	National Senior Certificate (NSC)	Full Accreditation
	General Education and Training Certificate: Adult Basic Education and Training (GETC: ABET)	Full Accreditation
The South African Comprehensive Assessment Institute (SACAI)	National Senior Certificate (NSC)	Provisional Accreditation
Benchmark Assessment Agency (BAA)	General Education and Training Certificate: Adult Basic Education and Training (GETC: ABET)	Provisional Accreditation

Umalusi quality assures the assessments (examination papers) for all assessment bodies. Assessment criteria need to be fit for purpose and there are policies in place that an assessment body must adhere to. Continuous assessments (SBA) are sampled, and moderators visit schools and report on the standard of the assessments. Statistical moderation is also used based on the concept that the final examination is an accurate measure of a learner's performance. However, it was indicated that it is not possible to generalise based on the continuous assessments.

Umalusi appoints external moderators while DBE has their own set of internal moderators. Moderators are appointed by Umalusi for a fixed term of office and are trained for the job. Moderation takes place at the DBE.

The final part of the standard for assessment is the standardisation process. Although it tends to be a very poorly understood process, it is critical to prevents anomalies in the examination results. The standard maintenance process requires looking at cohorts in relation to each other.

Due to funding challenges, the NSC is prioritised for quality assurance as well as the NC(V) level 4 and NATED N2. Although there may be a lower level of direct quality assurance for the other qualifications, they are still quality assured on some elements.

3.3. Funding

Umalusi has yearly allocations of budgets for quality assuring inherited qualifications. The funding of quality assurance comes from DBE for the NSC and NC(V) although Umalusi carries the cost of the moderation process for the NSC and pays the moderators' fees.

Currently, Umalusi's funding is only sufficient for the qualifications they are already quality assuring. It was indicated that the relevant Department will need to provide funding to quality assure the GEC qualification and the NASCA needs to have funding allocated by DBE or DHET for quality assurance.

4. SAQA

4.1. SAQA's quality assurance role

SAQA is the apex body. There are directives given by SAQA policy in terms of what qualifications should look like and what their basic structure should look like, which Umalusi adheres to, however SAQA has final approval of qualifications. Umalusi recommends qualifications to SAQA for registration and SAQA then applies their criteria (compliance criteria to be placed on the NQF) to check that they are adhered to. Once the qualification is approved, SAQA then registers the qualification on the NQF and publishes the qualification on their website.

4.2. SAQA's monitoring and reporting role

SAQA provides the compliance framework but the QCs are ultimately responsible for the direct quality assurance processes. Any changes to qualifications (additions of subjects or renaming) are made by Umalusi but must go through SAQA.

Every 3 years Umalusi reregisters or deregisters qualifications. Currently SAQA are clearing the NQF and looking at non-aligned qualifications (qualifications that Umalusi inherited from the previous system) and deregistering them in consultation with Umalusi.

There was an instance of SAQA playing a tie-breaking role in a disagreement between the DBE and Umalusi regarding a qualification, where SAQA prevailed.

4.3. SAQA's information dissemination role

There is no formal mechanism for widely disseminating information on new qualifications. The qualification is made available on the NQF, and on SAQA and Umalusi websites. They are also gazetted.

5. Prior Models

The previous model was very different as there was no qualifications framework or SAQA. There was a single Department of Education (DoE) and the Department of Labour (DoL) was responsible for occupational qualifications. Universities were autonomous and worked on a peer review quality assurance process.

The Previous Senior Certificate could have external subjects (e.g. music examined by Trinity College London) but for the new NSC all curriculum comes from the DBE.

Previously qualifications did not include elements such as RPL, articulation, etc. and the inherited qualifications were not aligned. The old qualifications now either need to be aligned or phased out.

6. Challenges

6.1. Issues reported

The current processes for qualifications design worked reasonably well. It was possible to develop qualifications and get a community of practice together to look at the qualification. It was also possible to find common ground and get agreement. The process gets held up by when the qualification is sent to the DBE as there was no clarity on who is responsible and what the time frames should be. As a result, the impetus gets lost.

The delineation of roles is a challenge, particularly in terms of interpreting Section 27 (h) of the NQF Amendment Act. which states that the function of a QC, with regards to qualifications on its sub-framework is to

> (iii) ensure the development of such qualifications or part qualifications as are necessary for the sector, which may include appropriate measures for the assessment of learning achievement; and
>
> (iv) recommend qualifications or part qualifications to the SAQA for registration;
>
> (NQF Act, 2008, p.18)

There appears to be confusion regarding who approves the qualification as legal advice from DBE and DHET says that the Minister has to approve the qualification and policies.

Ensuring qualifications or related curricula are relevant and responsive to the need can prove challenging, for example some NATED subjects considered outdated. Umalusi has requested DHET to submit revised curricula for the NATED when it goes through it 3 yearly reregistration. Umalusi is still conceptualising and finding ways of dealing with updating subject curricula as it is the responsibility of the QC.

The implementation and phasing out of qualifications is a challenge as it requires the approval of the Minister. There is a directive from SAQA to phase out non-aligned qualifications but phase out of the non-aligned qualification can't happen without the implementation of the new qualification and this can't happen without the Minister giving the go-ahead.

When the system started there were big differences between the visions of the DoL and the DoE for NQF system. Adapting of qualifications to the new system hasn't always worked. The GENFET sub framework has probably adapted the most easily as it had pre-existing qualifications and quite straight forward expectations. However, there is a challenge regarding the role of part qualifications as they do not currently fit on the GFETQSF but may be needed if a qualification spans more than one QC (as may happen for the GEC).

6.2. Recommendations for improvement offered

There is a need to put together an inter-organisational policy as a supplement to the sub-framework document so that there is accountability. This would hopefully also clarify the roles and responsibilities between Departments and Umalusi.

There needs to be consultation between Umalusi and the QCTO regarding the GEC in order to determine how to approach a combination of academic and occupational subjects in one qualification.

Section 2: Qualifications Development and Quality Assurance in the HEQSF

Quality Council: Council for Higher Education (CHE)

Introduction

This sub-report investigates qualifications development and quality assurance in the higher education sub-field which is overseen by the Council of Higher Education Quality Council.

1. Qualifications

The section looks at how are qualifications designed, developed and quality assured for the CHE Quality Council. It provides a broad description of the different types of qualifications within the sub-framework, the process of qualification initiation, how qualifications are approved, qualification proliferation, timeframes, funding and the quality assurance processes in qualification development.

1.1. Types of qualifications

The Higher Education Qualifications Sub-Framework (HEQSF) specifies qualification types, qualification routes and level descriptors. The CHE deals with whole qualifications which focus on the complete design of qualification from the first to the final year of study. This entails looking at the number of credits of a qualification, the level of learning, progression routes, and the methods of delivery. Eighteen qualification types are located within the ambit of the CHE. These qualifications are arranged on levels 5 – 10 on the National Qualification Framework (NQF) and are offered across three pathways namely, vocational, professional, and general pathways as seen in Table 1.

Table 1: CHE qualification types and variants

NQF level	Vocational pathway	Professional pathway	General pathway
10		Professional Doctoral degree	Doctoral degree
9		Professional Master's degree	Master's degree
8	Postgraduate Diploma	Postgraduate Diploma Bachelor's degree	Honours degree Bachelor's degree
7	Advanced Diploma	Bachelor's degree Advanced Diploma	Bachelor's degree
6	Diploma (240cr)	Diploma (360cr) (Possibly) Diploma (240cr)	
6	Advanced Certificate (120cr)		
5	Higher Certificate (120cr)		

The qualifications include two certificate types namely, the Higher certificate on level 5 and the Advanced Certificate, which is on level 6, there are three types of diplomas, namely the vocational diploma with 240credits, and the professional diploma with 240credits and 360credits on level 6. In the long term, the Higher Certificate at level 5 and the Advanced Certificate at level 6 may not remain exclusively within the jurisdiction of the HEQSF, these qualifications are, for the present, held in abeyance insofar as higher education standards are concerned. When looking at level 7 the Advanced Diploma is offered in the vocational and professional pathways while the Bachelors' degree on this level is on either the professional or general pathway. Level 8 comprises the Postgraduate diploma in the vocational and professional pathways, the general and professional Bachelor's degree and the Honours degree in the general path. The qualifications include the professional or general Masters on level 9 and the professional or general PhD on level 10. This framework comprises a total of 18 qualification variants and provisionally proposes that standards development by the CHE should focus on the qualifications included in the green-coloured blocks, which will comprise 14 (possibly 15) qualification variants. The number and type of qualifications are however under review by the CHE and will subsequently change again within the next 5years.

Besides listing the qualification types, the HEQSF specifies the naming conventions; purposes and characteristics; minimum admission requirements and progression for each qualification type. A qualification is first named as a qualification type e.g., Bachelor or Master, which is followed by a designator e.g., Science. This is the broad area of study, e.g., Bachelor of Science. The designator appears after the word "of". All degrees have a designator, while certificates and diplomas do not. Third, where appropriate, this could be followed by a qualifier that specifies the field of study. The linking word is 'in', e.g., Bachelor of Science in Chemistry.

According to policy, not all universities may offer all qualification types. There are four different university types in SA, traditional, comprehensive, universities of technology and private universities. For example, the traditional universities may not offer the Diploma (240cr), Advanced Certificate (120cr) or the Higher Certificate (120cr).

1.2. Qualification initiation

New qualifications are proposed by academics from a School or Centre within a Faculty in the higher education institutions, such as universities. The initiation can be triggered by demands from the industry because of possible technological developments or because of the production of new knowledge and concepts within a field of study.

1.3. Qualification approval

Accreditation for qualifications can be turned down by the CHE, the grounds for such could be varied. One of the main reasons for not accrediting a qualification is the inability of institutions to understand curriculum development and design. Linked to this is the structure of the curriculum where the integration and coherence of knowledge are assessed. There could be queries that the qualifier/naming could not be aligned to CHE conventions and also whether qualifications meet the basic requirements for the particular degree. Other aspects that are considered are e.g., staffing – which states that lecturers must be one level higher than the students they teach or examining whether library facilities meet the specified requirements.

1.4. Prevention of qualification proliferation

Qualification proliferation or overlap has been on the rise, i.e., too many qualifications in a specific subject area or occupational field. This is because of a demand by universities and industry for specialised qualifications that would fit with specific jobs. This is problematic for the CHE as it increases the number of applications that they receive, which causes delays in the finalisation of approvals. The HEQC has therefore started a review of the processes of qualification approval and will be reconsidering the types of qualifications on the NQF.

1.5. Key partners/participants in qualifications development

The key partners in qualifications development are the HEIs, DHET, CHE, SAQA and Professional associations (e.g. South African Institute of Chartered Accounting - SAICA). Each of these stakeholders plays an important role in the development process of qualifications. Several stakeholders participate in academic developments for qualification developments as shown in Figure 2.

Figure 1: Stakeholders involved in CHE qualification accreditation

1.5.1. Internal stakeholders within HEIs

Academic Staff

These are academics who have identified the need for academic development(s) and are mainly responsible for the development of the curriculum and completing all application forms and processes.

Quality and Academic Planning Office

The role of this office is to advise and comment on the qualification developments. They provide support to academic staff on the design and quality assurance of academic developments. They provide substantive responses to academics on whether the qualification proposal makes sense and give guidance as to whether the exit level outcome is clearly stated. Further, they assist to ensure that there is compliance with university and national higher education policies.

Faculty and School

Faculty / Schools have a Board that governs and regulates the academic activities within their ambit. Their mandate is to ensure that qualification developments meet with all university rules and considers and recommends academic developments to the Senate and relevant subcommittees. The Board also promotes, monitors, and regulates teaching, learning, assessment, research, and other academic functions of the university.

Academic Planning and Development Committee (APDC)

This is a subcommittee of the university's Senate, which considers proposals for new academic developments after they have been evaluated by Faculty Boards. This committee makes recommendations to the Senate on academic developments that require external approval.

Senate

The University Senate is accountable to the CHE for regulating the teaching, learning, research and academic functions of the University. Final internal approval of a qualification development is given at this point.

1.5.2. External stakeholders

Department of Higher Education and Training (DHET)

The ministerial department oversees universities and other post-secondary education in South Africa. The DHET grants the ultimate permission for funding approval (in the case of the public) and PQM approval (public and private) for a qualification.

The Council on Higher Education (CHE)

An independent statutory body, advising the Minister of Higher Education and Training on higher education policy. The council is responsible for quality assurance within higher education and the accreditation of programmes of public and private higher education institutions. This is executed by the Higher Education Quality Committee (HEQC), which is the sole authority that may approve the accreditation of new qualifications in higher education.

South African Qualifications Authority (SAQA)

SAQA develops and implements policy and criteria for the development, registration and publication of qualifications and part-qualifications. It registers programmes that have been accredited by a quality council (the CHE in the case of higher education). SAQA gives a qualification a programme ID number which is put onto the NLRD.

Professional Bodies

In South Africa, there are statutory as well as non-statutory (voluntary) professional bodies. Statutory bodies (such as the Health Professions Council of South Africa) are established because of an Act of Parliament and govern the practice of specific occupations in South Africa. Voluntary bodies create an enabling environment for professional development in a discipline and relationships are maintained through the Schools. The statutory bodies are problematic, as they emanate from legislation, resulting in contestation about who's duty it is to accredit a qualification. As long as the NQF Act says that QCs are responsible for the qualification approval CHE will perform this role. The CHE is currently in the process of developing an MOA to outline the role that the different stakeholders play to ensure that there is no misunderstanding about this.

1.6. Time frames

The timeframe for the process of qualification accreditation from the initial proposal for a new qualification until the qualification is registered on the NQF sub-framework and available to be offered to learners varies.

The university's processes may take 12 – 24months from initiation of a proposal for internal approval. Public institutions apply for qualification approval to DHET, and then to CHE and then to SAQA. The new programme is sent to the Department of Higher Education and Training (DHET) for Programme Qualification Mix (PQM) and funding (for public institutions) assessment for approval may take up to six months. It then proceeds to the CHE for accreditation, which may take between 36 – 48 months. According to the CHE, the review process under their ambit should be approximately six to eight months, however, they cite time lags between different stakeholders, deferment of qualifications, return upon receipt, as reasons for the delay. There is also a parallel process where the application goes to professional bodies for review. After accreditation is granted by the CHE, the South African Qualifications Authority (SAQA) registers the qualification which may take up to six months. Private higher education institutions go directly to the CHE, who would then recommend to SAQA for an ID number, their process could therefore be much shorter. The entire external approval processing could take between 18 months and 5 years to complete.

Table 2: Timeframes for CHE qualification development and approval

Process	Timeframes	Type of institution	Stakeholders	
Internal processes	12mos - 24mos	Public and private	Curriculum design / internal approvals	
External processes	18mos - 60mos	Public HEIs	DHET CHE SAQA	Professional bodies
		Private HEIs	CHE SAQA	
Internal processes	6mos - 12mos	Public and private	Legal and curriculum implementation finalisation	

1.7. Funding

Funding for qualification development lies with the different institutions and is part of general budgets within an institution. Funding streams come from either the DHET for public institutions or internally from private providers. In public institutions, the DHET must give initial approval for qualifications and this is mainly to ensure that there would be adequate funds available to offer the programme.

1.8. Quality assurance of qualification development

There are several stages within the qualification development process. The process for the development of qualifications is initiated internally within the higher education institution. Upon internal approval, there is a specified external route that is prescribed by various stakeholders. The figure below is an example of the approval process within a particular university and the external process it must follow.

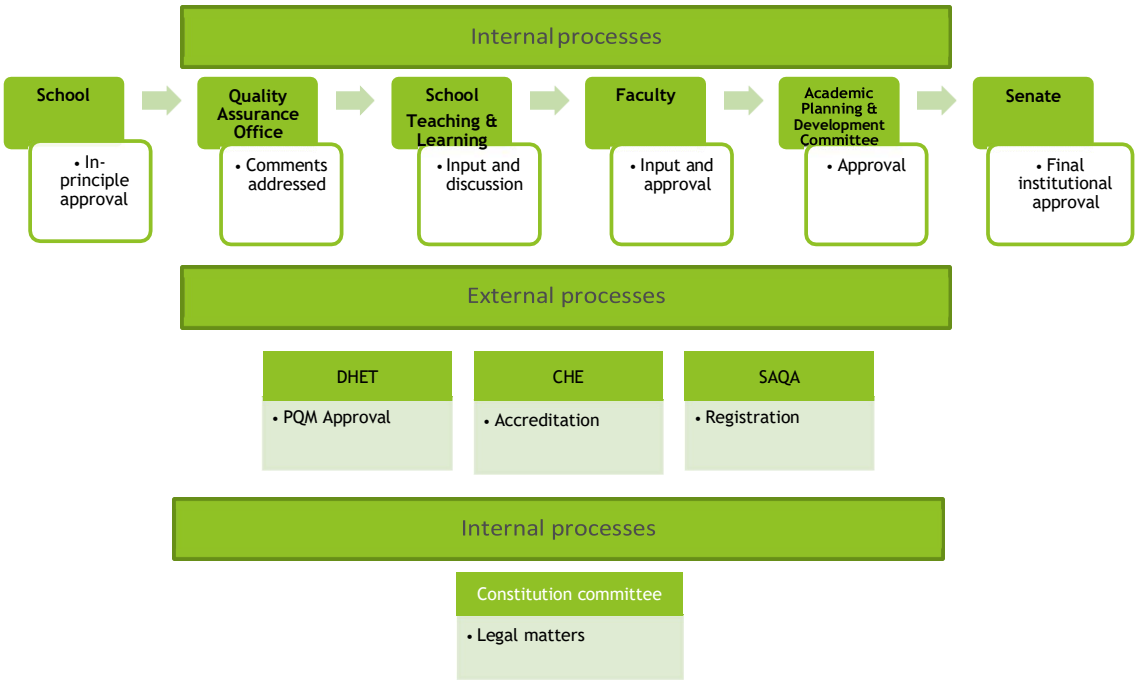


Figure 2: Internal and external processes for CHE qualification development

Academics develop the curriculum and complete all application forms and processes. They look at how the learning outcome in the curriculum will meet the exit level outcomes of the qualification. This is sent to the Quality and Academic Planning Office for comments to the academic staff on the design and quality assurance

of qualification proposals. The application then goes to the Faculty Academic Planning Committee (FAPC), chaired by an Assistant Dean who reviews all qualification developments to check whether they meet with university rules. They forward the proposal to the Academic Planning and Development Committee (APDC) a subcommittee of the university's Senate that makes recommendations to the Senate on academic developments that require external approval. The University Senate is the final internal regulating body focusing on teaching, learning, research and academic functions of the University and therefore has the final say before sending a proposal externally. Once approved by the university's Senate, a proposal for a new programme is sent to the Department of Higher Education and Training (DHET) to request that it be added to the university's Programme Qualification Mix (PQM), consisting of a list of programmes that a university may offer. Once PQM clearance has been approved by the DHET, the programme documentation is uploaded to the CHE's online system and submitted for accreditation by the Higher Education Quality Committee (HEQC). Once in the CHE system, the proposal will be sent to a committee for review. After accreditation has been granted by the CHE, the new programme is sent to the South African Qualifications Authority (SAQA) for registration.

2. Curriculum Development

The section looks at the process of curriculum development in the higher education sector. It focuses of who designs the curriculum, what curricula looks like, how quality is assured and the funding mechanisms which are in place for development and quality assurance.

2.1. Curriculum developers

The academics within Higher Education Institutions decide on how curricula are designed. These are usually academics with expert knowledge in their field of study who would understand the requirements for a specified area of specialization. The curriculum development process is sometimes undertaken in consultation with stakeholders from the field to ensure the latest trends or knowledge is incorporated into the curriculum. It is ultimately the responsibility of the academics to ensure that all processes are followed and that all criteria for qualification development are met.

2.2. Curriculum Composition

The curriculum may take various formats, this is usually decided upon by the Higher Education Institution. A curriculum could be a combination of compulsory and elective formal knowledge subjects typically classroom-based; or a combination of formal knowledge subjects + practical work + work experience; mainly practice-based modules; or the form of a spiralled curriculum. This is usually informed by the academics' understanding of the field, they may make use of advisory boards. It could also be prescribed by professional bodies, in terms of what they recommend as compulsory knowledge for a qualification.

2.3. Quality assurance of curriculum development

Quality assurance of the curriculum is mainly undertaken by the academic staff within the internal process. This process often coincides with a discussion between Schools and the professional bodies, advice is given by councils on the quality of the curriculum. The curriculum is assessed at various levels within the university, this would include the School/Faculty, a university quality assurance office, teaching and learning committees, Faculty boards, the university quality assurance committee and senate. The criteria used for the quality assurance of the curriculum focuses on e.g., coherence; possibilities for progression; occupational relevance. The CHE is responsible to check that the institution has the checks in place for quality assurance for everything they do, to ensure that it is credible, authentic, built on philosophy etc.

2.4. Funding

Curriculum development processes are mostly funded by universities from internal Departmental/School/ Faculty budgets. This means that developing a qualification is merely added to the academic workload. There may be cases where industry partnerships are made in connection with a particular curriculum and which a particular company/individual donor would fund. In this case, the industry partners would be involved in the development of the curriculum.

3. Assessment of Qualifications

The section looks at the assessment of qualifications in higher education, and describes assessment types, moderation and quality assurance, and how assessment is funded at higher education institutions.

3.1. Forms of assessment

Learning assessment depends on the kind of program that is offered by the institution. Assessment can take the form of Continuous internal assessment, external assessment, practical work, work-integrated learning, project work, summative assessment, exams and various combinations. Higher institutions have academic planning committees that look at the teaching and learning strategy and the method of assessment and the way the assessments get moderated. What goes into the application when a qualification is developed is the intended learning outcomes for a module and these are then linked to the intended learning outcomes that are set on the assessment criteria.

3.2. Moderation and quality assurance

When it comes to assessments, CHE uses peer evaluation by the Senior Peer Academics in the same discipline to quality assure assessments. The assessments are quality assured based on the criteria given by CHE. In the final years of learning, the assessments need to be integrated pulling together from all the different principles that students have learnt throughout the years.

3.3. Funding

With regards to funding, some universities such as the University of Cape Town has university capacity development grants that help fund assessments.

4. SAQA

The section looks at the role of the South African Qualifications Authority and the relationship it has with the CHE in terms of the quality assurance of qualifications. It provides an explanation of the monitoring and reporting processes and how information is disseminated.

4.1. SAQA's quality assurance role

SAQA is a key stakeholder both for public and private universities. Qualifications cannot be credited without SAQA's approval. After a qualification has gone through the decision-making body CHE and HEQC, the qualification is submitted to SAQA for the registration ID number so that the qualification can be approved. The SAQA ID enables the learner to be recorded on the NLRD (National Learner Record's Database). The learner record cannot then be loaded to the National Learner Record Database if they do not have a SAQA ID, because the NLRD is the official place where verification is done, where they check the legitimacy of your qualifications, SAQA can be contacted to get the information of a learner's qualification on the database.

4.2. SAQA's monitoring and reporting role

SAQA is responsible for the development of policy and criteria for registering qualifications onto the NQF on the recommendation of CHE. SAQA has a board for registration and works with professional bodies that check the qualification against their criteria and level descriptors before a registration ID is issued. The registration board checks if the qualification complies with the SAQA criteria. SAQA then does follow-ups to ensure that the institution is complying.

SAQA also has a DIR which stands for Directory for International Relations and every application has to explain how it is internationally comparable with qualifications offered outside of South Africa. SAQA checks that and returns the application to CHE if for example if there are certain things an institution has not complied with the international comparability. With regards to qualifications that are expiring, SAQA only registers qualifications that are recommended by CHE.

4.3. SAQA's information dissemination role

Once a qualification has been granted an ID number, the qualification is approved by DHET and a permission letter or certificate is issued so that institutions so can start advertising and recruiting learners to the program.

The National Learners' Records Database (NLRD) is a highly specialized and multifaceted database that SAQA is using to meet the needs of various users. The NLRD contains records of nearly 11 million learners with details of their achievements. The NLRD also contains information on quality

assurance bodies, their accredited providers, assessors, and moderating bodies. SAQA has been working with the Council on Higher Education to gather the information that relates to private higher education institutions in higher education so that this data can also be uploaded to the NLRD

5. Prior Models

The old HEQSF framework was compliance-driven and a conveyor system. CHE has established a panel that has been tasked with the review of the HEQSF over the next 2 years. Currently, the time frame of approving a qualification takes about 18-24 months. One of the changes proposed in the review is moving towards is a simplification process and CHE is working in collaboration with their stakeholders SAQA and the DHET to simplify the process and the turnaround time to be between 6-8 months or the latest a year. The new framework is focused on giving institutions autonomy and the institutions being responsible for their quality assurance.

The new framework proposes to develop system development and training with institutions to get them ready and ensure the success of the new framework. The success of the new framework also depends on how well institutions internal quality assurance systems are. The new framework focuses on building both sized the external quality assurance from outside and then plans to introduce progressively small steps that will lead to a successful implementation in 2024. The new framework proposes a differentiated model with incentives and shifting from a programme to qualification and accreditation. There is one application form that is going to be used for both SAQA and CHE so there is no need to get an application form from CHE and SAQA.

6. Challenges

6.1. Issues reported

There are several challenges linked to the internal university processes, these include e.g., that the number of forms to be completed is quite high and that they are not aligned to the CHE forms. The QAPO have long delays due to staffing, and often there is a backlog of applications at this stage. Another concern is that the comments made to a proposal by the QAPO are superficial and address technical aspects such as grammar. This indicates that the academic staff may not be getting the feedback that will assist them with improving qualification

development. Deadlines for university committee meetings are usually tight and are scheduled across the year, and chances are great that a proposal could miss a due date and then have to wait months before consideration.

The fact that qualifications may have been approved with a designator and no area of specialisation, means that Universities often choose to do minor academic changes to existing qualifications. This is done because they do not want to go through the long external process of adding a specialisation. The problem with this is that when students receive their certificate/degree they receive it saying e.g., Master of Business Science, but they desire the specialisation to be clearly stated on it e.g., Master of Business Science in Digital marketing. The shift toward more specialised types of work has led to a proliferation of applications for specialised degrees. Typically, academics look at the 'what' of the curriculum and have a limited understanding of the broader concepts around curriculum development. The concerns are that academics do not recognise the critical aspects required for learning e.g., learning outcomes, assessment, pedagogy, constructive alignment.

There are several challenges with external processes that are a concern as it leads to many delays. The HEQC online system is completed at the school level and there are lots of standard information that must be completed online e.g., the university's standing orders on assessment or higher degrees. Once the proposal is at the CHE there are often very long delays and comment on a proposal can take 12 months or longer before a CHE committee sits to review it. The reason provided for this is that the CHE is inundated with applications because of the mushrooming of the private sector to provide higher degrees. This is exacerbated because the CHE is woefully under capacitated. The other concern within the CHE is that the committees only meet six times a year and this leads to massive backlogs of qualification proposals waiting to be reviewed.

Some of the challenges mentioned by CHE is that institutions that are privates are very lucrative in higher education programmes and CHE, therefore, gets various problems. There are fly-by-night institutions that do not offer accredited registered programs that are operating, there are consultants that are making an income from trying to develop a programme and send it in for submission. There's also fraud that CHE has picked up in some case where people have tried to fraudulently change an outcome of qualifications and receive accreditation.

Another challenge raised is working with the different professional bodies, some professional bodies in their legislation do not have anything about approval and accreditation of qualifications they do not look at the program or visit the institution. So, it is difficult to offer or accredit programmes such as nursing in universities because they require approval and endorsement from the South African Nursing Council, and sometimes the SANC does not provide the approval or endorsement.

Some institutions mentioned that the fact that CHE has its criteria and SAQA has its criteria that institutions should meet when developing qualifications. It was a challenge for most institutions to work with these different systems because it just prolonged the qualification approval timeframes.

The lack of non-formal programmes was also raised as a challenge.

6.2. Recommendations for improvement offered

If timelines are shorter, academics would have a better idea of the curriculum content and will be better placed to make decisions about assessment and pedagogical aspects of implementing the programme.

One suggestion for the internal review process is that there should either be a full set of related information submitted to accompany every proposal or the CHE must be given an updated set of these requirements so that it does not have to be completed with each application. The internal processes within universities need to be strengthened, and academics must develop a deeper comprehension of concepts around curriculum development.

After accreditation and a course are implemented, there is no periodic review of a programme to assess whether all the design elements which were stated in the qualification proposal is being met. The onus is on

universities to review programmes and to ensure that academics are developed to understand the concepts around curriculum planning, development, and implementation.

Doing site visits was suggested as one of the solutions to prevent fly-by-night institutions from providing an unaccredited programme. There must be a provision for non-formal programs within the new framework.

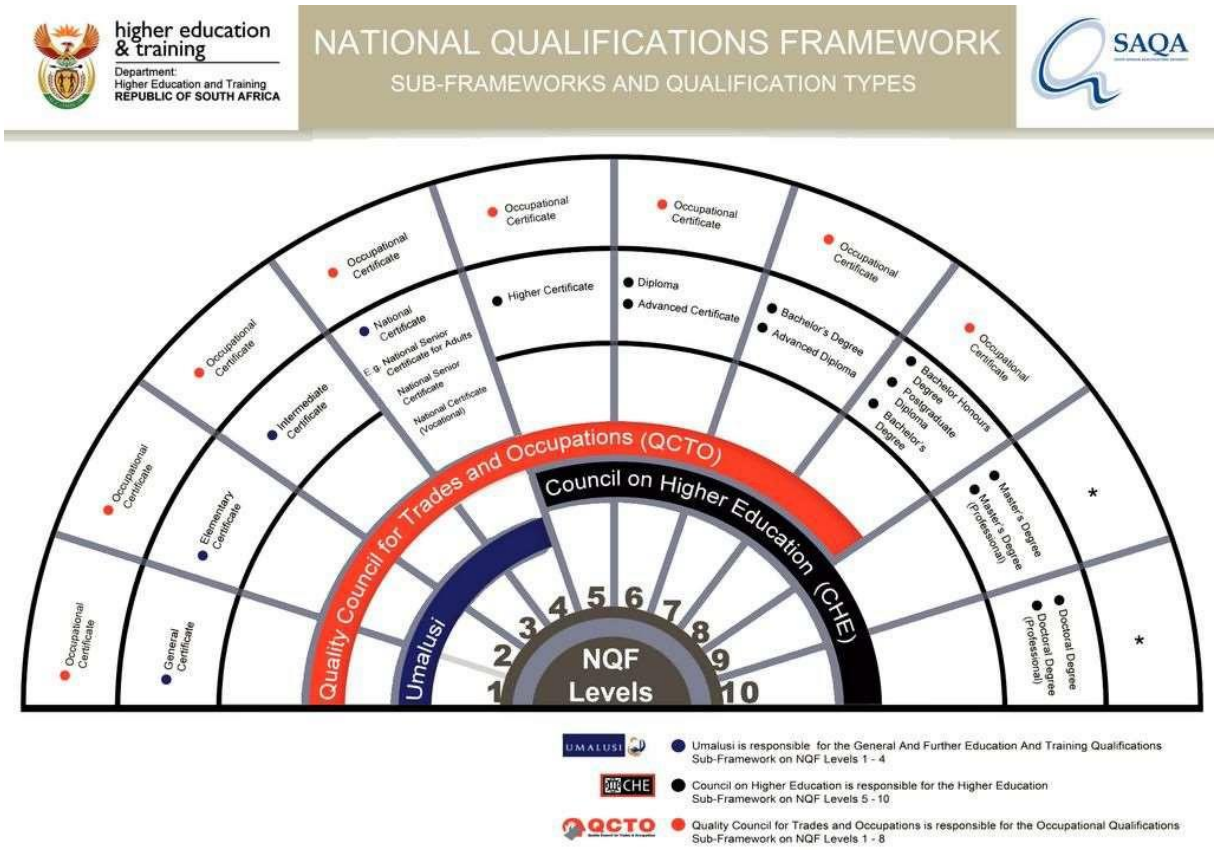


Figure 3: NQF Qualifications framework

Section 3: Qualifications Development and Quality Assurance in the OQSF

Quality Council for Trades and Occupations (QCTO)

Introduction

This report asks a series of questions to investigate qualifications development and quality assurance in the Occupational Qualifications Sub-Framework (OQSF).

1. Qualifications

How are qualifications designed, developed and quality assured on Occupational Qualifications Sub-Framework (OQSF)?

1.1. Types of qualifications

The Occupational Qualification Sub-Framework Policy document defines a qualification as:

"A registered national qualification consisting of a planned combination of learning outcomes which has a defined purpose or purposes, intended to provide qualifying learners with applied competence and a basis for further learning and which has been assessed in terms of exit level outcomes, registered on the NQF and certified and awarded by a recognised body".

The policy document further defines an *occupational qualification* as:

'The formal recognition and certification of learning achievement awarded by an accredited skills development provider".

The Quality Council for Trades and Occupations (QCTO) is responsible for different types of qualifications and historically registered qualifications, as shown below.

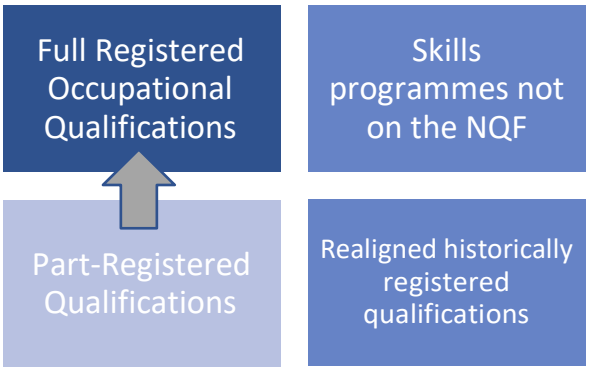


Figure 1: Types of qualifications under the jurisdiction of the QCTO

The types are:

- Full Occupational Qualifications that consist of a minimum of 120 credits, registered on the National Qualifications Framework (NQF)
- Part-Qualifications that consist of less than 120 credits, registered on the NQF

  A part-qualification means an assessed unit of learning that is registered as part of a full qualification. For example, a part-qualification can be a module or a unit standard, etc.
- Skills Programmes that are not provided for on the NQF and currently do not carry credits recognised by the NQF. A Skills Programme may be registered as a part –qualification on the NQF if it satisfies the requirements of the South African Qualifications Framework (SAQA).

The QCTO is also responsible for four kinds of historically registered pre-2009 qualifications on the Occupational Qualifications Sub-Framework (OQSF) and has begun a process to fast-track the realignment of these qualifications into occupational qualifications. The legacy qualification types are:

- Unit standard-based qualifications
- Non unit standard-based qualifications that are outcomes based
- Provider-based qualifications linked to specific providers
- National Certificate (N4-N6) and National Diploma offered by the Technical and Vocational Education and Training colleges (TVETs) and private colleges

The following information is relevant to the composition of qualifications:

- 60% or 72 of the total credits of the qualification must be at or above the level of the qualification for any qualification with a total credit value of less than and up to 120 credits. For a qualification with a credit value of more than 120 credits, a minimum of 72 credits must be at or above the level of the qualification.
- 40% of the credits of the qualification can be less than the level of the qualification
- The exit level outcomes of a qualification point to the level of a qualification
- By 2023, unit standards will be replaced with modules although the unit standard model will still be in use
- The Foundational Learning Competence (FLC) is a part qualification registered at NQF Level 2 and is a minimum level of competence in the context of occupational qualifications, in Communication and Mathematical Literacy as needed for successful progression in occupational training at NQF Level 3 and NQF Level 4.
- 55% of occupational qualifications need a time frame of more than a year to be developed while 45% of qualifications are developed within a year.

The OQSF extends from NQF levels 1-8 although the demand for occupational qualifications is greatest at NQF levels 1-6. The *Revised Occupational Qualification Skills Framework Policy* of 2020 makes provision for the following types of qualifications:

- General Occupational Certificate: Level 1
- Elementary Occupational Certificate: Level 2
- Intermediate Occupational Certificate: Level 3
- National Occupational Certificate: Level 4
- Higher Occupational Certificate: Level 5
- Occupational Diploma: Level 6
- Advanced Occupational Diploma: Level 7
- Specialised Occupational Diploma: Level 8

1.2. Qualification initiation

The QCTO is neither the initiator nor the developer of the majority of occupational qualifications, although it may suggest that certain qualifications are required. The QCTO follows a demand-led type of model for qualification development and waits to be approached by external role-players with identified needs.

The collection of information on occupations is one of the mandates of all SETAs and this information informs SETA skills planning as well as the development of Sector Skills Plans. The Sector Skills Plans are the platform or base for most South African occupational qualifications as these Skills Plans identify the need for the development of specific qualifications as well as new qualifications. Examples of areas of need are:

- Unique needs of SETA stakeholders in terms of skills required, and the development of stakeholder-specific qualifications
- An expected growth in demand at times within certain sub-sectors of a SETA, leading to the requirement for ensuring the sufficient provision of qualifications
- A regular review and assessment of the curriculum content of registered SETA qualifications and recommendations for further development of occupational qualifications
- Conversion of legacy qualifications to occupational qualifications
- The confirmation and verification of OFO codes for specific occupations within SETA sectors.

The identification of the need for a qualification is not yet a refined process and concerns have been expressed about the Sector Skills Plans and issues which arise out of these plans.

As soon as the need for the development of an occupational qualification has been identified, this need has to be linked to a code from the Organizing Framework for Occupations (OFO) and an application form has to be completed.

The QCTO uses the OFO as a central feature of qualifications development in the following ways: as a primary document for an application by prospective qualifications developers and as an assurance that a proposed qualification has labour market relevance.

When the QCTO is assured that the application is in order, it approves or rejects the qualification application. Should the application be approved, it leads to the preparation and signing of a Service Level Agreement (SLA) between the QCTO and the Development Quality Partner (DQP).

1.3. Qualification approval

The application may be confirmed to proceed with development if the outcome of the application justifies the decision.

The application may be rejected if:

- Changes need to be made to the scope results in a different occupation code
- There is no agreement on a way forward
- There is an overlap of occupation and specialisation with a previously approved application

1.4. Qualification proliferation

There are currently 2 028 occupational qualifications registered on the NQF. Proliferation of OQSF qualifications is attributed to a variety of factors which include the use of the Organising Framework for Occupations (OFO); confusion between full and part qualifications; the large number of historical qualifications and different interpretations of qualifications and learning programmes.

- *OFO*: The OFO has about 2500 6-digit Occupations and the use of the OFO is deemed to promote proliferation specifically because of the 'one code one qualification' convention. Qualification developers scan the OFO for codes that do not have qualifications and set about developing these in the absence of any real need for such qualifications
- *Full and part qualifications*: Both are registered as qualifications from NQF Level 1 to 8, although a part-qualification is an assessed unit of learning that should be registered as part of a full qualification There is no distinction between the registration of full occupational qualifications with less than 120 credits and part-qualifications with also less than 120 credits. Part-registered qualifications consist of less than 120 credits each, yet some registered part-qualifications have more than 120 credits.
- *Historical qualifications:* According to *the Concept Paper on the Registration of Qualifications on the National Qualifications Framework* of 21 May 2020 a total of 1 597 registered pre-2009 historical qualifications were allocated to the OQSF in 2011. Many of these qualifications have not yet been realigned as occupational qualifications or deregistered.
- *Qualification and learning programmes*: Different interpretations of the terms qualification and learning programme have exacerbated the issues of proliferation.

1.5. Key development partners and their roles

The QCTO is mandated to develop, maintain and quality assure the Occupational Qualifications Sub-Framework (OQSF) of the NQF. The QCTO follows a demand-led type of model for qualification development and waits to be approached by external role-players with identified needs. As a quality assurance body, the QCTO needs to keep a distance between assuring and developing qualifications so it is the recipient of requests from interested parties rather than the initiator or direct developer of occupational qualifications. The QCTO oversees the development process from inception to approval by receiving and processing the application as well as appointing the development and the assessment partners. At the completion of the development process the QCTO receives the final submissions for evaluation and presents the completed application to SAQA for registration on the NQF.

The diagram below reflects the QCTO and its key partners in the qualifications development process.

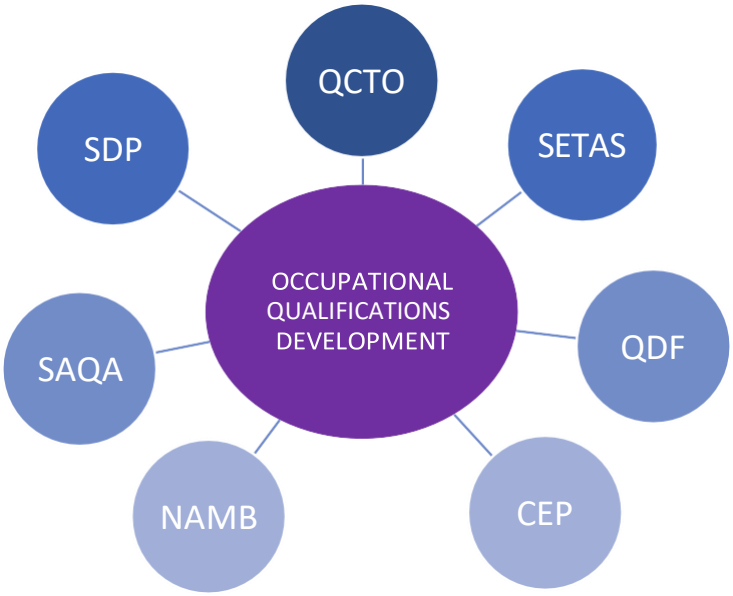


Figure 2: Key partners in occupational qualifications development

Sector Education and Training Associations (SETAS)

SETAS make the development of occupational qualifications possible. Their valuable role includes the following:

- Funding and managing the development process by signing a Service Level Agreement (SLA) with the QCTO. SETAS are responsible for the development of roughly 80% of all occupational qualifications while professional bodies contribute around 20% through individual requests.
- Collecting information on occupations to inform Sector Skills Plans. Sector Skills Plans are the platform or base for most of South African occupational qualifications as these skills plans identify the need for the development of specific qualifications as well as new qualifications.
- Developing the qualification as the Development Quality Partner (DQP) appointed by the QCTO.
- The DQP has multiple responsibilities such as managing the qualification process through the appointment of a facilitator, the Qualifications Development Facilitator (QDF); providing administrative support to complete the process and identifying and communicating with expert practitioners and stakeholders who provide input; managing the verification process through identifying and consulting on an appropriate Assessment Quality Partner (AQP) and submitting the final input to the QCTO.
- Assessing and verifying the qualification as the Assessment Quality Partner (AQP) appointed by the QCTO. Other appropriate bodies can also fulfil the delegated functions of the AQP such as moderating, examining, professional bodies, occupational associations and legislated boards. If the DQP is also the recommended AQP it needs to provide proof of consultation with other stakeholders about this appointment.

  The AQP defines internal assessment criteria and weight for each knowledge topic and practical skill and coordinates and manages external assessment. It recommends accreditation of assessment centres and providers for knowledge and practical components to the QCTO and verifies SETA workplace approval systems for work experience.

The Qualification Development Facilitator (QDF)

The QDF is the procedural facilitator for the qualification development process and is responsible for the actual development of the qualification from inception to submission of the final documents. The QDF is appointed and funded by the development partner and can be a member of staff of a SETA or work regularly with a specific SETA because of experience in the sector.

The QCTO has a list of approved QDFs that may be appointed to facilitate the process of developing a qualification. These QDFs were actively involved when the QDF Manual was put together and interacted with the model as it is seen today. They are a closed shop and there is no easy way to become a member of this ingroup except through becoming a learner QDF. Learner QDFs used to receive a stipend from the National Skills Fund (NSF), but they no longer do so and presently must sustain themselves. Developing a qualification is time consuming work and because few learner QDFs can finance themselves and they are unsure at which point they will be found competent, the pool of QDFs is decreasing and few new additions join the ranks.

The Community of Experts (CEP*)*

The CEP is made up of:

- SETAS with a link to employers and workplaces
- employer and employee organisations such as Business Unity South Africa (BUSA)
- industry bodies like Agriseta representing the Agricultural Sector
- professional bodies such as a representative from the Pharmacy Council representing a statutory body and a member of the Estate Agency Body representing a non-statutory body
- public and private skills development providers
- expert practitioners who are competent in doing the work such as a pharmacy technician or a qualified electrician from each sector that previously trained electricians to ensure that the new qualification makes provision for all sectors
- expert assessors of the appointed Assessment Quality Partner (AQP)
- educationalists,

The CEP is involved with the curriculum and assessment specifications in both development and verification processes and help to shift the developing qualification from an occupation to a qualification with a curriculum and assessment specifications. They do this in smaller working groups facilitated by the QDF.

The National Artisan Moderation Body (NAMB)

The NAMB falls within the Skills Branch of the Department of Higher Education (DHET) and is not a public or a state-owned entity. Section 26A (2) of the Skills Development Act requires the NAMB to recommend the certification of artisans to the QCTO amongst other duties. All trade qualifications must be verified and assessed by this body. The NAMB is also the Assessment Quality Partner (AQP) for trade qualifications.

Researchers were unfortunately unable to make contact with representatives from this body as a result of a time factor.

The South African Qualifications Authority (SAQA)

SAQA is the oversight body of the NQF and the custodian of its values and quality character. Amongst other duties it oversees NQF implementation, collaborates with the Quality Councils and registers qualifications and part-qualifications on the NQF.

Every occupational qualification needs to comply with the requirements of the NQF and meet its policy and criteria to be approved and registered on the NQF.

Skills Development Providers (SDP)

Any Skills Development Provider (SDP) offering training or who wants to provide training in trades or occupational and/or part-qualifications must seek accreditation from the QCTO and must comply with the minimum criteria for accreditation. The accreditation is valid for a period of five years from the date in which the QCTO granted accreditation to the SDP or until the SDP is de-accredited by the QCTO.

Accreditation of the SDP may be withdrawn by the QCTO if the SDP fails to perform its responsibilities as stipulated in the QCTO Accreditation Policy, and/or contravenes the provisions stipulated in the accreditation letter or act in a way that is unlawful or unbecoming of an SDP.

The accreditation process comprises of two parts namely: institutional compliance through a desktop evaluation of documents submitted by the SDP and programme delivery readiness through a site evaluation of the SDP's premises by a QCTO Verifier.

1.6. Time frames

The QCTO reports that 55% of occupational qualifications need a time frame of more than a year to be developed while 45% of qualifications are developed within a year.

1.7. Funding

Developing a qualification is a costly exercise and as SETAs are levy-raising bodies, they are deemed to be in a better financial position to pay for the development process of an occupational qualification than any professional body. Information suggests that the development of a qualification lies anywhere between R100 000 to R400 000.

1.8. Quality Assurance

Quality assurance of the occupational qualifications process is one of the mains tasks of the QCTO. It takes place in three stages as described below.

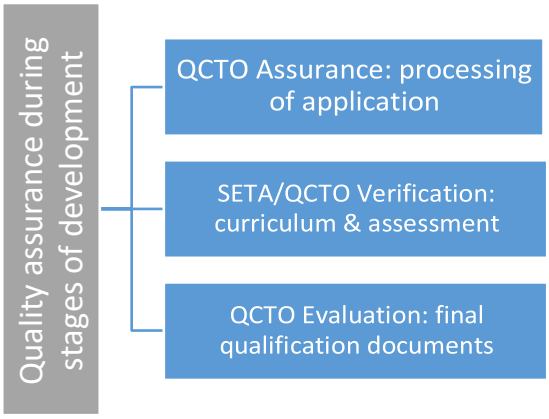


Figure 3: Quality assurance during stages of occupational qualifications development

An occupational qualification is quality assured during three stages of the development process: firstly, submission and processing of the development application; secondly, curriculum development and assessment and thirdly evaluation of the final qualification documents.

The evaluation of the first and third stages is done by the QCTO while the second stage, the verification of the curriculum and assessment is done by a SETA and the QCTO.

QCTO: Assurance during processing of application

Once an application has been submitted, Deputy Directors of the Occupational Qualifications Design Department of the QCTO spend time to assure that the application is in order in the following ways:

- the application for the OFO code has not been covered by a previous qualification
- proof is produced that labour market empirical demand exists
- international research has been done to add value by aligning South African standards with those of international counterparts.

A scoping meeting is held to provide the QCTO with evidence that the rationale and scope of the application are supported and that there is a commitment from enough stakeholders to justify the development of the qualification. The outcome of the scoping meeting leads to the approval or rejection of the qualification application.

SETA/QCTO: Verification of curriculum development & assessment

Two processes of verification take place:

- the first process is to verify the initial development of the curriculum as well as the assessment specifications
- the second process is to verify readiness for delivery of the curriculum as a learning programme

The first verification process is mostly managed by the SETA, who often plays the role of both the Quality Development Partner as well as the Assessment Quality Partner, and the second process is managed by the QCTO.

The first process of verification takes place after the development of the first document, the occupational profile, and after the development of two further documents, the curriculum specifications and the assessment specifications.

The responsible parties and their functions:

- The SETA/DQP/AQP is responsible for the management of this process of verification and distributes documents to working group members, invites comments, collects and collates feedback received and arranges a working group meeting to consider comments. The SETA/DQP/AQP is also responsible for the development of both the progress and process reports which appear after each verification in a format prescribed by the QCTO but with input from the QDF and the CEP.
- The QDF facilitates the CEP working group meetings to consider the inputs received, makes the agreed changes to the documents and prepares a report on how the comments were dealt with. The QDF provides feedback to the DQP on problems experienced and gives a description and motivation for any changes that need to be made.
- The QCTO receives both the progress and process reports with information on stakeholder participation and responses as well as any additional information.

The second process of verification takes place when a skills development provider has prepared the curriculum as a learning programme which is a structured and purposeful set of learning experiences that leads to an occupational qualification.

Each skills development provider undergoes an accreditation process which comprises of two parts namely: institutional compliance and programme delivery readiness. The QCTO evaluates the completed application and verifies the authenticity of the supporting documents. If the desktop evaluation is successful, a QCTO verifier conducts a site visit on a specific date agreed upon between the QCTO and the prospective SDP to determine programme delivery readiness. The application for accreditation will either be approved or declined.

QCTO: Evaluation of final qualification documents

The curriculum, assessment specifications, qualification and process report are signed by the DQP and delivered to the QCTO who is responsible for the evaluation of the submissions.

2. Curriculum Development

What curriculum development logic operates in the NQF sub-framework for Trades and Occupations?

2.1. The logic of curriculum

Curriculum tends to be 'an ill-defined area of intellectual enquiry' (Hamilton, 1976, 75). It is therefore necessary to provide a brief explanation of how the term is used in this report.

2.1.1 At the broadest level curriculum is mostly understood as referring to a set of educational alternatives/choices about the 'what' 'where' and 'how' of teaching and learning. In formal educational terms these choices are expressed as a set of ***rules*** about (1) content *selection* (2) *sequence* – what comes first and what comes second etc. (3) *pace* - time allocated to teaching - learning and (4) *evaluative criteria* - assessment, levels of cognitive challenge encoded in assessment tasks and test items, language demands etc. (Bernstein, 2000, 12 – 13). These rules express the internal structure of a curriculum.

2.1.2 Curriculum decisions made in terms of selection, sequence, pace and evaluative criteria are determined by the ***context*** from which the curriculum logic is drawn (or recontextualised). Curriculum logic may be drawn directly from the world of work; it may be drawn from formal knowledge disciplines; it may employ both these logics in different combinations (Moore, 2013; Gamble, 2013). If the logic is drawn from the everyday life world of learners, then content and assessment criteria will relate to the worlds of everyday living.

2.1.3 The rules of curriculum apply to curriculum at ***three levels***:

- *Intended* curriculum or *curriculum as plan*
- *Implemented curriculum* is sometimes called *enacted* curriculum
- *Assessed* curriculum is sometimes called *attained* curriculum

(See for instance, Howie and Hughes, 1998; Billett, 2006 for discussions about different levels of curriculum).

2.2. Curriculum development in occupational qualifications

In South African technical and vocational education and training (TVET), the term first became formally used in technical and FET colleges and particularly when the three-year, full-time National Certificate (Vocational) [NC(V)] at NQF levels 2-4 was introduced in 2007, as a significant move towards higher-level conceptual

knowledge linked to practical application in a college environment. Lecturers from a number of colleges were drawn into the national programme development process, which drew on unit standards in the design process. Industry experts were also involved more closely than in the past. Like the NATED programmes, accredited by the Department of Education through National Education Department Report 191 (97/07) and offered by public colleges to support the apprenticeship system, NC(V) programmes are based on central syllabuses and examinations moderated by Umalusi. Assessment, including a practical, externally assessed integrated assessment task (ISAT) - along the lines of nationally-examined trade tests.

Against this background we investigate how curriculum development proceeds for occupational qualifications at the three levels.

2.2.1. The intended curriculum for occupational qualifications

> *Occupational qualifications have only been around for the last five years and it's only now starting to get updated. It is a new type of qualification. It's not a purely academic qualification it's not a purely practical qualification, we are combining all those elements that a person needs to be competent and proficient in the job. You know, so we are hoping that in the workplace you pick up on your soft skills, you pick up on your ethics you pick up on treating people with respect, besides just doing what's in the component. (QCTO respondent)*

The world of work provides the logic for occupational qualifications. This logic gains its legitimacy from the notion of an *occupational profile* related to a coded occupation listed on the Organising Framework for Occupations (OFO). Legitimation is premised on the requirement that *industry experts* specify what the occupational profile should look like, thereby ensuring relevance and responsiveness to industry requirements (Dept of Labour - undated PowerPoint presentation).

In an occupational profile the purpose of an occupation is broken down into occupational tasks and each task is then specified in terms of:

- Products or services to be delivered – *knowledge* required
- Occupational responsibility - *practical skills* required
- Context where tasks will be performed - range of *work experience required.*

The transition from *occupational profile* to *occupational qualification* occurs when the language of what is essentially a job description is rewritten in the language of curriculum. An occupational qualification consists of a compulsory combination of *knowledge modules*, *practical skill modules* and *work experience modules* that relate to the occupational profile.

The intended curriculum is specified in detail in three documents. which are ultimately registered on the National Qualifications Framework (NQF) as a full or part-qualification:

- A *qualification document* under the SAQA logo and registered on the NQF, sets out, *inter alia*, the curriculum structure that will lead to the achievement of stated exit level outcomes and their associated texts assessment criteria.

- A *curriculum document* under the QCTO logo and issued under the auspices of the Development Quality Partner (DQP), includes the occupational profile and the curriculum structure in terms of knowledge, practical and work experience modules. This is the document used by skills development providers to develop learning materials and internal assessment tasks.

- An *assessment specifications document* under the QCTO logo and issued under the auspices of the Assessment Quality Partner (AQP), returns to the exit level outcomes, which are now named 'integrated assessment focus areas' and specifies their associated assessment criteria. This document is used by assessment quality partners (AQPs) to develop external integrated summative assessments (EISAs)

A Qualifications Development Facilitator (QDF) is appointed by the development quality partner and works with invited industry experts on a Community of Practice (CEP) to produce the three documents that make up an occupational qualification. QDFs interviewed reported that their expertise in qualifications development mostly derives from their experience as SAQA consultants under the previous National Standards Body (NSB/Standards Generating Body (SGB) dispensation. They are therefore familiar with the way in which qualifications, based on exit level outcomes and criteria, are set out.

2.2.2. The *implemented curriculum* for occupational qualifications

In QCTO terms, the implemented curriculum is called *a learning programme* and it is at this level that the *rules of selection, sequence, pace and evaluative criteria* come into play a second time. This time the expertise to make such decisions resides in a *skills development provider* as an independent contractor that applies to QCTO for accreditation to offer an NQF-registered occupational qualification. Should the provider wish to offer what is now called a legacy qualification, based on unit standards, then a letter of intent is directed to the QCTO and, if there is no occupational qualification registered in this area, the provider is directed to the relevant SETA for accreditation against a legacy qualification.

Apart from meeting financial, human resource and physical resource requirements, the provider must also submit a Learning Matrix, which details how the content to be offered in the different modules will be covered (Form 2). Providers also have to indicate, *inter alia*, how internal formative assessment will be conducted, moderated and verified.

A satisfactory desk audit and site visit is required for formal accreditation. Skills development providers then refer to the detailed curriculum component specifications in the Curriculum document to develop actual curricula, in terms of making decisions about the content to be included, how modules will be grouped together to ensure curriculum flow, what types of assessment will be used, etcetera. In the language of the QCTO, these activities are usually referred to as learning programme development and/or materials development but they are the activities of curriculum enactment or implementation.

2.2.3. Distinctive features of the occupational curriculum

In the final section on curriculum, we draw attention to some of the definitive features of the occupational curriculum, which serve to establish its distinctive position in the broader array of qualifications registered on the South African NQF. At the same time, these features serve to distinguish the occupational curriculum from curriculum prescriptions for qualifications offered in the other two sub- frameworks.

Marked features are that:

- The occupational curriculum focuses exclusively on work practices and procedures, stipulated as topics or tasks and linked to detailed sets of criteria of what would count as competent occupational performance. The curriculum has little if any requirement for broader forms of contextual knowledge other than knowledge which underpins immediate task performance. The emphasis is exclusively on setting a national standard for performed competence in the world of work.

- Each module has a credit allocation in terms of notional hours (one credit equals 10 notional hours). Topics under Knowledge modules are also given percentage weightings in terms of the overall module. However, this information does not establish a basis for evaluating curriculum in terms of coverage, the relation between breadth and depth of content, recommended sequencing of modules within a category, curriculum progression in the same occupation *across* levels of the NQF.

- Although assessment criteria are explicitly set out repeatedly across the three documents, there is no indication of expected question or task difficulty in terms of either content, concepts, difficulties that candidates may face regarding the linguistic features of 'texts and tasks', the type of assessment responses expected from candidates, the extent to which candidates are expected to be fluent in the specialised vocabulary of the occupation etc.

What we find instead is that:

- Credits at a particular NQF level and the number of credits allocated to a module are deemed to represent the relevant level of learning to be achieved at that level in terms of the ten competences detailed in each NQF level descriptor.

Closer scrutiny of the level descriptors (SAQA, 2012) show, however, that in the knowledge descriptor, for instance, there is minimal difference in how knowledge is described:

NQF Level Four

a. Scope of knowledge, in respect of which a learner is able to demonstrate a *fundamental knowledge base of the most important areas of one or more fields or disciplines,* in addition to the fundamental areas of study, and a *fundamental understanding* of the key terms, rules, concepts, established principles and theories in one or more fields or disciplines.

NQF Level Five

a. Scope of knowledge, in respect of which a learner is able to demonstrate *an informed understanding of the core areas of one or more fields, disciplines or practices*, and an *informed understanding* of the key terms, concepts, facts, general principles, rules and theories of that field, discipline or practice. (SAQA, 2012, 7, 8; emphasis added)

The example from the hospitality sector presented in Annexure A serves as a heuristic device to indicate the type of comment and questions encountered more generally in interviews with different stakeholders. In the three qualifications compared, the curricular specifications for knowledge and practical modules and their associated assessment criteria are remarkably similar. The difference lies in the number of credits allocated to each qualification. The occupational qualification of COOK registered at **NQF level 4** on the OQSF has a credit allocation of 184 credits; the occupational qualification of CHEF registered at **NQF level 4** on the OQSF has a credit allocation of 380 credits; the occupational qualification of CHEF, registered at **NQF level 5** of the OQSF has a credit allocation of 554 credits. Such credit allocations seem arbitrary in comparison to standardised credit allocations prescribed on the HEQSF. A comparator would be the qualification type 'Diploma' at **NQF level 6** on the HEQSF, described as having a vocational orientation, which has a credit allocation of 240 credits (2 years full-time study) or 360 credit (3 years full-time study) (CHE, 2013, 29). In the HEQSF it is not only the NQF level but also the number of credits which stipulate a standard.

Even taking into account the 'loading' of credits in the work experience component of the occupational curriculum, it appears as if credit allocation, as operationalised on the OQSF, contradicts the principle of horizontal and vertical progression. Every qualification seems an occupational end-point. Why would a learner complete a level 4 qualification as a COOK and then proceed to a level 4 or even a level 5 qualification for CHEF when the qualification components for all three qualifications are stipulated in almost exactly the same terms? The explanation given was that it is a learner's prior qualifications which determines which of the three qualifications s/he embarks upon. An additional explanation was that it depends on how much time a learner and/or employer is willing to spend on obtaining a qualification.

Part- qualifications 'tucked in' under full qualifications also seem not to be clearly understood. Following through on the qualification comparison which we used as a guide to understand the logic behind multiple qualifications of a similar scope and nature, we were told, for instance, that the part-qualifications of KITCHENHAND (OQSF level 3) and FOOD HANDLER (OQSF level 2) which resort under COOK at OQSF level 4 are considered 'insulting' in the hospitality industry as they bear no relation to the core work of a Cook. Such a combination of part- and whole qualifications is viewed as 'bureaucratic housekeeping' rather than representing occupational relationships in industry or being viewed as planned progression across NQF levels.

3. Assessment

How is a national qualification standard ensured?

> *Right. Let me explain it to you. If you are studying Chef, you would have in the course of your training covered all the knowledge modules all the practical modules, you would done your workplace experience and you would have that signed off. You would have been assessed on all those assessment criteria stipulated in that document. And that we call the formative process. It is also summative in the sense that the module must be tested. And the result goes into the system. And once a learner has completed all the modules successfully in training, and has been declared competent in all those modules, the system produces a statement of results. Now, that statement of results, gives you entrance to the EISA - the External Integrated Summative Assessment - external meaning that the providers have got nothing to do with it. It is integrated. (Extract from QCTO interview)*

A key innovation in QCTO system of occupational qualification development has been the introduction of an External Integrated Summative Assessment (EISA) for *all* occupational qualifications. Traditionally, trade qualifications have been linked to an external trade test and professional body qualifications have been linked to a public examination, both forms of assessment granting national credibility. In the NSB/SGB system, the 'portfolio of evidence' was the main vehicle of assessment, with quality assured through internal and external SETA moderation and verification. Despite these measures, it has proven difficult to convince employers and the general public of the national validity of SETA-accredited qualifications. Some sectors have maintained high standards in both skills programmes and unit standard-based qualifications, but challenges have arisen as a result of duplication, fragmentation and lack of articulation in the overall system. In many occupations and jobs there are literally hundreds of qualifications available and none of them can be deemed to be **the** benchmark of a national standard.

Against this background and, in addition to the internal assessment undertaken and moderated internally by skills development providers during the course of a learning program as described in the above interview extract, the QCTO is currently working on developing a national system of external integrated assessment for occupational qualifications. In this system Assessment Quality partners (AQPs) are delegated by the QCTO to develop assessment instruments and manage external integrated summative assessment of specific occupational qualifications. Currently, the National Artisan Moderating Body (NAMB) is the AQP for all trade qualifications, the Independent Examinations Board (IEB) is the AQP for the Foundational Learning Certificate (FLC), the SETAs and in some sectors Professional Bodies are the AQPs for occupational and professional qualifications. A digital assessment item bank is currently being developed with subject matter experts providing expertise as examiners and moderators. The system has had a 'trial run' in various sectors and it is hoped that, in due course, it will be possible to guarantee a national standard in relation to all occupational qualifications.

4. SAQA

What is SAQA's role in relation to qualifications development and quality assurance?

SAQA plays an important role in quality development and quality assurance. Below is a brief description of SAQA's role.

4.1. SAQA's quality assurance role

The South African Qualifications Association (SAQA) is responsible for registering occupational qualifications and part-qualifications on the National Qualification Framework (NQF). According to a proposal to the SAQA Chief Executive Officer (CEO), *The Registration and Extension of Qualifications on the National Qualifications Framework* of 21 May 2020, 2028 occupational qualifications are currently registered on the NQF of which 416 are occupational certificates.

All occupational qualifications and part qualifications must meet national criteria and articulate within as well as across Sub Frameworks. The process of screening and evaluating each QCTO qualification or part qualification against the *Policy and Criteria for the Registration of Qualifications and Part-Qualifications* on the NQF is done by the Registration and Recognition Directorate (DRR).

If the application does not meet the criteria, the DRR returns the application to the QCTO to provide the relevant information. In 2020 119 new occupational qualifications were in the process of being registered and 125 qualifications were returned to the QCTO to address non-compliant findings by SAQA. Most of these qualifications are not aligned to the Revised OQSF Policy and are due to expire in 2023.

Examples of areas of non-compliance by the QCTO include issues surrounding qualifications based on the OFO; exit learning outcomes and modules; entry requirements for full and part-qualifications and the credits of full and part-qualifications

Applications that meet the criteria are scrutinised by the Qualifications & Standards (Q&S) Committee, and qualifications meeting the criteria are recommended to the Board for registration on the NQF. Once Board approval is granted, the qualifications are registered on the NQF.

4.2. SAQA's monitoring and reporting roles

SAQA has bilateral meetings with the Quality Councils in which SAQA discusses the development of qualifications. Meetings between the QCTO and SAQA include problems with Occupational Certificates where it relates mainly to job tasks and not to qualifications across specific occupations. Improvements to the development of qualifications are also discussed and the Registration and Recognition Directorate (DRR) is in the process of developing a guideline document for the development of qualifications and part-qualifications.

4.3. SAQA's marketing role

Marketing is the responsibility of the three Quality Councils. SAQA formally informs the Quality Councils of the registration of qualifications. The QCTO space is complex and the QCTO requested that SAQA informs only the QCTO. They in turn will then inform the Development Quality Partners (DQPs), Assessment Quality Partners (AQPs) and the Quality Assurance Partners(QAPs).

5. Prior Models

What qualification development and assessment models were in place prior to the current system?

Prior models of qualifications development and assessment were put forward in three broad periods that coincide with the training institutions dominant at the time. While the thumbnail sketches offered in this section can by no means do justice to the richness of the views expressed and the remarkable 'institutional memory' which still exists, they attempt to reflect the discursive 'flavour' of each era and the ongoing power struggles around control over training.

The 1970s: Training by large corporations - focus on apprenticeship and management training

In the 1970s, training was governed solely by industry and mostly by large corporations. Labour was considered to be cheap and replaceable, there was no trade union involvement in training matters and the importation of skills was a dominant trend. In local training, the focus was on management training and on apprenticeships.

The 1990s: Industry Training Boards – competence and CBMT foregrounded

The Manpower Training Amendment Act of 1990 devolved responsibility for training from the state to industry and made provision for the establishment of training boards that would be responsible for all training matters in different industry sectors, with a redirection of financial responsibility for training from the state to industry. Through accredited training boards industry sectors now had increased autonomy to make their training as broad or as narrow as they deemed appropriate, although within a strategic framework set by the state.

The legislative requirement that skills training for apprentices and other trainees should change to a competency-based modular training system (CBMT) and generous tax rebates to employers for training done, stimulated training activity at all organisational levels, even though more so at management level than on the shopfloor. In order to be CBMT-compliant, many industry training boards imported training materials developed in the British National Vocational Qualification (NVQ) system. Programmes and materials were also developed locally, often by well-known industry experts with strong reputations. (Some of these programmes are reportedly still well-respected and in use, registered on the NQF in the nomenclature of current times.)

In the late 1980s and early 1990s the COSATU unions took on the issue of lack of recognition of shopfloor expertise and the focus of training moved to artisanal multi-skilling and literacy and numeracy training for all workers (later called adult basic education). The principle of 'competence' as the outcome of training was accepted by both employers and unions and training issues were included in industrial bargaining.

The 2000s: SETAs and unit-standard-based qualifications

The years between the SAQA Act of 1995, the Skills Development Act in 1998, the establishment of SETAs in 2000 and the NQF Review of 2005 is associated with qualifications development linked to National Standards Bodies (NSBs) and Standards Generating Bodies (SGB), established in terms of twelve 'Organising Fields' and their associated 'Sub-fields'. Skills levies ensured that money was available for training via the SETAs. The basic building block of qualification was the 'unit standard' related to Fundamental, Core and Elective qualification categories.

While acknowledging the fragmentation brought about by literally thousands of 'unit standards' being developed and registered on the NQF, respondents remain in favour of the contextual application made possible by elective options. A second acknowledgement refers to 'a fixation on accreditation and assessment rather than on learning' (interview response). The 'cumbersome bureaucracy in terms of separate qualification and provider registration and accreditation' by each of 23(and later 21) SETAs was also a familiar refrain. A further sentiment expressed with regard to the NSB/SGB era was that even though there was a continual contestation around redefining competence and what it meant, in the end was that 'unit standards' expressed the logic of employers.

6. Challenges

What challenges or blockages exist in the current systems of qualification design, development and assessment?

6.1. Issues raised

6.1.1. 'Too many hands on a qualification'

QCTO staff report that the development of a qualifications takes between one and two years, but this is not the experience of any respondent interviewed. For trade qualifications, industry participants judge the development of a qualification from the time the trade is gazetted until an accredited provider is ready to offer the learning program with the necessary Recognition of Prior Learning (RPL) policies in place. The general view is that the full process takes many years because qualification and assessment development and

their respective quality assurance processes move between many 'partners' and levels, with inevitable time delays. All respondents reported on continued procedural duplication and bureaucratic high-handedness which sour partner relations. The need for 'pruning' and stream-lining of practices and procedures is viewed as essential in terms of 'unblocking' the system and building credible occupational qualifications and the industry-wide standards which they endeavour to foster.

6.1.2. The use of the OFO in qualifications development

The Organising Framework for Occupations (OFO) is a classification system for qualifications with a stated intention to count and tabulate the available occupations in the country and the number of people that work in those positions. It was reported repeatedly that there seems to be no link between an enumerating function and the process of qualifications development. Reasons given were that:

- Many occupations on the OFO cannot sensibly be developed into a list of qualifications of general application.
- Occupational qualifications are currently developed based on an OFO six-digit code e.g., 2019 – 111102 Parliamentarian or 2019 111204 Senior Government Official and they are not suitable for qualifications development.
- The use of the OFO code leads to a proliferation of qualifications and does not address the real need for qualifications. Qualification developers scan the OFO for codes that do not have qualifications and set about developing these in the absence of any real need for such qualifications.

6.1.3. Low uptake of occupational qualifications

Low uptake of qualifications is regarded as a huge challenge to the system. The SAQA website shows that many qualifications have no Learning Programmes recorded against them and no providers are currently accredited to offer the qualification. SETA Sector Skills Plans report no or low uptake of qualifications since their registration.

SAQA also reports that qualifications often cannot be registered because of lack of alignment between the whole and part-qualifications. Part-qualifications are recommended with more than 120 credits while full qualifications are recommended with credits less than 120 without providing the rationale for such a recommendation. Different entry requirements for parent qualification and part-qualifications similarly cause systems blockages. Entry requirements for part-qualifications are often lower than the entry requirement for the parent qualification; moreover, the part-qualification does not provide modules to allow the learner to enrol for the parent qualification. An example given was that the parent qualification may require mathematics and communication at NQF level 4, but the part-qualification requires mathematical literacy at NQF level 3. There are no modules in the part-qualification that provide opportunities to obtain mathematics or communication at NQF level 4.

6.2. Recommendations offered

6.2.1. The use of the OFO in qualifications development

There is a suggestion that the OFO should be de-linked from the process of qualification development and that the use of OFO-codes should be made non-mandatory. An Occupational Qualifications Development Framework (OQDF) should be used in its place which is a list of all qualifications that the QCTO has identified as necessary and relevant for inclusion and that has been informed by the principle of an occupation as *a set of jobs whose main tasks and duties are characterised by a high degree of similarity* as defined by the OFO. A limited set of occupational qualifications will then be identified which allows pathways into all jobs that fall within the ambit of this Framework.

6.2.2. Building qualification progression through skills programmes

Respondents repeatedly stated that combinations of unit standards offered as short-term skills programmes fulfil a valuable role in skill development provision. We were shown truly impressive examples, in different SETA contexts, of progression pathways built through a series of skills programmes to lead to one and in some cases even two registered unit standard-based, or what is now called legacy qualifications. It was reported that these kinds of skills development frameworks have been developed over years and depend on cooperation and trust between employers and providers and SETAs.

In a system where uptake is low and where employers plead consistently for shorter 'built for purpose' pathways, the potential offered by such initiatives and the validity and credibility which already exist in these sectors and sub-sectors should be recognised and used as a basis for embracing and developing the full range of qualification and program options under the jurisdiction of the QCTO. This may mean that 'unit standards' have to be retained in the system to some extent, but there is enough synergy between a unit standard-based logic of qualification development and the modular logic of occupational qualifications to enable a credible solution.

References

Bernstein, B. 2000. *Pedagogy, Symbolic Control and Identity*, revised edition. Lanham: Rowman and Littlefield Publishers Inc.

Billett, S. 2006. Constituting the Workplace Curriculum. *Journal of Curriculum Studies* 38 (1), 31-48. DOI: 10.1080/0022027050015378.

Council on Higher Education (CHE). 2013. *The Higher Education Qualifications Sub-Framework*. Pretoria: Council on Higher Education.

Department of Higher Education and Training (DHET). 2013. *White Paper for Post-school Education and Training.* Pretoria: Department of Higher Education and Training.

Department of Higher Education and Training (DHET). 2015. *Guidelines: Organising Framework for Occupations (OFO)*. Pretoria: Department of Higher Education and Training, Republic of South Africa. Accessed 08 February 2016. https://www.mqa.org.za/sites/default/files/OFO%20Guidelines%20-%202015.pdf

Department of Higher Education and Training. 2017. *Guidelines: Organising Framework for Occupations (OFO)* 2017. Accessed 19 February 2021. https://www.samra.co.za/wp-content/uploads/OFO_GUIDELINE_2017-2.pdf

Department of Labour/GTZ. 2009. Quality Council for Trades & Occupations (QCTO). PowerPoint presentation made available by interviewee.

Gamble, J. 2013. Why improved formal teaching and learning are important in technical and vocational education and training (TVET). In UNESCO-UNEVOC e-publication: *Revisiting global trends in TVET - Reflections on theory and practice*. Bonn: UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training. 204 – 237.

Hamilton, D. 1976. *Curriculum Evaluation*. London: Open Books.

Howie, S. J. and Hughes, C. A. 1998. *Mathematics and Science Literacy of Final-Year School Students in South Africa*. Pretoria: Human Sciences Research Council.

Moore, R. 2013. *Basil Bernstein: The Thinker and the Field*. Abingdon: Routledge.

Nyaka, Faith. 2020. South African Qualifications Authority (SAQA) The Registration and Extension of Qualifications on the National Qualifications Framework. Proposal to the CEO made available by the author.

Quality Council for Trades and Occupations (QCTO). 2014. *Occupational Qualifications Development Facilitator Manual*. https://www.fpmseta.org.za/downloads/QDF_Manual.pdf

Quality Council for Trades and Occupations (QCTO). https://www.qcto.org.za/accredited-skills-developent-providers/accreditation-guidelines.html

South Africa. National Qualifications Framework Act, as amended in 2019. Accessed 25 February 2021. Available at https://www.gov.za/documents/national-qualifications-framework-act

South African Qualifications Authority (SAQA). 2012. *Level Descriptors for the South African National Qualifications Framework*. Pretoria: SAQA.

South African Qualifications Authority (SAQA). https://www.saqa.org.za/

Umalusi. 2020. *Policy and Criteria for the Development, Registration and Publication of Qualifications and Part-qualifications for the General and Further Education and Training Qualifications Sub-Framework.* [Draft].

Umalusi Evaluation and Accreditation Unit. Accessed 25 February 2021. https://www.umalusi.org.za/units/evaluation-and-accreditation-unit-ea/

APPENDIX A

COMPARING CHEF AND COOK QUALIFICATIONS			
SAQA QUAL ID	101697	94941	102296
QUALIFICATION TITLE	**Occupational Certificate: Chef**	**Occupational Certificate: Chef**	**Occupational Certificate: Cook**
NQF Level	**05**	**04**	**04**
Credits	**554**	**380**	**184**
DQP	CATHSSETA	CATHSSETA	CATHSSETA
Quality Assurance			QCTO - Quality Council for Trades and Occupations
Registration Status		Passed the End Date - Status was "Reregistered"	
Registration start date	2017-10-26	2015-07-01	2019-09-11
Registration end date	2022-10-26	2017-10-26	2024-09-11
Last date for enrolment	2023-10-26	2018-10-26	2025-09-11
Last date for achievement	2026-10-26	2021-10-26	2028-09-11
PURPOSE OF THE QUALIFICATION	The purpose of this qualification is to prepare a learner to operate as a Chef. A Chef plans, organises and executes the preparation, cooking and finishing (presentation, holding and storing) of food in hotels, restaurants and catering (HORECA) establishments. A qualified learner will be able to: Plan and prepare for the provision of chef services.	The purpose of this qualification is to prepare a learner to operate as a Chef. Plans, organises and executes the preparation, cooking and finishing (presentation, holding and storing) of food in hotels, restaurants and catering (HORECA) establishments. A qualified learner will be able to: Undertake planning and preparation activities for the provision of chef services.	The purpose of this qualification is to prepare a learner to operate as a Cook. A Cook prepares, seasons and cooks food items in hotels, restaurants and catering (HORECA} establishments. A qualified learner will be able to: Prepare for food production, associated areas, commodities, staff and cooking environment.

	⍰ Organise food production areas, commodities, staff and environment for the execution of chef services. ⍰ Execute the preparation, cooking and finishing of a variety of dishes using the correct method and techniques to meet customer and organisational requirements.	Organise food production area, commodities, staff and environment for the execution of chef services. Execute the preparation, cooking and finishing of a variety of dishes using the correct method and techniques to meet customer and organisational requirements.	⍰ Communicate with and assist other kitchen personnel. ⍰ Prepare, cook and assemble specific food items using the correct method and techniques to meet customer and organisational requirements. ⍰ Assist kitchen and service staff to prepare and serve food. ⍰ Hygienically prepare and assemble food, and clean food preparation areas.
RATIONALE OF QUALIFICATION	This qualification has been developed for professionals in the Hospitality and catering industry. It brings together theoretical, practical and workplace elements of food preparation and service. This qualification also provides for a direct pathway from entry as a Kitchenhand to qualifying as a Chef. The South African Chefs Association (SACA), the recognised professional body, felt that due to an increase in demand for chefs in the industry and an increase of uptake by learners it would be the most appropriate starting point to develop the Chef qualification. The Professional Body felt that no matter where a Chef worked, they should be able to do the specific skills that the employer requires. The supervisory and financial aspects have been included in this qualification, although not currently part of the responsibilities of the Chef. A learning pathway is embedded within the qualification	This qualification has been developed for professionals in the Hospitality and catering industry. It brings together theoretical, practical and workplace elements of food preparation and service. This qualification also provides for a direct pathway from entry as a Kitchen hand to qualifying as a Chef. The South African Chefs Association (SACA), the recognised professional body, felt that due to an increase in demand for chefs in the industry and an increase of uptake by learners it would be the most appropriate starting point to develop the Chef qualification. The Professional Body felt that no matter where a Chef worked, they should be able to do the specific skills that the employer requires. The supervisory and financial aspects have been included in this qualification, although not currently part of the responsibilities of the Chef. A learning pathway is embedded within the qualification	This qualification has been developed for Cooks in the Hospitality and Catering industry. It brings together theoretical, practical and workplace elements of food preparation and service. It aims to improve the standards of services, growth and development of the industry as well as to provide possibilities of self-employment for potential food vendors. This qualification also provides for a direct pathway from entry as a Cook to qualifying as a Chef. It has two part qualifications that create a vertical pathway to cook, namely Kitchen Hand and Food Handler. A clear career pathway exists between Cook and Chef and once qualified as a Cook, provide the opportunity to study further for the Chef qualification, even at a later stage. Qualifying learners with sufficient working experience might also get promotion for further career advancement. The

	which will allow for a learner to work as a Kitchenhand or Commis/Cook during their first and second year, and Commis/Cook during their second and third year to qualify as a Chef. Once qualified as a Chef, and gaining sufficient working experience it may lead to promotion and further career advancement as a Sous Chef and/or Executive Chef. These occupations are registered designations with the Professional Body. This qualification will professionalise the industry and is applicable to all sectors of Professional Cookery.	which will allow for a learner to work as a Kitchen-hand/Commis during their first and second year, Commis/Demi during their second and third year to qualify as a Chef. Once qualified as a Chef, and gaining sufficient working experience it may lead to promotion and further career advancement as a Sous Chef and/or Executive chef. These occupations are registered designations with the Professional Body. This qualification will professionalise the industry and is applicable to all sectors of Professional Cookery.	qualification is aimed at school leavers and those who have been working in the industry, without the required qualifications. This qualification will professionalise the industry and is applicable to all sectors of professional cookery experience it might also lead to promotion and further career advancement. This qualification will professionalise the industry and is applicable to all sectors of professional cookery.
Entry Requirements	Level 2 with Mathematical Literacy.	Qualification at NQF Level 2	National Qualifications Framework (NQF) Level 1 qualification with Mathematics.
Knowledge Modules:	343401100-KM-01, Personal hygiene and safety, Level 3, 3 Credits. 343401100-KM-02, Food safety and quality assurance, Level 4, 5 Credits. 343401100-KM-03, Workplace safety, Level 4, 5 Credits. 343401100-KM-04, Theory of safety supervision, Level 5, 3 Credits. 343401100-KM-05, Numeracy and units of measurement, Level 3, 2 Credits. 343401100-KM-06, Computer literacy and research, Level 4, 2 Credits. 343401100-KM-07, Environmental awareness, Level 3, 2 Credits.	343401000-KM-01, Personal hygiene and safety, NQF Level 3, 2 Credits. 343401000-KM-02, Food safety and quality assurance, NQF Level 4, 4 Credits. 343401000-KM-03, Workplace safety, NQF Level 4, 4 Credits. 343401000-KM-04, Theory of safety supervision, NQF Level 5, 2 Credits. 343401000-KM-05, Numeracy and units of measurement, NQF Level 3, 3 Credits. 343401000-KM-06, Computer literacy and research, NQF Level 4, 2 Credits. 343401000-KM-07, Environmental awareness, NQF Level 3, 2 Credits.	512101-000-00-00-KM-01, Personal Hygiene and Safety, Level 3, 3 Credits. 512101-000-00-00-KM-02, Food Safety and Quality Assurance, Level 4, 5 Credits. 512101-000-00-00-KM-03, Workplace Safety, Level 4, 5 Credits. 512101-000-00-00-KM-04, Numeracy, Units of Measure and Computer literacy, Level 3, 3 Credits. 512101-000-00-00-KM-05, Environmental Awareness, Level 3, 2 Credits.

	343401100-KM-08, Environmental sustainability, Level 4, 3 Credits. 343401100-KM-09, Introduction to Nutrition and Diets, Level 4, 4 Credits. 343401100-KM-10, Nutrition and healthier food preparation and cooking, Level 5, 6 Credits. 343401100-KM-11, Basic Ingredients, Level 3, 4 Credits. 343401100-KM-12, Gastronomy, basic scientific principles, flavour construction and global cuisines, Level 5, 15 Credits. 343401100-KM-13, Theory of food production, Level 5, 5 Credits. 343401100-KM-14, Theory of food production supervision, Level 5, 4 Credits. 343401100-KM-15, Introduction to the kitchen, and the hospitality and catering industry, Level 2, 2 Credits. 343401100-KM-16, Theory of staff resource management, Level 5, 4 Credits. 343401100-KM-17, Theory of production facility and equipment resource management, Level 5, 4 Credits. 343401100-KM-18, Theory of commodity resource management, Level 4, 2 Credits. 343401100-KM-19, Operational Cost Control, Level 5, 12 Credits.	343401000-KM-08, Environmental sustainability, NQF Level 4, 2 Credits. 343401000-KM-09, Introduction to Nutrition and Diets, NQF Level 4, 2 Credits. 343401000-KM-10, Healthier Food Preparation and Cooking, NQF Level 5, 3 Credits. 343401000-KM-11, Basic Ingredients, NQF Level 3, 3 Credits. 343401000-KM-12, Gastronomy, basic scientific principles, flavour construction and global cuisines, NQF Level 4, 6 Credits. 343401000-KM-13, Theory of food production, NQF Level 4, 2 Credits. 343401000-KM-14, Theory of food production supervision, NQF Level 5, 2 Credits. 343401000-KM-15, Introduction to the kitchen, and the hospitality and catering industry, NQF Level 2, 2 Credits. 343401000-KM-16, Theory of staff resource management, NQF Level 5, 3 Credits. 343401000-KM-17, Theory of production facility and equipment resource management, NQF Level 5, 2 Credits. 343401000-KM-18, Theory of commodity resource management, NQF Level 4, 3 Credits.	512101-000-00-00-KM-06, Introduction to Nutrition and Diets, Level 4, 4 Credits. 512101-000-00-00-KM-07, Basic Ingredients, Level 3, 4 Credits. 512101-000-00-00-KM-08, Theory of Food production, Level 5, 5 Credits. 512101-000-00-00-KM-09, Introduction to the Kitchen, and the Hospitality and Catering Industry, Level 2, 2 Credits. 512101-000-00-00-KM-10, Theory of Commodity Resource Management, Level 4, 2 Credits.

	343401100-KM-20, Menu planning and recipe costing, Level 5, 15 Credits. 343401100-KM-21, Food preparation methods and techniques, Level 3, 8 Credits. 343401100-KM-22, Food cooking methods and techniques, Level 3, 10 Credits. 343401100-KM-23, Theory of preparing, cooking, and finishing dishes, Level 5, 24 Credits. 343401100-KM-24, Personal development as a Chef, Level 2, 4 Credits. Total number of credits for Knowledge Modules: 144.	343401000-KM-19, Operational Cost Control, NQF Level 5, 10 Credits. 343401000-KM-20, Menu planning and recipe costing, NQF Level 5, 8 Credits.343401000-KM-21, Food preparation methods and techniques, NQF Level 3, 8 Credits. 343401000-KM-22, Food cooking methods and techniques, NQF Level 3, 10 Credits. 343401000-KM-23, Preparing, cooking, and finishing dishes, NQF Level 4, 10 Credits. Total number of Credits for Knowledge Modules: 95 Credits.	512101-000-00-00-KM-11, Food Preparation Methods, Level 2, 4 Credits. 512101-000-00-00-KM-12, Food Preparation Techniques, Level 3, 4 Credits. 512101-000-00-00-KM-13, Food Cooking Methods and Techniques, Level 3, 10 Credits. 512101-000-00-00-KM-14, Personal Development as a Cook, Level 2, 4 Credits. Total number of credits for Knowledge Modules: 57.
PRACTICAL Skills Modules	343401100-PM-01, Prepare and cook food items using different methods and techniques, equipment and utensils, Level 4, 20 Credits. 343401100-PM-02, Prepare, cook and finish dishes using different methods and techniques, equipment and utensils, Level 4, 28 Credits. 343401100-PM-03, Plan menus and costrecipes/dishes, Level 5, 26 Credits. 343401100-PM-04, Manage and maintain staff, facility, equipment and commodity resources, Level 5, 22 Credits.	343401000-PM-01, Prepare and cook food items using different methods and techniques, equipment and utensils, NQF Level 4, 20 Credits. 343401000-PM-02, Prepare, cook and finish dishes using different methods and techniques, equipment and utensils, NQF Level 4, 40 Credits. 343401000-PM-03, Plan menus and cost recipes/dishes, NQF Level 5, 20 Credits. 343401000-PM-04, Manage and maintain staff, facility, equipment and commodity resources, NQF Level 4, 10 Credits.	512121-000-00-00-PM-01, Prepare and Assemble Food Items using Different Methods and Techniques, Equipment and Utensils, Level 3, 6 Credits. 512121-000-00-00-PM-02, Cook Food Items using Different Methods and Techniques, Equipment and Utensils, Level 4, 14 Credits. 512121-000-00-00-PM-03, Implement Food Production, Level 3, 6 Credits. 512121-000-00-00-PM-04, Maintain Food Production Systems, 5, 16 Credits.

	343401100-PM-05, Maintain food production systems, Level 5, 22 Credits. 343401100-PM-06, Implement and maintain cost control in catering, Level 5, 22 Credits. Total number of credits for Practical Skill Modules: 140.	343401000-PM-05, Maintain food production systems, NQF Level 4, 10 Credits. 343401000-PM-06, Implement and maintain cost control in catering, NQF Level 5, 20 Credits. Total number of Credits for Practical Skill Modules: 120 Credits.	512121-000-00-00-PM-05, Documents and Report on Kitchen Activities, Level 3, 2 Credits. 512121-000-00-00-PM-06, Assist with Kitchen Activities, Level 2, 4 Credits. Total number of credits for Practical Skill Modules: 48.
Work Experience Modules	343401100-WM-01, Planning and preparation of processes and procedures to provide chef services within the hierarchy of the organisational structure, Level 5, **90 Credits.** 343401100-WM-02, Processes and procedures for organising food production area, commodities, staff and environment, Level 5, 80 Credits. 343401100-WM-03, Processes and procedures for preparing and cooking a variety of food items using different methods and techniques, equipment and utensils, Level 4, 40 Credits. 343401100-WM-04, Processes and procedures for preparing, cooking and finishing a variety of dishes using the correct method and techniques to meet customer expectations, Level 4, 60 Credits. **Total number of credits for Work Experience Modules: 270.**	343401000-WM-01, Planning and preparation of processes and procedures to provide professional chef services within the hierarchy of the organisational structure, NQF Level 5, **40 Credits.** 343401000-WM-02, Processes and procedures for organising food production area, commodities, staff and environment, NQF Level 4, 50 Credits. 343401000-WM-03, Processes and procedures for preparing and cooking a variety of food items using different methods and techniques, equipment and utensils, NQF Level 4, 25 Credits. 343401000-WM-04, Processes and procedures for preparing, cooking and finishing a variety of dishes using the correct method and techniques to meet customer expectations, NQF Level 4, 50 Credits. **Total number of Credits for Work Experience Modules: 165 Credits**	512101-000-00-00-WM-01, Preparation Processes and Procedures to Provide Cooking Services within the Cook-Serve or Cook- Chill/Freeze Food Production Environment, Level 4, 30 Credits. 512101-000-00-00-WM-02, Hygiene Practices and Cleaning Processes and Procedures within the Cook- Serve or Cook-Chill/Freeze Food Production Environment, Level 2, 5 Credits. 512101-000-00-00-WM-03, Processes and Procedures for Communicating with and Assisting other Kitchen Personnel within a Cook-Serve or Cook-Chill/Freeze Food Production Environment, Level 4, 4 Credits. 512101-000-00-00-WM-04, Processes and Procedures for Preparing and Assembling a Variety of Food Items using Different Methods and Techniques, Equipment and Utensils, and to Accommodate Special Dietary Requirements, Level 3, 8 Credits.

			512101-000-00-00-WM-05, Processes and Procedures for Cooking a Variety of Food Items Using Different Methods and Techniques, Equipment and Utensils, Level 4, 32 Credits. **Total number of credits for Work Experience Modules: 79.**
EXIT LEVEL OUTCOMES	1. Plan and prepare for the provision of chef services. 2. Organise food production area, commodities, staff and environment for the execution of chef services. 3. Execute the preparation, cooking and finishing of a variety of dishes using the correct method and techniques to meet customer and organisational requirements.	1. Plan and prepare activities for the provision of chef services. 2. Organise food production area, commodities, staff and environment for the execution of chef services. 3. Execute preparation, cooking and finishing of a variety of dishes using the correct method and techniques to meet customer and organisational requirements.	1. Prepare for food production, associated areas, commodities, staff and cooking environment. 2. Communicate with and assist other kitchen personnel. 3. Prepare, cook and assemble specific food items using the correct method and techniques to meet customer and organisational requirements. 4. Assist kitchen and service staff to prepare and serve food, and clean service areas. 5. Hygienically prepare and assemble food, and clean food preparation areas.
Criteria for Exit Level Outcome 1:	Planning and maintaining activities are undertaken with regard to ordering, receiving, storing and issuing of commodities for the provision of chef services. Menus for different types of meal occasions are planned and recipes are costed in order to provide chef services within budget.	Planning and maintaining activities are undertaken with regard to ordering, receiving, storing and issuing of commodities for the provision of chef services. Menus for different types of meal occasions are planned and recipes are costed in order to provide chef serviced within budget.	Clean and tidy up facilities, equipment and storage areas to prepare for food production. Store commodities, and maintain stock levels in accordance with re-ordering management procedures. Undertake food production preparation by weighing, measuring and selecting the quality and quantity of ingredients, as per

	? Sustainable production is planned within organisational budget and control operational costs. ? Staff requirements and kitchen resources are managed to reflect a prepared and resourced food production environment. ? Knowledge and understanding are demonstrated with respect to planning and preparation activities for the provision of chef services.	Sustainable production is planned within organisational budget and control operational costs. Staff requirements and kitchen resources are managed to reflect a prepared and resourced food production environment. Knowledge and understanding is demonstrated with respect to planning and preparation activities for the provision of chef services	recipe and dish specifications using Prep Lists, Ingredient Lists and Work Plans outlining the times, temperatures, techniques and methods to be followed. ? Store food production components correctly for later assembly and presentation through plating and garnishing. ? Equally divide staff work allocation in accordance with the tasks required to be completed for maintaining food production.
Associated Assessment Criteria for Exit Level Outcome 2:	Occupational Health and Safety (OHS) requirements are promoted and maintained in food production areas and in the use and maintenance of equipment. ? Food safety is promoted and maintained in the kitchen and quality of dishes are monitored at all stages of preparation and finishing. ? Personal health, hygiene, professional appearance and professional behaviour are promoted and maintained to reflect a co-ordinated, safe and compliant food production environment. ? Communication with team members, subordinates, management, service waitrons and customers is maintained in the execution of chef duties. ? Basic computer literacy is demonstrated during the exercising of chef duties.	Occupational Health and Safety (OHS) requirement are promoted and maintained in food production areas and in the use and maintenance of equipment. Food safety is promoted and maintained in the kitchen and quality of dishes is monitored at all stages of preparation and finishing. Personal health, hygiene, professional appearance and professional behaviour are promoted and maintained to reflect a coordinated, safe and compliant food production environment. Communication with team members, subordinates, management, service waitrons and customers is maintained in the execution of chef duties. Basic computer literacy is demonstrated during the execution of chef duties.	Provide assistance and support to kitchen personnel to maintain high levels of cleanliness, efficient food production, and to ensure all service requirements are met. ? Document stock levels and record fridge and freezer temperatures to ensure efficient and safe food production. ? Communicate and report on equipment maintenance issues, quality standards of ingredients and out-of-stock items is undertaken to ensure efficient food production.

	⍰ Knowledge and understanding are demonstrated with respect to organising food production area, ingredients, staff and environment for the execution of chef services.	Knowledge and understanding is demonstrated with respect to organising food production area, ingredients, staff and environment for the execution of chef services.	
Associated Assessment Criteria for Exit Level Outcome 3:	⍰ Food items are prepared and cooked using various preparation techniques (including peeling, slicing, chopping, dicing) and cooking methods (including boiling, poaching, steaming, stewing, braising, roasting, grilling, baking, frying and microwaving). ⍰ A variety of dishes are prepared, cooked, finished and monitored in terms of the quality at all stages of the process. ⍰ Dishes are prepared, cooked, finished and adapted for a healthy balanced life style or to accommodate dietary requirements. ⍰ Knowledge and understanding are demonstrated with respect to executing the preparation, cooking and finishing of a variety of dishes using the correct method and techniques to meet customer and organisational requirements.	Food items are prepared and cooked using various preparation techniques (including peeling, slicing, chopping, dicing) and cooking methods (including boiling, poaching, steaming, stewing, braising, roasting, grilling, baking, frying and microwaving). A variety of dishes are prepared, cooked, finished and monitored in terms of the quality at all stages of the process. Dishes are prepared, cooked, finished and adapted for a healthy balanced life style or to accommodate dietary requirements. Knowledge and understanding is demonstrated with respect to executing the preparation, cooking and finishing of a variety of dishes using the correct method and techniques to meet customer and organisational requirements.	⍰ Prepare hot and cold food items using various preparation techniques (including peeling, slicing, chopping, dicing). ⍰ Cook food items using various cooking methods (including boiling, poaching, steaming, stewing, braising, roasting, grilling, baking, frying and microwaving). ⍰ Assemble and present food items through plating and garnishing. ⍰ Maintain and monitor food quality and portion control through-out production and service to meet customer and organisational requirements.
			⍰ Clean all service and associated areas and items, and store all items to the designated areas. ⍰ Maintain sanitation, health and safety standards in service and associated areas. ⍰ Provide assistance and support to kitchen personnel to maintain high levels of

			cleanliness, efficient food production, and to ensure all service requirements are met.
			? Clean all work areas and items, and return all items to the designated areas. ? Maintain sanitation, health and safety standards in work and associated areas. ? Maintain high levels of cleanliness in food production to ensure that all service requirements are met. ? Assemble and present food items in accordance with work instruction.
Integrated Formative Assessment:		The skills development provider will use the curriculum to guide them on the stipulated internal assessment criteria and weighting. They will also apply the scope of practical skills and applied knowledge as stipulated by the internal assessment criteria. This formative assessment leads to entrance into the integrated external summative assessment.	The skills development provider will use the curriculum to guide them on the stipulated internal assessment criteria and weighting. They will also apply the scope of practical skills and applied knowledge as stipulated by the internal assessment criteria. This formative assessment leads to entrance into the integrated external summative assessment.
Integrated Summative Assessment:	An external integrated summative assessment, conducted through the relevant Quality Council for Trades and Occupations (QCTO) Assessment Quality Partner is required for the issuing of this qualification. The external integrated summative assessment will focus on the Exit Level Outcomes and Associated Assessment Criteria.	An external integrated summative assessment conducted through the relevant QCTO Assessment Quality partner is required for the issuing of this qualification. The external integrated summative assessment will focus on the exit level outcomes and associated assessment criteria. The external assessment model requires that the external assessment will be conducted through a combination of a written	An external integrated summative assessment conducted through the relevant Quality Council for Trades and Occupations (QCTO) Assessment Quality Partner is required for the issuing of this qualification. The external integrated summative assessment will focus on the Exit Level Outcomes and Associated Assessment Criteria.

		assessment and practical task at an accredited trade test centre. The written examination will be concluded at an accredited trade test centre and marked by registered assessors. Practical tasks will also be assessed by registered assessors. The combination of the written and practical assessment will be conducted over a period of two working days.	
REREGISTRATION HISTORY		As per the SAQA Board decision/s at that time, this qualification was Reregistered in 2015	
PROVIDERS CURRENTLY ACCREDITED TO OFFER THIS QUALIFICATION	None	None	None

Report 3: New pedagogical territories for service provision in South Africa

An interpretation of the QCTO provider online readiness survey

EXECUTIVE SUMMARY

The 2020 provider readiness survey aimed at determining the degree of provider readiness to offer, amongst others, occupational qualifications, skills programmes and part-qualifications on an online platform. This information was gathered in order to gauge the readiness of the sector to work under the strictures of the National Lockdown imposed in response to the COVID-19 pandemic.

The survey was limited to providers accredited by either the QCTO or a SETA to offer qualifications on the OQSF. Some 831 providers responded to the survey, an excellent response rate that provides confidence in the accuracy of the results.

The array of questions determining the degree of online readiness, detailed the degree of readiness, frequency of offering on an online platform and the kind of offerings available. The responses pointed to a differentiated understanding of e-learning, online learning and making use of singular, multiple or techno-blended approaches in the instructional design of the programmes on offer.

In the main, it is clear that the differently framed COVID context caught the sector off-guard to move online in a blink of time. The sector mainly depends on face-to-face offerings and practical simulations in a set environment.

Except for the 9,15% of the providers who used online and/or blended learning prior 2020, the rest of the providers indicated that their staff is generally unprepared to provide online or blended training and will require support. This aligns with the trend in the responses to challenges the providers believe their institutions will experience/is experiencing with implementing online or blended learning. Other challenges that reappeared in the responses are that of the practical nature of the programmes / qualifications on offer, the know-how of developing online programmes or to identify appropriate software, data costs, limited network availability and finances. Digital literacy is mentioned as a challenge to ensure student's engagement, even if the online offerings are available and accessible.

Technology available for online offerings are according to the responses, mainly limited to smart phones and in instances providers assisted students with resources such as laptops. For the small SMEs with limited financial resources, it is not viable at all to provide the necessary technology to students.

Provider Readiness

The Survey was limited to providers accredited by either the QCTO or a SETA to offer qualifications on the OQSF. Some 831 providers responded to the survey, an excellent response rate that provides confidence in the accuracy of the results. A central concern was the experience level of providers in providing online or blended training.

How often did your institution conduct online or blended training before 2020?

More Details

All the time	76
Regularly	80
Occasionally	214
Never	452
Don't know	9

The survey revealed that more than 55% of providers had never conducted such training before (or did not know which is counted as never in this report). If the occasionally category is included, it becomes clear that 82% of providers had limited or no experience in providing online or blended training.

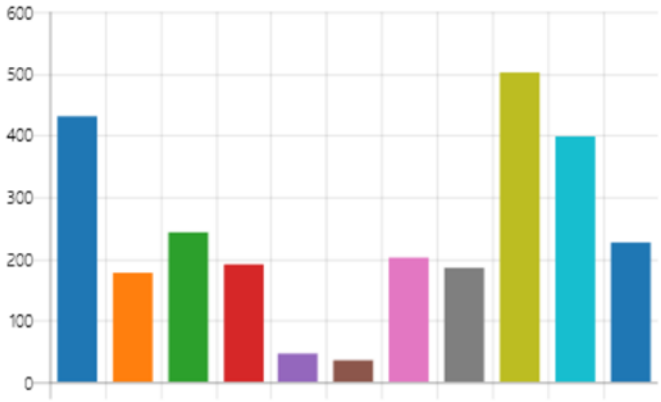
CONCLUSION 1: It is clear that the sector was not ready to move online with the rapidity that the COVID-19 pandemic has descended.

In terms of available infrastructure, providers were surveyed on what they currently had in place for the provision of online or blended training.

What are the tools or resources you CURRENTLY HAVE IN PLACE to provide online and/or offline distance or blended training?

More Details

Using video conferencing bet...	431
Simulators, or virtual training t...	178
Virtual learning environments	244
Blogs or discussion forums	192
Using podcasts	47
Using TV	35
Hosting videos	201
YouTube	186
Distributing written resources	503
Developing new learning reso...	397
Other	226

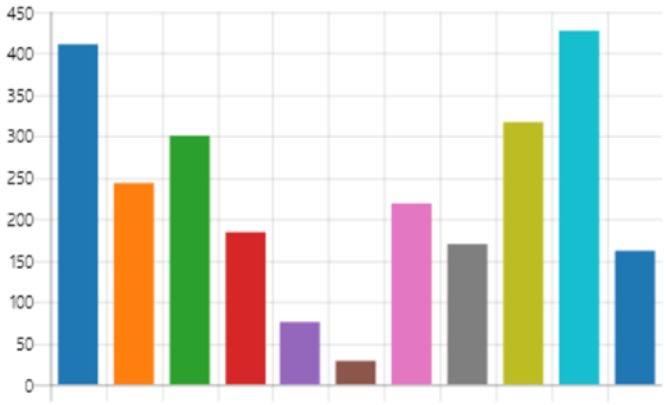


A large majority of providers (60%) relied mostly on the distribution of written resources – in all likelihood the pre-existing course material. Just over 51% of providers are also using video conferencing, while most providers are also rapidly developing new resources. This trend remained robust when providers responded about their planned interventions.

What are the tools or resources you are DEVELOPING OR EXPANDING to increase online and/or offline distance or blended training?

More Details

Using video conferencing bet...	411
Developing simulators, or virt...	243
Creating virtual learning envir...	301
Developing blogs or discussio...	185
Using podcasts	75
Using TV	28
Hosting videos	218
YouTube	170
Distributing written resources	318
Developing new learning reso...	427
Other	162



Once again, video conferencing and written resources featured prominently, with the future focus of providers shifting heavily towards the creation of new learning resources to fit new conditions, with a surge in the development of virtual learning environments and simulators.

CONCLUSION 2: Despite providers being generally unprepared for online or blended training, development of new resources and new forms of learning environments is a central focus, and such resources seem to be developing very rapidly.

Student Readiness

Although providers are not yet ready, they are moving rapidly in this direction. This is only one side of the coin, however, and students must be ready to receive this new type of training – both conceptually and in terms of the infrastructure that they require (tablets, laptops, internet etc.) Students are not currently equipped for such training.

Do you believe that the learners enrolled at your institution are:

More Details

Fully equipped to engage with...	95
Mostly equipped to engage w...	286
Minimally equipped to engag...	283
Not equipped to engage with...	167

Indeed the students have access to a smart phone:

The majority of the learners enrolled at your institution have access to:

More Details

A laptop or desktop computer	272
A tablet computer	137
A smart phone	651
Fixed line internet (fiber/ADSL)	99
Mobile internet (3G/4G)	379

CONCLUSION 3: Students are generally unequipped to engage with online or blended training, even if it becomes rapidly available at providers. Many providers have suggested that with new intakes, they will need to raise fees and build in the cost of providing students with requisite infrastructure such as laptops etc

---

Readiness to return to face-to-face tuition

Providers have indicated that the majority (61%) will need to close their doors – potentially permanently – should the lockdown continue for an indefinite period. This would be a disaster for the system second to none.

While online resources are being developed, providers must return to face-to-face training in the short to medium term. Providers have overwhelmingly indicated (82%) that they will be able to do so with substantial compliance to the DHET health and safety guidelines:

The Department of Higher Education and Training has issued guidelines on the "Protocol for Routine Cleaning for COVID-19 Prevention within Post-School Education and Training" and "Protocol on Screening, Testing & Linkage to Care for COVID-19 Programme within the Post School Education and Training Sector" - both available on www.higherhealth.ac.za Do you believe that your organisation will be:

More Details

Able to fully comply	540
Able to fully comply with som...	139
Able to comply with a majorit...	72
Able to comply with a majorit...	65
Unable to comply with the ma...	15

CONCLUSION 4: There is an imminent danger of collapse for a majority of providers in the system. A large majority (82%) of providers are ready to return to face-to-face training within the strictures of the guidelines provided by DHET – and the recommendation is that this re-opening be prioritised urgently to prevent significant long-term damage to the sector.

In summary, there are a few critical issues according to the responses that must be considered in thinking of ways to improve the efficacy of online and blended learning. Amongst others, knowledge about online pedagogical offerings, affordability, connectivity, assessment and student support.

Moving to alternative modes of delivery, serious consideration should be given to how a meaningful and long-term effect on students' learning could be established. One should be careful not to think that the mere introduction of online learning and application of technologies would lead to effective teaching and quality learning. In many instances it might just be a replication of traditional pedagogies. Moving to an alternative mode of delivery also requires the development of new dispositions of thinking and learning, because for many this is unchartered territory.

Many students are from disadvantaged backgrounds and cannot afford data to participate in an online tuition system. Infrastructure to offer and receive tuition is a matter of affordability, context and accessibility and not all service providers could afford to provide the necessary devices and data to students. Context and location determine the quality of connectivity and although most of the students do have smartphones, there are still parts of rural South Africa, with poor reception – notwithstanding the fact that using a smartphone as the primary medium of instruction for a learner imposes significant barriers to success even if reception and bandwidth are abundant.

Assessment practices and the expectancies in terms of qualification attainment need to be revisited. The components to be covered, weighting and structure of practical or application components and the kind of competencies to be developed through practical application need to be reviewed. Types of assessment, project-based learning and assessment, as well as the utilisation of feedback in instructional design should be emphasised.

Although the survey dealt with provider readiness for online offerings and that the QCTO might need to put regulatory guidelines in place to assist in the development of online offerings, the responses to the questions brought about an array of matters that need urgent consideration in the occupational environment. These include the following-

- facilitator capacitation;
- assistance and training in instructional design, development and choices;
- the alignment of instructional choices and assessment practices;
- a framework for qualification development and how offerings need to be planned; and
- new thinking about the need for qualifications and how attainment of such should be certified.

All the above should be viewed in the context of the current policy environment in terms of accreditation and qualification offerings. This also means that regulatory frameworks and policy amendments should be reconsidered.

---

1. Introduction

The 2020 provider readiness survey aimed at determining the degree of provider readiness to offer, amongst others, occupational qualifications, skills programmes and part-qualifications on an online platform. This information was gathered in order to gauge the readiness of the sector to work under the strictures of the National Lockdown imposed in response to the COVID-19 pandemic.

The survey was limited to providers accredited by either the QCTO or a SETA to offer qualifications on the OQSF. Some 831 providers responded to the survey, an excellent response rate that provides confidence in the accuracy of the results.

The array of questions was posed to respondents to determine the degree of online readiness, detailing the degree of readiness, frequency of offering on an online platform and the kind of offerings available. The questions either required a choice from a dropdown selection, or to provide responses pertaining to the context of the service provider. The focus in the questions were on the degree of readiness to shift offerings to an online platform, possibilities, and challenges to do so. The survey further established the types of qualification/s accredited to provide and number of students enrolled for training at the institution for the 2020 academic year.

Besides indicating the frequency of conducting online or blended training before 2020, the questions also required answers to the tools or resources that providers had in place to provide online and/or offline distance or blended training. These questions might have resulted in multiple interpretations related to resources in place, but not yet utilised and / or resources in place and already in use before the lockdown. Both interpretations were considered in the data analysis.

Considering the mode of delivery prior to 2020 overwhelmingly being face-to-face tuition, it was necessary to enquire about the resources that the respondents are developing or expanding to increase online and/or offline distance or blended training. The responses to these questions were considered to assist in identifying the kind of support that providers might need in developing quality online and techno-blended training content and the practical application thereof.

The qualification type on offering may vary from partial practical in nature to mostly practical in nature. The survey therefore intended to determine how likely providers would offer qualifications with a highly weighted practical component for and online mode of delivery. Respondents had to consider the theoretical component and intended knowledge development as well as the intended competency development as required in the practical component in their responses.

Provision of qualifications is heavily reliant on the readiness of lecturers to adapt to a required mode of delivery. An online, blended and / or hybrid offering choice require reconsideration of preferred teaching strategies and alignment with intended learning outcomes. The pedagogical and presentational requirements of the subject matter, in terms of (a) knowledge selection (content) and (b) competencies/skills are key reflections, but contact time, data as resource and infrastructure needed consideration too.

The question on the readiness of students to receive tuition in an alternative mode of delivery, other than face-to-face, required deeper thought from the respondents about the student's level of digital literacy and adaptability. Learning styles and students' readiness to learning in another teaching and learning paradigm is another matter considered in the responses. The same is true for readiness for provision of blended learning. The interpretation of blended or hybrid learning may vary from one provision context to the next, depending on the kind of online multimedia coursework that supplement the onsite provision. As in the case of pure online tuition, blended or hybrid learning would require readiness of both lecturer and student to engage in the chosen mode of delivery. In both cases it would be the accessibility to data, laptops and tablets that would determine the level of success in blended learning contexts. Infrastructure in place is another determining factor.

In a sudden, forced change to online teaching and learning such as lockdown due to a pandemic, it

would be infrastructure and practices already in place and in use that might make the difference in the steady continuation of teaching and learning to take place. Stipulations to regulate safety precautions in such a differently framed context would add to the administrative planning and the management of the study year. It is for this reason that questions were posed about the interpretation and application of set regulations and the challenges that the providers might experience to comply to such regulations.

The nature of most of the qualification on offer calls for the return to face-to-face mode of delivery, but the reality requires new developments and thinking about alternative teaching, learning and assessment paradigms.

2. Survey analysis

The survey contained open and closed questions. The latter with a choice list to guide the response to the question. The responses made provision for both a quantitative analysis of the closed questions and a content, textual analysis of the open questions. The open questions provided the respondents an opportunity to picture the provision context, possibilities of offering and the challenges experienced in more detail.

The content analysis led to thematic coding of responses in terms of ability to move to online provision and challenges experienced to do so. The themes that emanated from what was mentioned as challenges and the recurrent responses on difficulties experienced, provided pointers to recommendations that could enhance provision in various contexts.

3. Findings

3.1 Challenges in offering alternative provision

The respondents had the opportunity to elaborate on the challenges that they experience offering tuition during the lockdown.

3.1.1 Revenue generation and income streams

A lack of income due to non-paying students, studentship stipends not paid, inability to generate revenue or to receive donor funding was reiterated in many of the responses. Respondents indicated that the lack of income impact on the ability to pay staff members and affecting operations, payment of rent, lease rental fees on equipment, the development and revision of programmes and to secure infrastructure. Although the revenue generation dried up, the overheads of these providers stayed the same. Respondents from ECD training provision mentioned the uncertainty and lack of communication from Government about ECD as reasoning for a lack of donor funding for this sector preparation. Communication and decisive guidance seemed to be a secondary influence on the health of income streams for these providers.

The recruitment of students is heavily affected which explain the large number of respondents indicating that they have no student enrolment for 2020. The impact of the pandemic on the larger economy was felt in parents of students who lost an income and became unable to cover their children's study fees, contributed to a lower enrolment and negatively affected the income stream.

A drastic increase in unbudgeted expenditures required a major review of the 2020/21 financial year and the possibility of that facilities will no longer be available due to a backlog in rental payments impacted negatively on the new developments. In many instances respondents expressed uncertainty about the sustainability of provision.

A secondary impact on revenue generation is linked to accreditation processes. Respondents indicated that 80% of their revenue stream is from face-to-face training and that some SETAs are not accrediting them to offer online training. The providers found it therefore impossible to develop

course material for online offerings or were reluctant to develop online offerings with the knowledge that they will not be accredited for those courses. Many of the respondents raised concerns about accreditation processes and that the SETAs are reluctant to move away from administrative burdened processes and that they as providers are feeling stifled in new developments. Some respondents pointed to the slow reaction times from SETAs in approving material and methods hampered proper development. A review of accreditation processes and other SETA practices seems to be a necessity.

The clients that normally require training are, according to the respondents, categorised as "non-essential services" which further impacted on the number of prospective students and training opportunities. Other mentioned that clients scaled training down in favour of production and manufacturing and other are operating at 50% capacity and even so low as 30% of staff capacity, therefore all training was postponed until further notice. This impacted further on the respondents' ability to generated revenue that that they in turn could use to develop online tuition.

Some of the respondents were of opinion that the lower enrolment rate in some of the programmes was causally linked to the interpretation of essential services during the lockdown period. Service providers in the hospitality and beauty industries mostly felt the effect of "non-essential services". Those providers who solely provide training in these industries fear the closing of their services.

The student profile, supporting family structures and whether parents retained employment during the lockdown are all factors that the respondents pointed to as reasons for a smaller revenue stream. This again reiterate the role of socio-economic status and context as driving factors in providing and receiving services.

Revenue generation should be read with the sudden increase in unexpected expenses coupled with the COVID-19 regulations in terms of health and safety and the requirement to move to online offering, tuition and the adoption of new teaching and learning paradigms. A broader economic impact should also be acknowledged. Many respondents refer to negotiations with landlords and rental agents for payment relief. Respondents reiterated the fact that although "payment holidays" were granted, no lowering of rental fees were experienced. The latter has had a huge impact on planning, the year schedule, marketing, student communication, while attempting to provide alternative tuition options to students. Another matter that impacted negatively on the respondents' income is the SETA grant payments. These payments are linked to student achievements and because of lockdown students cannot obtain the practical experience which further have implications that credits linked to unit standards cannot be obtained and therefore grant payments are not made.

The uncertainty of what the future holds has seen a significant drop in clients booking new training over this period. Without clarity on what we can expect post lockdown in terms of the 'new normal' organisations are naturally reluctant to make decisions around skills development initiatives.

Financial sustainability was one of the main factors mentioned in the challenges to deal with the requirements of the COVID-19 reality. Many respondents clearly stated that, if the challenges are not acknowledged and not supported and managed by the broader community and Government, they foresee devastating effects on the livelihood of tens of thousands of employees and company owners.

3.1.2 Operations, schedules, and academic year planning

Respondents are concerned about the effect of a constant changing reality on the planned schedules and the academic year. They indicated that 38% of them are severely affected by the national lockdown and are not at all able to provide tuition. If combined with those seriously affected, more than 67% of the respondents experienced a turmoil in their operations. Only 3,7% of the respondents reported a minimal impact on their operations.

The national lockdown has affected the operations of the institution:	
Minimally - there has been almost no effect on the operations of the institution	31
Moderately - the institution can offer all knowledge components for all courses	174
Seriously - the institution can offer limited online tuition	242
Severely - the institution cannot train at all	318
Slightly - the institution can offer almost training that was done before lockdown	66
Grand Count	831

In instances, facilitators and other staff members left work unfinished, thinking that the lockdown would be for a short period of time. With an extended lockdown, supply chain management will be heavily affected, which will result in slow payment of suppliers, which in turn will impact on the availability of resources, operations and tuition at large.

Matters that further negatively impacted on the operations are the accessibility to textbooks and whether the publishers would be able to provide books during the lockdown. This would have required the rethinking of the kind of supporting material to prepare. Not being able to offer practical applications and auxiliary services such as graduations and certificates are mentioned as matters impacting operations and schedules. Limitation on movement during the lockdown and closed supplier businesses hindered attempts to provide effective online training intervention programmes and digital oriented training. The practical and experiential learning were negatively affected and the uncertainty about the length of the lockdown influenced the planning of academic, operational and occupational activities.

A few respondents reported on the total shut down of operations. Others indicated that the transition to online/blended learning was based on their understanding and feedback from government responses. Many indicated a lack of direction in terms of expectancies as a reason for not investing heavily in online teaching and learning material. They therefore adopted a phased-in approach to ensure sustainability and within the financial constraints that they experienced.

In terms of the academic year, the feasibility of a second student intake for the second semester became out of the question. This has had a knock-on effect on student numbers and revenue generation. The mode of delivery and the mainly face-to-face offering prior the lockdown made for 90% of all training done. This had to change with the institution of the COVID-19 regulations and lockdown – for many this meant the cancellation of a yearly schedule.

Some respondents indicated that they had to give up rental properties, moved all the operations totally online and intend to continue with only online provision in future. These offerings would be for disciplines of a specific nature. The respondents expressed a need for further guidance and advice from the QCTO in this regard.

3.1.3 Infrastructure and institutional readiness

Various reasons were mentioned by more than 62% of the respondents who indicated that they did not provide students with infrastructure / laptops / tablets / data to assist them in accessing online or blended learning resources. Most of the reasons are linked to finances, problems to make data available and others rely on workplaces where students are doing apprenticeships to provide the necessary technology for learning to take place. It was clear that the question on infrastructure let many providers to the possible review of fee structures to include laptops or tablets in the registration fees for courses enrolled for.

The respondents' choice to courier printed learning material to students is another reason why the provision of any technology is not considered.

In terms of institutional infrastructure readiness to provide blended training, the responses were as follows:

Institutional readiness in terms of infrastructure to provide blended training	
All infrastructure is in place	231 (28%)
No infrastructure is in place to facilitate blended training	110 (13%)
Some infrastructure is in place and blended training can commence	187 (22,5%)
Some infrastructure is in place and blended training can commence for specific programmes	151 (18,2%)
Some infrastructure is in place, but it is not ready for blended training	152 (18,3%)
Grand Count	*831*

The question focused on blended learning to determine whether a blended model would be a more accessible alternative to fully online provision. Although 28% of the respondents indicated that all infrastructure is in place to provide blended learning, it was not clear from further comments if the infrastructure was already in use before or at the time of the lockdown. The responses indicated that the nature of the discipline will determine the appropriateness of blended learning. Even if blended learning will be appropriate for certain programmes, substantial development in this regard still needs to be done.

The 18,2% of the respondents that referred to specific programmes that some infrastructure is in place and included in instances all the programmes that they are offering, but mostly refer to electrical, electronic and robotics fields as well as IT, commerce, financial accounting, office administration, public sector accounting and business management. Programmes with mostly a practical nature such as food and beverage, chef and healthcare, only the theoretical component of the programmes are mentioned as possible online offering. For a number of the respondents offering programmes of a purely practical nature, the online training is experienced as "cosmetic and bears no resemblance to the skills and training needed". These references are in particular made in relation to becoming a professional chef and working in the hospitality and tourism industry. It seems that the second- and third-year training was the most heavily affected.

3.1.4 Development of e-learning material

It was already mentioned that 67% of the respondents experienced a serious to a severe impact on operations. The same respondents mentioned that they experienced the very short time frame in which digital learning material had to be developed as strenuous and in instances not feasible. Access to e-learning software to assist in the development is found to be expensive and due to the negative impact on revenue generation, further inhibited the development of e-learning material.

Respondents mentioned the diversity in contexts and student profiles as factors that impacted the online provision. Providers with several sites indicated that the material had to be adapted to the diverse student backgrounds and infrastructure. It seems that in most instances the context determined the kind of material development. Some respondents felt that their philosophy of "no student is left behind" negatively affected student who have readily online access, because the study material is made available to suit a slower pace and limited access.

Uncertainty about whether SETA would accredit providers to continue with online provision, let 38% of them resort to the distribution of printed study material. Video conferencing is used by 49% of the respondents to assist in blended learning practices that might become a permanent feature of the online teaching and learning practice. Although the lockdown caught the providers by surprise more than half (51%) of the respondents indicated that they are developing new resource material for online provision. Although technical expertise remained one of the biggest challenges - this included certain constraints with loading material and videos, there were a few respondents who indicated that they have however used the opportunity to upskill faculty and staff to create valuable

online and virtual learning solutions.

Funding and expenses were woven into most of the challenges. Additional software and online licenses and resources require additional funding, especially when required that an e-learning platform design would accommodate both theory and practical learning delivery.

3.1.5 Staff readiness

The respondents indicated that 18% of staff members are generally unprepared to deal with online or blended learning. The reference to staff members included academic and administrative staff. Another 13% would need significant upskilling to be able to deal with online or blended provision. Counted together, this means that 31% of the staff are not sufficiently prepared and according to the responses another 35% would need some support. It could then be said that when the lockdown was instated, two-thirds of the staff members were not ready to offer online or blended training.

Some of the providers are concerned about the various levels of staff readiness to perform duties, offering online tuition, and taking up responsibilities of a new site reality. Quite a number of the respondents referred to the unevenness in readiness and capacity to move to an online platform that resulted in some staff working much longer hours than others. In turn this has a negative effect on staff morale and motivation. It seems that the pandemic also has had a socio-emotional impact on the staff due to uncertainty of the length of the lockdown and what would be required of them to ensure tuition to continue. Teaching skills and the ability to make alternative tuition choices are also mentioned as a matter of concern.

The difference in infrastructure for staff working from home impacted on the level and frequency of communication with students. A lack office equipment such as copiers, internet access, data, the quality of internet connection and printers are mainly the reason for restricted engagement with students, which in turn has had a negative impact on learning progression. Many of the staff members experienced distant communication challenges. This included them not being able to reach students to ensure constant progress.

3.1.6 Student readiness and learning progress

A survey question required of the respondents to indicate how equipped students are to move to an online learning platform:

Do you believe that the learners enrolled at your institution are:	
Fully equipped to engage with online or blended training	95
Minimally equipped to engage with online or blended training	283
Mostly equipped to engage with online or blended training	286
Not equipped to engage with online or blended training	167
Grand Count	831

From the responses 46% indicated that they are fully or mostly equipped, whereas 54% indicated that the students are minimally or not at all equipped to engage with online or blended learning environments. For more than half of the student cohort the move to online or blended training was found to be difficult.

Although responses on the readiness of students to move to an online platform was mainly required, personal and social challenges seem to have a major impact too. The respondents' narrative responses pointed to socio-economic, socio-emotional and psycho-emotional factors that impacted on the students' morale. Words like "fear", "demotivated", "frustrated", "angry", "irritated",

“conflicted”, “tensed”, “disengaged” and “annoyed” described what respondents experienced the emotional state of students and parents to be. Keeping the students motivated and the parents calm was part of a new communication strategy.

In instances the students' commitment to take part in online teaching and learning was also motivated by the receipt of stipends. Where students have not received their stipends, they were not willing to participate any longer and leave the whatsapp groups and forums set up for them to continue with the learning.

Respondents indicated that some students withheld fees because they felt that the tuition is not what is expected of mostly practically oriented subjects. Students are mostly reliant on smartphones for the interaction and some providers therefore narrowed the scope and lessened the frequency of interaction to save data usage. This impacted negatively on learning progress.

It was clear from the responses that learnerships were a major concern. In instances the time frames within which the learnerships need to be completed was shortened by at least 3 months due to cost saving and financial implications.

The respondents mentioned the uncertainty about the assessment, examination timetables and whether they must invest in online assessment practices matters that impacted severely on the learning progress.

The student profile was mentioned as a determining factor in alternative provisioning. Some respondents mentioned that the older cohort of students required more support and motivation to embrace online learning. Others referred to having international students enrolled in language courses which put additional support requirements on the service providers.

Computer literacy was pointed out as a major obstacle in the communication of NQF L1 students in many of the disciplines. In these instances, the providers had to solely rely on the distribution of hard copies and video conferences with links that students could access via their smartphones.

The respondents who indicated that they had to make provision for tablets and learning devices for students, also indicated that additional time went into training of student in the utilisation of the tablets for online learning. For many of the staff and students the online learning platform seemed to be uncharted territory and for skilled staff it meant the implementation of different learning styles to accommodate students’ individual needs. The staff found the preparation of differentiated learning support very tedious, but also mentioned that they are of opinion that face-to-face tuition provide a much better sense of which of the students would need additional support. Peer tutoring and assistance in a group was found as additional support to individuals in a classroom setting.

3.1.7 Work integrated learning, simulations and practicals

Access to workplaces and the use of technical workshops were mentioned as concerns. The practical training forms 70% of training requirements and since this cannot take place during lockdown, respondents pointed to a severe impact on students’ readiness to sit for their External Integrated Summative Assessments (EISAs) – the final examination in Occupational Qualifications.

The continuation of workplace experience in particular fields such as elderly care became impossible due to the no-entry policy of Geriatric / Elderly care centres as part of the COVID-19 regulations. Another example came from the experiential work-based element in the hospitality industry as the industry is closed completely. Many more examples were mentioned of industry and companies not willing to accept student placements that points again to context as determining factor for the development, progress and planning of practical experience. Some respondents were concerned about possible court cases or claims that may loom if students might contract COVID whilst in work integrated learning environments.

Respondents found online simulations in many disciplines exceedingly difficult. Where some fields in the IT, financial and the economic sectors totally lend themselves to online simulations, the nature of hospitality, early learning (ECD) and elderly care as well as welding, hairdressing, health and skin care are examples of fields that would need real practical sessions.

Since the providers are making use of external expertise whose licenses are expiring within the lockdown period may not continue to operate in future, one example of such is in rail operations. This would cause an additional burden on providers to seek the same quality expertise elsewhere to assist in the practical operations.

The hands-on discovery and inquiry-based learning approaches followed by many of the respondents became a huge challenge to ensure application of knowledge selections / the theoretical component. Others engaged deeply to find a way to get around the dilemma with the practicals that will still ensure that all outcomes are reached and that all SO's, AC's, CCFO's, EEKS's have been covered.

3.1.8 Mode of delivery

Most of the respondents indicated that their clients prefer face-to-face delivery framed in an experiential learning approach. The same could be said for their references to parents, students and some of the staff members. It is therefore pivotal for the respondents to get clarity about the length of lockdown and possible alternative tuition models that they must adapt in a restricted and narrowly framed reality. Respondents stressed that alternative modes of delivery need time to become established in a particular context and that the development and implementation of online and blended teaching, learning and alternative assessment paradigms are costly. For many respondents, the forced change of mode of delivery resulted in additional cost not budgeted for in the 2020 academic year.

A few respondents refer to disability factors as determining factor for the mode of delivery. In this regard the example of deaf students was mentioned with the indication that these students need to have a clear vision of a qualified facilitator to deal with tuition. The providers found it difficult to ensure good facilitation and to adhere to the COVID-19 requirements pertaining to social distancing and the call for online engagement. For these students face-to-face learning would be the most appropriate means of delivery.

In instances, respondents refer to a psycho-emotional impact that the need to work online has had on some students. Respondents mentioned that some student expresses a fear for moving to another kind of learning platform, partially due to the fact that they are not certain of what to expect and what would be expected of them.

3.1.9 Assessment practices

Many of the respondents indicated that summative assessment and practical examinations are mainly what make up the assessment practices. Moving tuition online, also means that alternative assessment practices had to be developed. Most providers are not ready to adopt an alternative assessment paradigm that moves away from the basic pen and paper model. Some of the respondents indicated that SETAs will only verify to hard copy results and individual arrangements are done to arrange for such verification. Assessment feedback is given in an online classroom. The respondents still await the approval of and implementation of e-assessments from the SETAs.

Concerns were raised about conducting EISA practice assessments and final assessments. Some respondents indicated that all staff have been working remotely and will only be able to conclude the external moderation of projects and portfolio of evidence done on paper post lock down – this in turn affects the structure of and planning for the academic year. Progress and planning are also affected by examinations which were put on hold, as a result, students could not register for the

second trimester. Respondents reiterated in various ways the fact that if approval is not granted for online summative assessments to take place, students will not be able to sit for an examination or the possibility of continuation of study.

The ability to provide feedback and to use feedback as adaptation in tuition planning seems to be a major gap in the assessment processes. Respondents referred to the lack of moderation and student communication. Others mentioned that students completed the portfolio of evidence, which cannot be verified because of the COVID-19 restrictions also that students who completed their final modules cannot proceed to write a final examination. This in turn impacted heavily on processes and the academic year.

The analysis of the responses pointed to a great need to review assessment processes. This would require deeper thinking about qualification structures and the weighting of components.

3.1.10 Accreditation processes

Respondents raised many concerns about slow responses and lack of communication in dealing with accreditation processes. Although some of the respondents expressed appreciation for some of the SETAs to introduce online accreditation and approval processes, the main concerns raised were about the burdensome administration processes and slow responses in implementation and approval. Many referred to the amount of time spent on the application process, not knowing whether approval will be granted. Some respondents refer to the effect of administrative requirements on the expectancies in the new COVID driven reality. Responses included references to dealing with applications to offer online tuition, while the urgent need to adopt an alternative mode of delivery and develop source material to service the new requirement also knocked on the door. Many just tried to keep provision buoyant by putting additional communication structures in place.

Communication between service providers, collaboration across as well as the network of training professionals and SDF providers were the most helpful for many of the respondents. Some indicated that the biggest support came from amongst themselves to interpret the many directives sporadically issued by government.

3.1.11 Clarity in communication and guidance

The respondents pin their uncertainty to a lack of clarity in the communication about expectancies, but also in the restricted guidance in terms of actions to be taken. Two examples mentioned are whether and when the Trade Testing would resume, whether so-called “top-up” training will happen and when SETAs will issue serial numbers. Guidance in terms of directives and compliance were also mentioned as a concern. Reference was for instance made to the governmental indication that students would return to workplaces and institutions during the months of May-June, but with not directive issued in this regard, the actual time of return stayed uncertain.

The respondents made it clear that it could be argued that the lack of communication and the slowness in responses from SETAs might be that they were also heavily affected by the regulations and operated on skeleton staff capacity.

3.1.12 Policy and regulations

Concerns are raised about the lack of regulatory frameworks for the SETAs to deal with online moderation. A concern is also raised about the lack of training in this regard which impacted on operations and provisioning due to the delay in approval of online tuition. Respondents indicated

that the changes required a rewrite of QMS policies and to ensure alignment of internal policies with SETA requirements for online applications. Respondents experience the online application process as lengthy and burdensome.

Adherence to the regulations in terms of health and safety, 9,6% of the respondents indicated that they would have difficulty or will not be able at all to comply to most of the stipulated guidelines. Although 82% will be able to substantially comply to the DHET health and safety guidelines, this should be read with the concern expressed about additional expenses not budgeted for. It also means that providers need to review internal policies to ensure alignment with national expectancies. Because of the social distancing rule, the utilisation of facilities should be considered and referenced in internal policies pertaining to teaching and learning.

The responses showed deep uncertainty pertaining to the interpretation and implementation of policies. Also, the way how provider policies should be aligned to national policies and expectancies set by SETAs brought a lot of uncertainty in the operations of these providers.

4. Recommendations

The suggestions made below are to address the prominent issues that have been referenced as challenges experienced to move to an online tuition environment.

4.1.1 Structures, support and processes to frame revenue generation

A drastic increase in unbudgeted expenditures was caused by unpreparedness to deal with the requirements of the sudden onset of COVID-19, low student numbers, non-payment of student fees and the continued expenses.

Revenue generation is in many instances also reliant on external processes and organisations such as clients and the SETAs. A review of the SETA's administrative processes, more efficient approval processes and a stronger working relationship with industry will be necessary. An advocacy drive pertaining to positive features and value of alternative pedagogies, online and blended teaching and learning practices might motivate a more positive client perspective.

A more streamlined accreditation to lessen administrative heavy processes would assist in creating more certainty for the service providers. A review of accreditation processes and other SETA practices seems to be a necessity.

The broader economic impact on revenue generation and income streams should be acknowledged. This points to national supporting structures, communication and the need to involve the broader community and government to ensure the continuation of skills development to feed the industry and economic need.

4.1.2 Intended outcomes and academic year planning

Many might refer to a lost academic year and that students will need an additional term to complete studies. The planning for an academic year should be planned with intended capacity and skill development, qualification structures, student enrolment and staff capacitation in mind. Furthermore, supporting processes such as supply chain management and availability of suppliers and resources such as textbooks need to be considered.

Timeframes, regulations and changes in national policies are matters for consideration in determining intended outcomes for a particular academic year. Certain disciplines might continue to be offered in totality online by utilising alternative pedagogies. The QCTO and SETAs need to communicate clear directives in this regard as this would impact on intended outcomes for an academic year.

4.1.3 Alignment of infrastructure, capabilities and e-learning material

Service providers might have infrastructure available which they never utilised before the lockdown. Taking stock of available infrastructure and staff capabilities for the utilisation of infrastructure will ensure more structured planning in what still needs to be developed. This will also assist in the planning and framing of the development of new resource material.

The available infrastructure should be read in line with underpinning teaching and learning approaches that the service providers would adopt to steer pedagogies. This should be done for both blended and online tuition platforms. An evaluation of available infrastructure should be done with a determination of needs for e-learning software to assist in the development of online teaching and learning material. Cost, timeframes, availability and staff capabilities to use the software will be determining factors in planning and budgeting. Learner profile, context and learning styles are matters for consideration in deciding on types of infrastructure.

4.1.4 Readiness to provide and receive tuition

The following findings that 31% of the staff are not sufficiently prepared and that another 35% would need some support underline the urgent need of staff upskilling and reskilling in terms of alternative pedagogies and digital literacy. To ensure a high staff morale, and evenness in capacity to deal with alternative offerings need to be established.

It should be noted that the preparation should not only include knowledge and digital literacy, but to also include the cultivation of creative, innovative thinking, employing principles of mindful teaching and learning practices, executive functioning and emotional intelligence. The latter to include the exercising of engagement, compassion and motivation.

4.1.5 Review of qualification and subject structures: accommodation of the application component

The practical training forms 70% of training requirements and since this could not take place during lockdown, respondents pointed to a severe impact on students' EISA readiness. The multiple references to the difficulties experienced in terms of work integrated learning call for the review of thinking in terms of expectancies towards achievement of a qualification.

Questions should be asked about the knowledge and knowledge application through practicals and simulated environments. Another matter that urgently needs rethinking is the expectancies pertaining to work integrated learning, the monitoring and the assessment of such. More consideration is needed to determine what are the intended learning outcomes and how the learning outcomes could be moderated. Expectancies in terms of practical experience and credit bearing components are considerations for thinking about achieving a qualification and the certification of such attainment.

4.1.6 Alternative modes of delivery and assessment practices

When thinking about innovative pedagogical practices, the main aim ought to be the establishment of a meaningful and long-term effect on students' learning. One should be careful to think that the mere introduction of online learning and application of technologies would lead to innovative pedagogical practices. It might just be that a replication of lecturing is done online. Alternative, innovative pedagogies should assist students to gain intrinsic motivation for learning and the ability to be self-directed and develop a sense of autonomy. This means that new dispositions of thinking and learning should be developed. An alignment with intended learning outcomes should underpin pedagogical choices and to also frame assessment practices.

The analysis of the responses pointed to a great need to review assessment processes. This would require deeper thinking about qualification structures and the weighting of components, but also the rethinking of purpose of assessment, types of assessment and the alignment with qualification structures.

Another matter pertaining to instructional choices is the role of feedback. The ability to provide feedback and to use feedback as adaptation in tuition planning seems to be a major gap in the assessment processes. Support in moderation practices, but also in how feedback could be used to steer the teaching and learning process, reciprocal engagement and peer tutoring and assessment should get attention. Self-assessment and metacognitive practices would enhance the efficacy of formative assessment practices a great deal.

4.1.7 Streamlining of policy application, regulations and accreditation

In many instances the responses pointed to a fragmented policy environment that needs urgent review to smooth and support processes and not to further cause hindrances in service provision. Policy is sometimes seen as the panacea for all ails in a system, and that policy reviews would bring about the cure. Solutions to problems might lay in trimming down on policy development, to rather strengthen sections of policies that might assist in streamlining processes and to support the system in its policy interpretation and implementation.

Concerns were raised about the lack of regulatory frameworks for the SETAs to deal with for instance online moderation. This means that there is a need for the alignment of national policy and the institutional adherence to and implementation of stipulations. Respondents indicated for instance that the changes required a rewrite of QMS policies and to ensure alignment of internal policies with SETA requirements for online applications.

The responses showed deep uncertainty pertaining to the interpretation and implementation of policies. Also, the way how provider policies should be aligned to national policies and expectancies set by SETAs brought a lot of uncertainty in the operations of these providers.

Respondents raised many concerns about slow responses and lack of communication in dealing with accreditation processes. This required a review of possible lengthy and burdensome actions to be taken to adhere to all requirements. Accreditation should be considered with the need of qualifications and in line with the broader economic development in South Africa.

The respondents pin their uncertainty to a lack of clarity in the communication about expectancies, but also in the restricted guidance in terms of actions to be taken. Two examples mentioned are whether and when the Trade Testing would resume, whether so-called “top-up” training will happen and when SETAs will issue serial numbers. Guidance in terms of directives and compliance were also mentioned as a concern. All of the above points to a need for open and clear communication, advice and direction from the QCTO and quicker response time from the SETAs. Communication is pivotal to efficacy, effective processes and quality provision.

5. Concluding remarks

Exploring the matter of changing modes of delivery and seeking alternative pedagogical practices, mostly require thinking about how differently to deal with a concept, seeking the rationale for engagement and solving a problem. Research conducted by Burns, Nettlebeck & McPherson (2009) and others on problem solving has emphasized the connection between reasoning and various cognitive abilities such as intelligence, intellect, attention and working memory. Related issues concern the relationship between beliefs and reasoning, the strength of explanations and evidence in generating and evaluating arguments (Brem & Rips 2000), the role of fast, automatic, unconscious reasoning processes versus processes which are slow, conscious and effortful. There is also the issue

of the impact of the group in modifying individual cognitive biases. From the responses to the survey questions, all the above became evident. Respondents made it clear that they had to find new ways to engage, to motivate, to communicate to find support.

Although the survey intended to determine the readiness of providers to move to online tuition, or at least blended teaching and learning, the questions also prompted responses on another level. Respondents started to ask questions about their own context, diversity of student profiles and various perspectives on the same matter, namely online teaching and learning. It was clear from the responses that major role of assessment, ways in which assessment is conducted and the outcomes of assessment should receive more attention. The integrated relationship of qualification, its offering and the kind of guidance that students need towards the attainment of a qualification needs deeper reflection.

Moving to alternative modes of delivery, should seriously consider in what ways a meaningful and long-term effect on students' learning could be established. Law (2002) points to such a shift as a 'product of change' and 'process' and Kozma and Anderson (2002) refer to a "newness" which means that in the operationalisation, one must be open to the unanticipated. Therefore, the importance of flexibility and the ability to adapt cannot be overstressed.

One should be careful to think that the mere introduction of online learning and application of technologies would lead to effective teaching and quality learning, in fact, Zemsky and Massy (2004) and Cuban (2009) warn that it could just be a replication of traditional pedagogical practices. When moving to an alternative mode of delivery, students also need to gain intrinsic motivation for learning and the ability to be self-directed and develop a sense of autonomy. According to the responses students hugely lacked self-motivation, self-directed learning and to take responsibility for and initiative in their own learning. Moving to an alternative mode of delivery also requires the development of new dispositions of thinking and learning.

From the responses, it seems that self-regulation needs to be instilled in many of the students to also be willing to adapt to new learning environments. Examples of the effect and worth of self-regulation. Frydenburg (2006) reports for instance on a case where information technology (IT) fundamental course students replaced textbooks with pocket PCs; they used the PCs to search for IT words in an active, student-centered approach. As peer/reciprocal form of teaching, the students selected topics of interest to them and worked in pairs to produce video podcasts on a topic in the module and would share their assignment with the whole class. The process involved the instructor providing sample video podcasts as examples and scaffolding in technical parts of the assignments. Elgort, Smith and Toland (2008) reports on another case where students studying towards Master of Library and Information Studies worked collaboratively using a wiki to produce a web-based information guides. Working autonomously, groups used instructor guidelines to produce three deliverables, a resource guide, presentation to class and an online journal in which students documented and reflected on their experiences. In another instance, students worked on lecturer / instructor directed (top down) and student directed (bottom up) activities which allow for high levels of empowerment and freedom. Some of the activities were not directly graded, rather students had to show evidence of accomplishing the activities. Students had a particular time period in which they had to contribute 500 words fortnightly. These examples just show that online and blended learning require student participation to keep them motivated, engaged and focused. This is a matter that the QCTO and SETA might have to consider in the initiatives to enhance the alternative modes of delivery. This would include a new way of interpreting programme content and in what sequence the offering needs to be planned. Even something so simplistic as allowing students to convey their ideas provided them with the necessary flexibility and motivation to participate. Staff's deeper thinking in terms of various forms of engagement needs to be address which could be anything from a raft of tools, modalities and media such as pictures, text, video and voice to a product and marketing strategy.

Staffs' capabilities, experience and perceptions

In face-to-face conventional classrooms, lecturers have different characteristics, teaching styles and facilitating skills. Likewise, lecturers also have different characteristics and perceptions of online learning and the effectiveness of technology-enhanced learning. According to Webster and Hackley (1997) these different perceptions in teaching style, attitude towards technology and the control of technology may impact and influence the perception of students on the effectiveness of online learning. The responses about staff readiness clearly point to the effect of staff readiness on student perceptions and even their own readiness.

Alberth (2011) argues that lecturers that have a positive attitude towards online learning and new technology are more likely to have more motivation and enthusiasm in their delivery and the tenacity to deal with challenges that are brought about by online learning. Those that have strong reservations about online learning and new technology are more likely to have less motivation and enthusiasm and only get involved in such programs as part of what is required of them. In this instance it was the sudden onset of COVID-19, the accompanied regulations and forced change to an alternative mode of delivery. Uncertainty and even fear are evident in the responses to the survey questions. One would assume that if a lecturer displays a positive attitude and is well-prepared, that positive attitude, enthusiasm and trust in the new way of teaching and learning will be established.

Furthermore, in an online learning environment, a lecturer's teaching and facilitating style has to encourage social interaction, participation and engagement among students and reduce a sense of isolation and seclusion due to the absence of face-to-face interaction that is done in classrooms. Carefully providing direction to students on how to access and evaluate web information on their own is also particularly important in encouraging students and building up their confidence.

The responses confirmed that the success of online learning also crucially depends on the computer literacy and technology knowledge of the lecturer because students are often faced with technical problems when accessing content online. Some of the respondents referred to the low digital literacy that exists among teaching staff and that some staff is hesitant to embrace educational technology because of the unfamiliarity with the environment. Research done by Kennedy, Jones, Chambers and Peacock (2013) confirms this finding by also referring to perceptions and concerns about the significance of technology in online or blended learning.

If teaching staff values the flexibility, enhanced engagement and personalised learning educational technology provides, their perceptions and attitudes formed from their experiences can greatly contribute to the adoption and integration of new modes of delivery on alternative platforms. A study that was done by De Winter et al. (2010) on the perceptions of lecturers on the affordances of online learning and new technology, found that giving the necessary support to lecturers in integrating technology into their online or blended teaching can contribute to useful pedagogical outcomes.

Context, diversity and differentiated student profiles

The success of online or blended modes of delivery does not only depend on technology, but on other critical success factors, such as, instructional design (pedagogy), lecturer and student characteristics and the support that is given to lecturers / instructors and students. Therefore, it is important to carefully consider and recognise these factors when designing or delivering online teaching and learning programmes.

About two decades ago a NESTA Future lab reported that mobile technology would further move learning activities out of the classroom into the virtual and physical environments of the students, causing learning to increasingly become more situated, more personal, collaborative and lifelong (Naismith, Lonsdale, Vavoula and Sharples, 2004). Years later many people including students began to turn to mobile devices as their first preference for connectivity and the use of these gadgets and mobile technology allowed students to expand their research, investigations and discussions beyond

classrooms (Johnson et al., 2011). It also enabled students to create knowledge and work together using larger content and enhanced their ability to apply such knowledge to their course content through “immersive recreation of dynamic systems” and “participatory simulations” (Alexander, 2006; Naismith et al., 2004). So it seems whether the move to alternative offerings is voluntary or forced as was the case in 2020, the use of mobile technology will continue to change the way students learn and even create new challenges for pedagogy to improve peer and lecturer-student interactions, as it seems from the responses received on the survey questions. This might also call for networking and other ways of collaboration. Although the service providers who participated in the survey, offer of training as a business adventure, the responses brought some instances of the value of collaboration and communication that resulted in more informed choices and reactions. This is a true call to move away from the silo approach and to encourage collaboration across providers. The effect of collaboration and sharing expertise is confirmed by a study done by Li, Zhang, Bonk and Guo (2015) on the experiences and perceptions of students on online learning. In the study students expressed appreciation for the opportunity that the online and open source learning platforms afforded them to also learn from seasoned lecturers and field experts not attached to their institutions. This is a matter could be considered by the respondents to the QCTO survey to develop a closer relationship with industry field experts or specialists from other service providers.

From a number of the responses, one could sense that some students perceived the physical absence of a lecturer in an online environment to be unfavourable and demotivational. Reference was made that even the clients believe that students would learn more effectively face-to-face with the lecturer, in a conventional teaching and learning environment with course material as source material, rather than looking at computer screens. Thus, these concerns show the need for inquiry into the way students learn, interact with their lecturers and other students and engage with the use of different technologies on these e-learning platforms. Substantial research has been done by Armstrong (2011) as well as Li, Zhang, Bonk and Guo (2015) to support assist providers in dealing with more effective learning in an online teaching and learning environment.

On the other hand, the responses pointed to how technology and online learning create digital divide, global, democratic and social disparities. Different levels of computer literacy, failures to access internet connectivity and student affordability of different technologies create an “app gap” which can cause a lot of anxiety, frustration, disappointment and a sense of isolation among students. Research done by Wang, Wiesemesand Gibbons (2012) and Rideout, Saphir, Tsang and Bozdech (2011) report on the same matter. The work of Corbell and Valdes Corbell (2007) as well as Guri-Rosenbilt (2005) provide for some guidance in how disadvantaged students that require steady and institutional support and training could be assisted.

In the development of online and blended learning material, students’ individual characteristics, such as, differences in learning styles and preferences need to be considered, but also the context in which the provision is taking place.

Suggested literature and case studies that could assist in strengthening seeking alternative pedagogies and the offering of online and blended tuition:

Alberth, A. (2011). Critical success factors in online language learning. *TEFLIN journal*, *22*(1), 16-33.

Alexander, B. (2004). Going nomadic: Mobile learning in higher education. *Educause review*, *39*(5).

Armstrong, D. (2011, October). Students' perceptions of online learning and instructional tools: A qualitative study of undergraduate students use of online tools. In *E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 1034-1039). Association for the Advancement of Computing in Education (AACE).

Ashton, J., & Newman, L. (2006). An unfinished symphony: 21st century lecturer education using knowledge creating heutagogies. *British Journal of Educational Technology*, *37*(6), 825-840.

Atkinson, K., Fluker, G., Ngo, L., Dracup, M., & McCormick, P. (2009, January). Introducing a learning repository using a blended professional development approach. In *ASCILITE 2009: Same places, different spaces: Proceedings of the 26th ASCILITE conference* (pp. 35-39). Australian Society for Computers in Learning in Tertiary Education.

Biggs, J. B. (1987). *Student Approaches to Learning and Studying. Research Monograph*. Australian Council for Educational Research Ltd., Radford House, Frederick St., Hawthorn 3122, Australia.

Bonk, C. J., & Lee, M. M. (2017). Motivations, achievements, and challenges of self-directed informal students in open educational environments and MOOCs. *Journal of Learning for Development*, *4*(1), 36-57.

Brem, S.K. & Rips, L.J. (2000): Explanation and Evidence in Informal Argument. *Cognitive Science, 24 (4), 573-604.*

Burns, N.R., Nettelbeck, T. & McPherson, J. (2009): Attention and Intelligence. A Factor Analytic Study.
Journal of Individual Differences, 30 (1), 44-57.

Chen, P. S. D., Lambert, A. D., & Guidry, K. R. (2010). Engaging online students: The impact of Web-based learning technology on college student engagement. *Computers & Education*, *54*(4), 1222-1232.

Cobcroft, R., Towers, S., Smith, J., & Bruns, A. (2006). Mobile learning in review: Opportunities and challenges for students, lecturers and institutions. In *Learning on the Move: Proceedings of the Online Learning and Teaching Conference 2006:* (pp. 21-30). Queensland University of Technology.

Corbeil, J. R., & Valdes-Corbeil, M. E. (2007). Are you ready for mobile learning? *Educause Quarterly*, *30*(2), 51.

Cuban, L. (2009). *Oversold and underused*. Harvard university press.

De Winter, J., Winterbottom, M., & Wilson, E. (2010). Developing a user guide to integrating new technologies in science teaching and learning: Lecturers' and pupils' perceptions of their affordances. *Technology, Pedagogy and Education*, *19*(2), 261-267.

Dew, J. (2010). Global, mobile, virtual, and social: The college campus of tomorrow. *The Futurist*, *44*(2), 46.

Diaz, D. P., & Cartnal, R. B. (1999). Students' learning styles in two classes: Online distance learning and equivalent on-campus. *College teaching*, *47*(4), 130-135.

Driver, R., Asoko, H., Leach, J., Scott, P., & Mortimer, E. (1994). Constructing scientific knowledge in the classroom. *Educational researcher*, *23*(7), 5-12.

Dron, J. (2007). Designing the undesignable: Social software and control. *Educational Technology and Society*, 10(3), 60-71.

Edirisingha, P., Salmon, G., & Fothergill, J. (2007). Profcasting–a pilot study and guidelines for integrating podcasts in a blended learning environment. *Research on competence development in online distance education and e-learning. Oldenburg: BIS-Verlag*.

Education and Manpower Bureau (EMB) (2004). Information technology in education – way forward.

Elgort, I., Smith, A. G., & Toland, J. (2008). Is wiki an effective platform for group course work? *Australasian Journal of Educational Technology*, *24*(2).

Ellis, A., & Phelps, R. (2000). Staff development for online delivery: A collaborative, team based action learning model. *Australasian Journal of Educational Technology*, *16*(1).
Enriquez, A. G. (2010). Enhancing student performance using tablet computers. *College teaching*, *58*(3), 77-84.
Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Lecturer beliefs and technology integration practices: A critical relationship. *Computers & education*, *59*(2), 423-435.
Ertmer, P. A., Newby, T. J. 1993. Behaviourism, Cognitivism, Constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly, 6 (4): 50-70.*
Fallaize, G. (2010). A whole lotta learning going on. *The Safety & Health Practitioner*, *28*(8), 46-46.
Fitzgerald, R., Barrass, S., Campbell, J., Hinton, S., Ryan, Y., Whitelaw, M., ... & McGinness, N. (2008). Digital Learning Communities (DLC): Investigating the application of social software to support networked learning (CG6-36).
Flores, M. A. (2005). How do lecturers learn in the workplace? findings from an empirical study carried out in portugal. *Journal of in-service education*, *31*(3), 485-508.
Fouser, R. J. (2010, July). From CMS to SNS: Exploring the use of Facebook in the social constructivist paradigm. In *2010 10th IEEE/IPSJ International Symposium on Applications and the Internet* (pp. 221-224). IEEE.
Friedman, T. (2013). Revolution hits the universities. *The New York Times*, *26*(1), 2013.
Frydenberg, M. (2006, November). Principles and pedagogy: The two P's of podcasting in the information technology classroom. In *Proceedings of ISECON* (Vol. 23).
Garrison, D. R., & Vaughan, N. D. (2008). *Blended learning in higher education: Framework, principles, and guidelines*. John Wiley & Sons.
Guri-Rosenblit, S. (2006). Eight paradoxes in the implementation process of e-learning in higher education. *Distances et savoirs*, *4*(2), 155-179.
Handal, B., MacNish, J., & Petocz, P. (2013). Academics adopting mobile devices: The zone of free movement. In *ASCILITE-Australian Society for Computers in Learning in Tertiary Education Annual Conference* (pp. 350-361). Australasian Society for Computers in Learning in Tertiary Education.
Harris, B. (2007). Flickr in art history class – how fun! smARThistory
Johnson, L., Becker, S. A., Cummins, M., & Estrada, V. (2014). *2014 NMC Technology Outlook for Australian Tertiary Education*. The New Media Consortium.
Johnson, L., Smith, R., Willis, H., Levine, A., & Haywood, K. (2012). *NMC Horizon Report: 2011 Edition*. The New Media Consortium.
Kabilan, M., & Rajab, B. (2010). The utilisation of the Internet by Palestinian English language lecturers focusing on uses, practices and barriers and overall contribution to professional development. *International Journal of Education and Development using ICT*, *6*(3), 56-72.
Kankaanranta, M. (2005). Guest Editor s Introduction: International Perspectives on the Pedagogically Innovative Uses of Technology. *Human Technology: An Interdisciplinary Journal on Humans in ICT Environments*.
Kennedy, G., Jones, D., Chambers, D., & Peacock, J. (2011). Understanding the reasons academics use–and don't use–endorsed and unendorsed learning technologies. In *Proceedings of the Ascilite*.
Kozma, R. B. (2003). *Technology, innovation, and educational change: a global perspective: a report of the second information technology in education study: module 2*. International society for technology in education (ISTE); International association for the evaluation of educational achievement.
Kozma, R. B., & Anderson, R. E. (2002). Qualitative case studies of innovative pedagogical practices using ICT. *Journal of computer assisted learning*, *18*(4), 387-394.
Kukulska-Hulme, A. (2006). Mobile language learning now and in the future.
Lankshear, C. Snyder, 1.(2000) Lecturers and Techno-Literacy: Managing Literacy technology and Learning in Schools. *Sydney, NSW, AUS: Alien & Unwin*.
Law, N. (2002, March). Leadership, change management and good pedagogic practices. In *APEC*

Cyber Education Cooperation (ACEC) International Workshop on e-Educational Leadership in ICT. Bangkok, Thailand, March.
Lee, M. J., Eustace, K., Hay, L., & Fellows, G. (2005). Learning to collaborate, collaboratively: An online community building and knowledge construction approach to teaching computer supported collaborative work at an Australian university. *2005 Annual Proceedings-Orlando: Volume# 2*, 328.
Li, Y., Zhang, M., Bonk, C. J., & Guo, Y. (2015). Integrating MOOC and Flipped Classroom Practice in a Traditional Undergraduate Course: Students' Experience and Perceptions. *International Journal of Emerging Technologies in Learning*, *10*(6).
Lui, A. K., Choy, S. O., Cheung, Y. H., & Li, S. C. (2006). A study on the perception of students towards educational weblogs. *Informatics in Education*, *5*(2), 245-266.
McLoughlin, C., & Lee, M. J. (2009). Personalised learning spaces and self-regulated learning: Global examples of effective pedagogy.
McLoughlin, C., & Lee, M. J. (2010). Personalised and self regulated learning in the Web 2.0 era: International exemplars of innovative pedagogy using social software. *Australasian Journal of Educational Technology*, *26*(1).
Ming, T., Hall, C., Azman, H., & Joyes, G. (2010). Supporting smart school lecturers' continuing professional development in and through ICT: A model for change. *International Journal of Education and Development using ICT*, *6*(2), 5-20.
Minocha, S. (2009). A study of the effective use of social software to support student learning and engagement.
Mirriahi, N., & Alonzo, D. (2015). Shedding light on students' technology preferences: Implications for academic development. *Journal of University Teaching & Learning Practice*, *12*(1), 6.
Mirriahi, N., Alonzo, D., McIntyre, S., Kligyte, G., & Fox, B. (2015). Blended learning innovations: Leadership and change in one Australian institution. *International Journal of Education and Development using ICT*, *11*(1).
Muir-Herzig, R. G. (2004). Technology and its impact in the classroom. *Computers & Education*, *42*(2), 111-131.
Naismith, L., Sharples, M., Vavoula, G., & Lonsdale, P. (2004). Literature review in mobile technologies and learning.
Norris, P. (2001). *Digital divide: Civic engagement, information poverty, and the Internet worldwide*. Cambridge university press.
Peacock, T., Fellows, G., & Eustace, K. (2007). The quality and trust of wiki content in a learning community. In *ICT: Providing choices for students and learning. Proceedings ascilite Singapore 2007* (pp. 822-832).
Pilling-Cormick, J. & Garrison, D.R. (2007). Self-directed and self-regulated learning: conceptual links. Canadian journal of university continuing education, 33(2):13-33.
Poelmans, S., & Wessa, P. 2013. "A constructivist approach in a blended e-learning environment for statistics", *Interactive Learning Environments*, pp.1-17.
Rabayah, K. (2008). A practical ICT for development framework: The ICT Center of Excellence. *International Journal of Education and Development using ICT*, *4*(4), 111-126.
Rabayah, K. (2008). A practical ICT for development framework: The ICT Center of Excellence. *International Journal of Education and Development using ICT*, *4*(4), 111-126.
Ritchhart, R & Perkins, D.N. (2002). Life in the Mindful Classroom: Nurturing the Disposition of Mindfulness. *Journal of Social Issues*, Vol. 56, No. 1, 2000, pp. 27–47
Rideout, V., Saphir, M., Tsang, V., & Bozdech, B. (2013). Zero to eight: Children's media use in America. Common Sense Media.
Rossingh, H. & Chambers, W. (2011). Project-based learning and pedagogy in lecturer preparation: staking out the theoretical mid-ground. *International journal of teaching and learning in higher education, 23(1):60-70.*
Rossing, J. P., Miller, W., Cecil, A. K., & Stamper, S. E. (2012). iLearning: The future of higher education? Student perceptions on learning with mobile tablets.

Rovai, A. P., & Jordan, H. (2004). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *The International Review of Research in Open and Distributed Learning*, *5*(2).
Salaway, G., Caruso, J.B. & Nelson, M.R. (2008). *The ECAR study of undergraduate students and information technology, 2008*. Boulder, CO: EDUCAUSE Center for Applied Research.
Sandeen, C. (2013). Assessment's place in the new MOOC world. Research & Practice in Assessment 8 (1), 5–12. *View at*.
Schlager, M., Fusco, J., & Schank, P. (2002). Evolution of an online education community of practice. *Building virtual communities: Learning and change in cyberspace*, *129*, 158.
Shuler, P., Hutchins, G., & LaShell, B. (2010). Student perceptions of tablet computers in a cooperative learning environment. *NACTA Journal*, *54*(2), 11.
Simons, P. R. J. (1993). Constructive learning: The role of the student. In *Designing environments for constructive learning* (pp. 291-313). Springer, Berlin, Heidelberg.
SITES M2 Projects. (n.d.). Second Information Technology in Education Study. Module 2 project pages.
Stubbé, H. E., & Theunissen, N. C. (2008, June). Self-directed adult learning in a ubiquitous learning environment: A meta-review. In *Proceedings of the First Workshop on Technology Support for Self-Organized Students* (pp. 5-28).
Terrell, S. R. (2002). The effect of learning style on doctoral course completion in a Web-based learning environment. *The Internet and Higher Education*, *5*(4), 345-352. Reflective Practice in the Civil Society:
Ulrich, W. (2000). Reflective Practice in the Civil Society: The Contribution of Critically Systemic Thinking. *Reflective Practice, Vol. 1, No. 2, 2000, pp. 247-268.* [ISSN] 1462-3943
Volery, T., & Lord, D. (2000). Critical success factors in online education. *International journal of educational management*.
Wallace, L. (1996). Changes in the demographics and motivations of distance education students. *Journal of Distance Education*, *11*, 1-32.
Wang, R., Wiesemes, R., & Gibbons, C. (2012). Developing digital fluency through ubiquitous mobile devices: Findings from a small-scale study. *Computers & Education*, *58*(1), 570-578.
Webster, J., & Hackley, P. (1997). Teaching effectiveness in technology-mediated distance learning. *Academy of management journal*, *40*(6), 1282-1309.
Whitehead, A.N. (1929). *The Aims of Education and Other Essays.* New York: Macmillan.
Yang, J. C., & Lin, Y. L. (2010). Development and evaluation of an interactive mobile learning environment with shared display groupware. *Journal of Educational Technology & Society*, *13*(1), 195-207.
Yuen, A., Fox, R., & Law, N. (2004). Curriculum innovations and multi-level e-leadership requirements: Putting research into practice. *Asia-Pacific Collaborative education Journal*, *1*(1), 11-18.
Zemsky, R. (2014). With a MOOC MOOC here and a MOOC MOOC there, here a MOOC, there a MOOC, everywhere a MOOC MOOC. *The Journal of General Education*, *63*(4), 237-243.
Zemsky, R., & Massy, W. F. (2004). Thwarted innovation: What happened to e-learning and why. A final report for *The Weatherstation Project* of The Learning Alliance at the University of Pennsylvania in corporation with the Thomson Corporation: Pennsylvania