United Nations
Educational, Scientific and
Cultural Organization

European Centre for the Development
of Vocational Training

USING LEARNING OUTCOMES TO COMPARE THE PROFILE OF VOCATIONAL EDUCATION AND TRAINING QUALIFICATIONS – A GLOBAL APPROACH

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November 2017

Summary

This article summarises the outcomes of a joint research carried out by Cedefop, ETF and UNESCO (in 2015-16) comparing the content and profile of four vocational qualifications (Bricklayer, Health care assistant, Hotel receptionist and ICT service technician) in 26 countries worldwide. The research was made possible by the increasing use of learning outcomes for defining and describing qualifications. The comparison was also made possible by the ongoing development of the European classification of skills, competences, occupations and qualifications (ESCO) providing a reference point for comparison of national profiles. The article argues that systematically demonstrating similarities and differences between qualifications allows national stakeholders to better reflect on their own choices and priorities: Are, for example, significant differences in skills requirements the result of differing national settings and requirements or are they merely caused by lack of information and oversight?

Introduction

While qualifications frameworks are developed for many different purposes, the promotion of learning outcomes stands out as probably the most important. **A systematic use of learning outcomes in frameworks and qualifications allows for the introduction of levels supporting comparison and transfer of qualifications**; outcomes increase the overall transparency of qualifications, making it possible for individual learners as well as future employers to judge their quality and relevance; and it points towards a 'common language' allowing for a dialogue between education and training institutions and external stakeholders on skills needs and the relevant responses to these. Different studies (Cedefop 2016; UNESCO, 2015) show that the national qualifications frameworks have played a significant role in supporting and facilitating a more systematic use of learning outcomes in many countries. Compared to the situation in 2013 when the first global inventory was produced (ETF, Cedefop and UNESCO, 2013), this inventory indicates that **learning outcomes are now more widely used and considered by countries in developing and reviewing and updating their qualifications.**

This article draws onon the increased use of learning outcomes, supported and facilitated by qualifications frameworks, and uses these statements as a basis for comparing the content and profile of vocational qualifications in 26 countries worldwide ([1]).

The comparative study – focus and methodology

In 2016, Cedefop, ETF ([2]) and UNESCO, in close cooperation with national stakeholders ([3]), carried out a comparative study of vocational education and training qualifications for 4 broadly defined profiles in 26 countries across the world. The study was inspired by the fact that an increasing number of countries now use **learning outcomes based approaches to define and write qualifications** ([4]). The emergence of this 'common language' ([5]) **makes it possible to compare what countries expect their TVET[6]-candidates to know, be able to do and understand after having successfully completed a TVET programme.** The study focusses on intended ([7]) learning outcomes and do not, consequently, claim to map and compare the actual

([1]) The study was carried out by researchers from 3s in Austria and Ockham IPS in the Netherlands, Karin Luomi Messerer, Monika Auzinger and Simon Broek. The findings presented in this article is based on the draft reports to Cedefop (2016) and UNESCO (2017).

([2]) The European Training Foundation, represented by Eduarda Castel Branco, added data for VET qualifications in Albania, Former Yugoslav Republic of Macedonia and Tunisia. Thought it was Serbia….?TUN data was not from ETF.

([3]) The analysis national level data was supported by a number of individual experts and institutions, see list in annex 1.

([4]) The 'global' study was inspired by and based on a European study developed by Cedefop, looking at ten VET qualifications in 10 EU countries. These ten qualifications are:

([5]) See for example Cedefop 2016, The application of learning outcomes in Europe; a comparative study of 33 countries.

(6) For the purpose of this article, the term Technical and Vocational Education and Training (TVET) is used. CEDEFOP uses the term Vocational Education and Training (VET).

([7]) The distinction between intended and actually achieved learning outcomes is critical for understanding the strengths and the limitations of the study: Intended learning outcomes are those that are presented in written documents. They describe what learners should know and be able to demonstrate at the end of a learning process. They are thus statements of expectations related to learners' performances. Achieved learning outcomes are those that are demonstrated by an

achievements of learners, as these are demonstrated through assessments or at work ([8]).While this can be seen as limiting the usefulness of the research, the systematic insight into national priorities can potentially add significant value. While not aiming for a ranking of countries, the aim of the study was twofold: (i) to examine the transparency and comparability of qualifications at international level and (ii) to support peer learning. Systematically demonstrating similarities and differences between qualifications allows national stakeholders to reflect on their own choices and priorities: Are, for example, significant differences in skills requirements the result of differing national settings and requirements or are they merely caused by lack of information and oversight? The following sections present the focus and the methodology of the comparative study. Given that this is a pilot-study testing out what is in many ways a new approach, this will be presented in some detail.

The qualifications studied

The study focuses on qualifications for 4 profiles commonly awarded in most countries of the world and seeks to describe and compare their scope, profile and content. The particular qualifications chosen are presented in the table 1 below.

Table 1 Qualifications covered by the study

individual learner at the end of a learning process and/or in a working context. In some countries the term 'competence' is used to describe these actually achieved learning outcomes.

([8]) The European part of the study, carried out by Cedefop, takes one step in this direction by analysing how learning outcomes are reviewed and how the experiences from 'real life' support a continuous renewal (through a feed-back loop) of qualifications.

Generic title	Further information / focal point of qualifications selected
Bricklayer/Masonry	Bricklayer is a traditional qualification in the construction sector (house building, commercial building, restoration, repair and maintenance).
Health care assistant	Healthcare assistants (or assistant nurses) provide assistance, support and direct personal care to patients and residents in a variety of institutional settings such as hospitals, clinics, nursing homes and aged care facilities. They generally work in support or under the guidance of qualified healthcare professionals (often nurses) or associate professionals. Might be a rather new qualification in some countries.
Hotel assistant/receptionist	Deals with communications as part of the reception function (e.g. provides tourist information to guests), with check-in and check-out of customer as well as with bookings; supports administration, book keeping, cost accounting.
ICT service technician	Provides ICT support and systems service in companies/institutions; focus is on more technical aspects of ICT installation, service and maintenance.

The qualifications were selected to illustrate the span of knowledge, skills and competences covered by national qualifications. While the bricklayer qualification must balance century-old handicraft traditions with modern industrial construction, the Health care assistant and the hotel receptionist qualifications need, to be able to offer the relevant personal services, a combination of sector-specific technical knowledge and inter-personal and transversal skills and competences. The ICT service technician qualification needs to combine technical and transversals skills and competences in a context characterised by rapid technological change. At least, two (Hotel receptionist and ICT service technician) out of the four qualifications are likely to refer to common sets of skills across countries.

The countries and regions covered

Departing from a Cedefop-project comparing 10 TVET-qualifications in 10 European Union countries, the keypurpose of the global study was to extend the selection of countries to cover as wide a variety of national systems and solutions as possible. The extension of the study from 10 to 26 countries was made possible by the cooperation between regional qualifications frameworks initiated by UNESCO from 2013 and onwards ([9]). This cooperation was essential for getting access to and analysing the relevant data from national qualification authorities. While important regions and countries are missing, **the study covers a wide range of countries and regions representing highly different national qualifications systems**. Countries are united, however, by having introduced learning outcomes-based national

([9]) In a follow up to the conclusions of the 2012 Shanghai declaration on TVET, a working group has been set up to address the feasibility of 'World reference levels for qualifications'. Including representatives of existing regional qualifications frameworks, this working group has initiated joint work in a number of areas, notably seeking to share experiences in the use of learning outcomes for different purposes.

qualifications frameworks. The participating countries were divided between Africa (5), Asia (2), Europe (12), the Gulf region (1), Latin America and Caribbean region (3) and the Pacific region (2). Table 2 shows the participating countries and the qualifications covered in each country and as a total.

Table 2 Countries and regions covered by the study

Region	Countries	Qualification profiles covered				Total
		Bricklayer	Hotel assistant / receptionist	Health care assistant	ICT service technician	
Africa	Mauritius	x	x	x	x	4
	Namibia		x			1
	Tunisia	x	x			2
	South Africa	X	x	x	x	4
	Zambia	x	x		x	3
Asia	Korea (KR)	X	X	X	X	4
	Philippines (PH)	X	X	X	X	4
Caribbean Region and Latin America	Barbados	x	x	x	x	4
	Chile	X	x			2
	Costa Rica	x	x	x	x	4
Europe	Albania	x			x	2
	Austria	x	x	x	X	4
	Bulgaria	x	x	x	X	4
	Denmark	x	x	x	X	4
	Finland	x	x	x	X	4
	France	x	x	x	X	4
	Ireland		x	x	X	3
	Lithuania	x	x	x	X	4
	Macedonia		x			1
	Netherlands	x	x	x	X	4
	Spain	x	x	x	X	4
	UK-England	x	x	x	X	4
Middle East	United Arab Emirates (UEA)				X	1
Pacific Region	New Zealand	x	x	x	X	4
	Samoa		x			1
Total	**26**	**20**	**23**	**17**	**20**	**80**

It is worth noting that **the four selected qualifications are not covered in all 26 countries**. This is partly due to lack of capacity at national level to provide data, partly because a particular qualificationis not awarded by the national system. This latter is in particular the case for the Health-care assistant.

Contextualising the qualifications

For a comparison of the content and profile of the qualifications to be possible, the institutional context in which the qualifications operate had to be clarified. While the majority of the 26 countries have set up national qualifications frameworks operating with learning outcomes-based levels, **only the European countries, through the EQF, have adopted a common reference point allowing for a comparison of these levels**. **This lack of a common reference provides a challenge for the global comparison** and could potentially be addressed through the gradual adoption of world reference levels, as currently sought by UNESCO. The occupational purpose of each qualification also provides an important indication on the role assigned to each qualification. The study distinguishes between two main occupational roles; skilled and semi-skilled worker. Table 3 shows how these two roles have been defined:

Table 3 Main roles of TVET-qualifications in the labour market

	Skilled worker	Semi-skilled worker
Scope	The qualification attests that the person is a qualified/competent/skilled worker, i.e. that he or she has the knowledge, skills and competence required to practice an occupation.	The qualification attests that a person has obtained a set of skills/competences, i.e. that he or she has the skills needed to perform particular tasks/a narrow set of activities (semi-skilled worker).

Source: Spöttl & Ruth 2011, 148-15

These roles can be further clarified by identifying the relationship of these qualifications to jobs and occupations. Does the qualification, for example, grant exclusive access to an occupation or is it one of several pathways leading in this direction? Table 4 shows different ways in which qualifications can be related to occupations:

Table 4 The relations of qualifications to occupations

Licensing refers to situations in which it is unlawful to carry out a specified range of activities for pay, i.e. an occupation or profession, without first having obtained a qualification which ensures that the practitioner meets the prescribed standards of competence.
Certification refers to situations in which there are no restrictions on the right to practice in an occupation, but job holders may voluntarily apply to be certified as competent by a state appointed regulatory body.
Registration refers to situations in which it is unlawful to practice without having first registered one's name and address with the appropriate regulatory body. Registration provides some form of legal barrier to entry, but an explicit skill standard is not provided.
Accreditation refers to situations in which an individual may apply to be accredited as competent by a recognised professional body or industry association. Accreditation is distinct

from certification in that the criteria governing accreditation and the procedures regarding enforcement are entirely the responsibility of the accrediting body rather than the State ([10]).

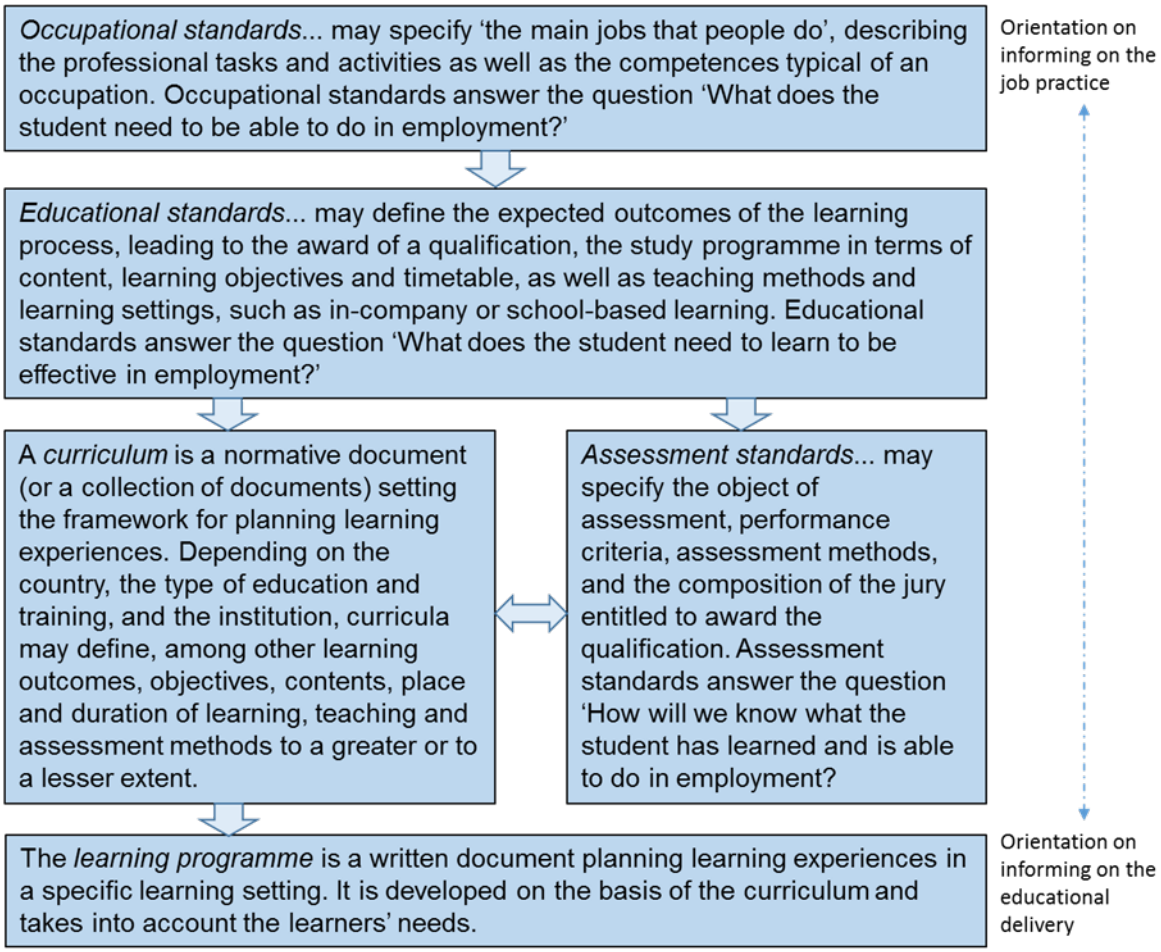
The learning outcomes data

While the contextual data helps to locate the qualifications in relation to the national qualifications systems and labour markets, the analysis of the intended learning outcomes stands at the centre of the study. While the learning outcomes approach now is commonly used for describing TVET-qualifications in the countries covered by the study ([11]), the way it is applied and interpreted varies. This means that **learning outcomes differ in length, level of detail as well as orientation**. **Countries** furthermore **use different documents and instruments to define and describe the intended learning outcomes** and it will **in many cases** be **necessary to combine different documents to get a full understanding** of the qualification in question. Countries normally use the following documents (Figure 1), or combinations of these, when defining the content and profile of their TVET-qualifications:

Figure 1. Documents providing information on learning outcomes

([10]) Cedefop (2013). *The role of qualifications in governing occupations and professions*. Working Paper No 20. Luxembourg: Publications Office of the European Union.

([11]) The fact that the 26 countries all use learning outcomes to define and describe their qualification signals a general acceptance of this approach. The differences in interpretation and implementation between countries, however, means that the objective of creating 'a common language' to be used across institutional and geographical borders has yet to be fully realised.



While occupational standards are oriented to meet needs of the labour market, specifying the performance requirements in an occupation, the educational standards, curricula, assessment criteria and program descriptions focus on the learning process and how this can be managed. These latter documents will normally vary significantly as regards level of detail and specificity. While a national qualification standard will normally provide an overarching description of the content and profile of a qualification, assessment criteria (for example) need to specify not only what to be assessed but also indicate the expected level of performance.

Establishing a reference point for comparing learning outcomes-based qualifications

Given that qualifications are presented and described in different ways across countries, the identification of similarities requires some form of reference point. Experiences from (in particular) European pilot projects point to the need for independent reference points (grids or matrices) making it possible to identify similarities and differences. The VQTS model ([12]) and projects building on this approach ([13]) exemplify this. Several ECVET projects have used a similar approach for comparing qualifications ([14]). These project approaches, however, are too limited in scope and left the project with **two main alternatives**:

([12]) Luomi-Messerer 2009; www.VocationalQualification.net
([13]) www.VocationalQualification.net > Resources > Links VQTS model
([14]) http://www.ecvet-projects.eu/ToolBox/ToolBoxList.aspx?id=28&type=1

- The **terminology** currently being **developed in the context of the ESCO** project (the multilingual classification of European Skills, Competences, Qualifications and Occupations) ([15]),
- The **terminology developed in the context of O*NET**, the Occupational Information Network used in the US ([16])

It was decided to use a draft version of the ESCO terminology made available at the beginning of 2016 ([17]). This reflects that **ESCO is explicitly designed to work at international level** and aims to be relevant across a diversity of national labour markets and education and training systems. Second, the ESCO terminology is not only providing a terminology on occupational tasks and functions, but introduces a terminology on knowledge, skills and competence designed to bridge the education and work. For the purpose of the study, two ESCO elements were used:

- The draft **ESCO terminology on occupational specific skills and competences** is developed for 27 sectors, it cover 3.000 occupations and contains approximately 13.000 skills and competence terms ([18]). Using the ISCO 2011 ([19]) as a tool for distinguishing sectors and occupations, the skills and competence terminology ([20]) evolved from an analysis of main tasks and functions in each occupation and associated jobs. This analysis was then adjusted using information regarding the learning outcomes used for describing relevant qualifications ([21]). The learning outcomes statements identified at national level were mapped to these occupationally specific lists of terms, demonstrating correspondence or lack of correspondence.
- The draft ESCO terminology on **cross-sectoral and transversal skills and competences** is organised according to five key headings divided into 16 sub-headings: Application of knowledge (numeracy/mathematics, ICT, Health and safety); Language skills and competences (for example mother tongue, foreign languages); Thinking skills and competences (Problem solving; Innovative and creative thinking; Entrepreneurial thinking; Social skills and competences (Leading and managing others; Working with others; Training and supporting); Critical thinking; Learning); and Personal attributes (Physical abilities; Attitudes to work; Values at work). While the fifth headline (attributes) is only partly about skills and competences, it is an important category for defining learning outcomes. In the same way as for the occupational specific skills and competences, national terms were mapped to the ESCO list, demonstrating correspondence or lack of correspondence.

ESCO is applied as a sort of 'fixed' terminological point allowing for the analysis of national learning outcomes based data. The fact that the terminology is detailed (for example containing 48 terms for capturing occupational specific skills and competences for Bricklayers),

([15]) https://ec.europa.eu/esco/portal/home
([16]) http://www.onetonline.org/
([17]) It needs to be emphasised that these are draft results and ESCO has been further developed since then and that a first official version of ESCO is about to be published in June 2017. Som have pointed out the room and need for improvement.
([18]) The terminology will be available in 24 languages.
([19]) International Standard Classification for Occupations, 2011
([20]) https://ec.europa.eu/esco/portal/escopedia/Learning_outcome
([21]) It should be noted that the number of knowledge, skills and competence terms included for each occupation vary. For the occupational areas touched by this study, the variation is as follows: The profile for bricklayer includes 48 terms; the hotel assistant/receptionist comprises 26; the profile for Health care assistants is..: and the ICT service technician includes 34.

increases its relevance and allows for a more precise analysis of the content and profile of national qualifications. The combination of occupational specific, cross-sectoral and transversal skills and competences was from the start considered to be of key importance to the comparison.

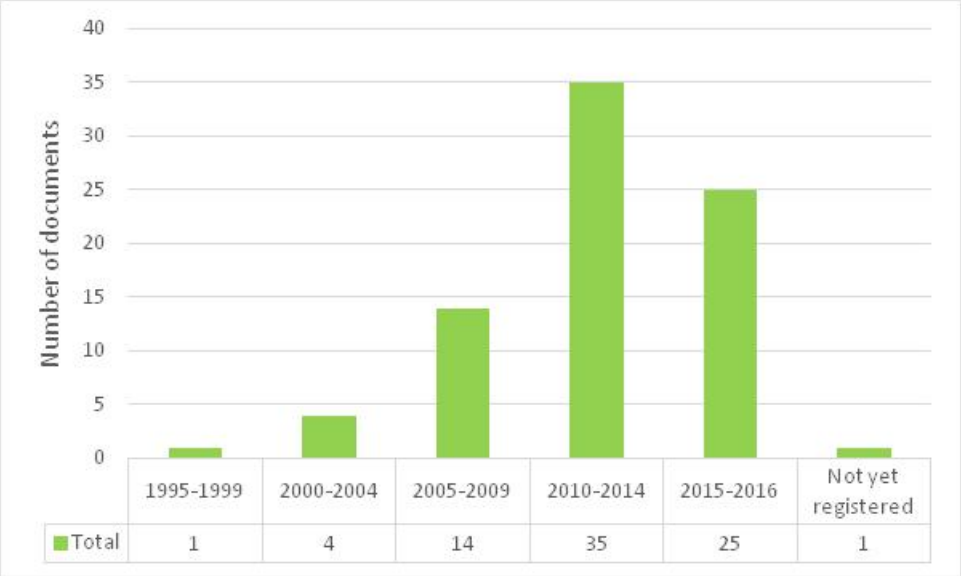
The main findings of the study

The findings of the study can be divided into two main parts, those related to the positioning of the qualifications in the national education and training and labour market context, and those related to the learning outcomes and the content and profile of the selected qualifications. The following two sections will provide an overview over main findings.

The qualifications and their context

It is commonly asserted that TVETqualifications, to be relevant to the labour market and society at large, must be reviewed and renewed on a continuous basis. The study shows that the majority of qualifications studied, 60 out of 80, had been issued during the last 6 years. 19 qualifications are registered as having been issued before 2010, raising questions regarding their relevance to the labour market they are supposed to serve[22].

Figure 2. Date of issue of documents used



The level of a qualification can either be established using a learning outcomes-based approach (for example provided by regional qualifications frameworks like the EQF) or by using institutional levels(like the International standard classification of education, ISCED 2001). These levelling approaches are based on different data but provide, when combined, a useful picture of the way qualifications are levelled. Table 5 provides an overview of the EQF level and ISCED 2011 classification as indicated in the qualifications descriptions. For all countries outside Europe the EQF level indication can only be estimated as no formal referencing of their NQF levels have taken place. In some cases, where no NQF level is available,

([22]) The question of review and renewal is addressed in the second part of the Cedefop study (for 10 countries) and an extension of this focus to the remaining 16 countries is being considered.

an estimation is not possible. A reference to ISCED 2011 is indicated for 56 out of 80 qualifications (mainly in Europe). This can be explained partly by the structure of education and training systems of the concerned countries where non-formal TVET is important and lies outside of education system.

Table 5. EQF levels (actual and estimated) and ISCED 2011 classification

Estimated EQF level	Total number	ISCED 2011	Total number
2	7	2	6
3	19	3	**32**
4	32	4	15
5	5	5	3
No estimate possible	17	No estimate possible	24

n = 80 qualifications.

While incomplete, the table is still interesting by demonstrating the wide range of levels covered by TVET qualifications, in this case from EQF level two to five. Table 6 shows the coverage according to EQF levels, also indicating how the four qualifications covered differ in this respect.

Table 6 EQF levels (actual and estimated)

Classification		EQF level indication (actual and estimate)				
Type		**2**	**3**	**4**	**5**	**n/a**
Bricklayer/mason	20	2	6	7	0	5
Healthcare assistant	17	1	8	5	0	3
Hotel assistant/receptionist	23	1	5	8	3	6
ICT service technician	20	3	0	12	2	3
Grand Total	**80**	**7**	**19**	**32**	**5**	**17**

n = 80 qualifications.

The hotel assistant qualifications can be found at all EQF and ISCED levels, whereas there are no bricklayer and health care assistant qualifications linked to EQF level 5. There is furthermore no ICT service technician linked to EQF level 3. Health care assistant qualifications are predominantly linked to EQF level 3 while the centre of gravity for ICT service technician qualifications seems lie at EQF 4. **The position of the four qualifications can be further determined by looking at their orientation towards the labour market and their relation**

to occupations. Table 7 shows that the majority of qualifications, 65 out of 80, aim to train skilled workers, able to work autonomously in a particular occupation, taking on the required responsibilities. This corresponds with the EQF-levelling where the centre of gravityof the qualification lies at levels 3 and (in particular) 4.

Table 7. Orientation of qualifications - overview per qualifications profile and country

Type	Skilled worker	Total	Semi-skilled worker	Total
Bricklayer/mason	AL, AT, BB, BG, CL, CR, DK, ES, FI, FR, LT, MU, NL, PH, TN, UK-EN, ZA, ZM,	18	NZ, KR	2
Healthcare assistant	AT, BG, CR, DK, ES, FI, FR, LT, MU, NL, PH	11	BB, NZ, ZA, IE, KR, UK-EN	6
Hotel assistant/receptionist	AL, AT, BB, BG, CL, CR, DK, ES, FI, FR, LT, MU, NL, NZ, PH, TN, UK-EN, WS, ZA, ZM,	20	IE, KR, NA,	3
ICT service technician	AL, AT, BB, BG, CR, DK, ES FI, FR, KR, LT, NL, PH, UAE, ZM, ZA,	16	IE, MU, NZ, UK-EN,	4
Total		**65**		**15**

n = 80 qualifications.

It can be observed that some countries have a higher share of qualifications preparing for semi-skilled work whereas others have none. For example, three of the four qualifications from New Zealand analysed are preparing for semi-skilled work as well as all three qualifications from Ireland, two from England and two from the Republic of Korea. The link to the labour market and to occupations can also be addressed by looking at the way qualification are legally required to operate in an occupation or not. Table 8 shows this:

Table 8. Function/role of the qualification in the labour market - overview per qualifications profile and country

	The qualification is required to practice a certain profession (licensing/accreditation)	In order to practice the related profession, in addition to the qualification further requirements need to be fulfilled (certification/registration).	The qualification is desired/recommended but not a formal requirement.
Bricklayer/mason	1 (DK)	3 (NL, ZA, TN)	16 (BB, NZ, CR, CL, MU, PH, KR, ZM, AT, BG, UK-EN, FI, FR, LT, ES, AL)
Healthcare assistant	7 (AT, BG, DK, FI, LT, ES, KR)	1 (ZA)	9 (UK-EN, FR, IE, NL BB, NZ, CR, MU, PH)
Hotel assistant/ receptionist	2 (DK, LT)	1 (TN)	20 (BB, NZ, ZA, WS, CR, ZM, CL, MU, NA, PH, KR AT, BG, UK-EN, FI, FR, IE, NL, ES, MK)
ICT service technician	2 (UAE, LT)	1 (KR)	17 (BB, NZ, ZA, CR, ZM, MU, PH, AT, BG, DK, UK-EN, FI, FR, IE, NL, ES, AL)
Grand total	**12**	**6**	**62**

n = 80 qualifications.

The data shows that the majority of qualifications are desired by occupations but that only a minority are (legally) required ([23]).

The orientation of qualifications can also be determined by addressing their link to further education, training and learning, including links to higher education. It is sometimes asserted that TVET-qualifications are 'dead-ends', not allowing learners to move to further and higher education and training which in turns affects the attractiveness of TVET. Table 9 questions this assertion, showing that only 5 qualifications provide no direct access to the next level of education and training. We also see that a significant proportion of the qualifications also provide access to (general) higher education. The importance of advanced or

([23]) These are preliminary findings that need to be further checked and confirmed, in particular as regards the qualifications defined as being legally required.

higher vocational education and training (outside the university sector) is implicitly underlined by the table, pointing to this as an important progress route.

Table 9. Purpose of qualifications for further education by qualification profile and country

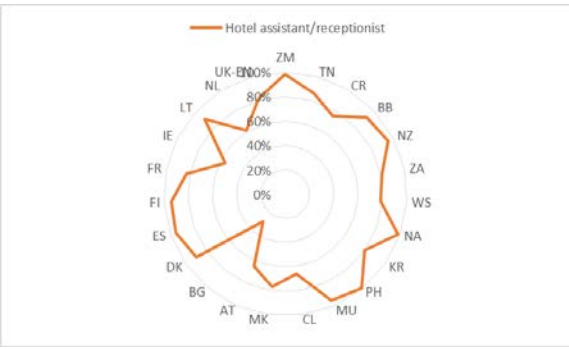
Type	No direct access to a next level of education and training	Access to a next level of education and training (but not to HE).	Access to a next level of education and training and to HE	Access to HE	Other
Bricklayer/mason	2 (ZM, KR)	11 (AT, BG, UK-EN, FR, NL, ES, BB, NZ, TN, MU, AL)	3 (FI, ZA, PH)	2 (DK, LT)	2 (CR, CL)
Healthcare assistant	2 (BG, LT)	7 (AT, DK, NL, ES, BB, ZA, MU)	6 (NZ, KR, PH, UK-EN, FI, IE)	-	2 (CR, FR)
Hotel assistant/ receptionist	1 (ZM)	9 (AT, DK, NL, BB, NZ, WS, TN, KR; MU)	9 (BG, UK-EN, FI, FR, IE, ZA, PH, NA, MK)	2 (LT, ES)	2 (CR, CL)
ICT service technician	-	9 (AT, DK, NL, BB, NZ, ZA, UAE, MU, AL)	7 (BG, FI, FR, IE, ZM, KR, PH)	3 (UK-EN, LT, ES)	1 (CR)
Grand total	5	36	25	7	7

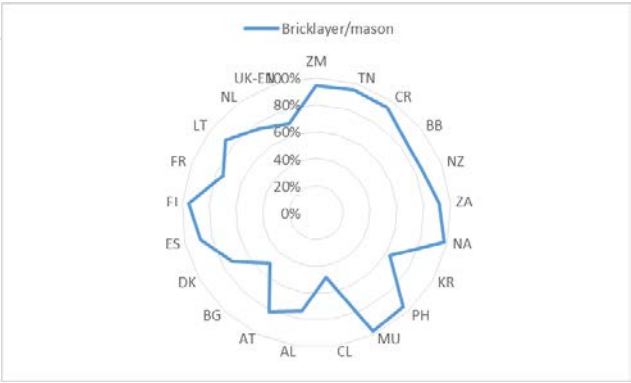
Overall, the contextual data provides an interesting picture of the four qualifications compared. While diverse and covering a relatively wide scope of levels and trades, the 80 qualifications share a number of common features, irrespective of the country they have been awarded in.

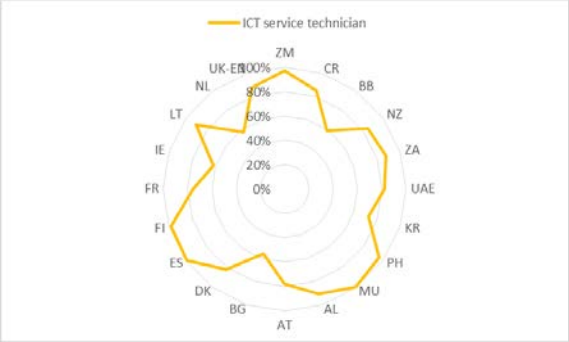
The content and profile of qualifications

As indicated, the qualifications have been mapped to the ESCO terminology on (a) occupational specific skills and competences and (b) cross-sectoral and transversal skills and competences. Figures 3 below illustrate the extent to which national qualification profiles (as a combination of occupational and transversal skills) match those used by ESCO. While this does not say anything about how the specific content of qualifications varies and their relevance to the needs of the labour markets, they illustrate the level of variation between countries.

Figure 3 Match of national qualifications profiles to ESCO (combining occupational-specific and transversal skills and competences)







Based on this comparison we can distinguish between countries with narrower or broader qualification profiles: if we look at the occupationally-specific skills and competences, Finland and Spain demonstrates an almost complete match with the ESCO occupational profiles. Bulgaria, Albania and Ireland, on the other hand, demonstrate a weak match with ESCO. **While we can observe some significant differences between countries in terms of match with ESCO, there are relatively limited differences across the four qualification studies.** The qualification with the best match is the ICT service technician where one third of the countries cover all ESCO skills and competences. The health care assistant qualification is the one where we find the lowest average match. The data indicate that the two service-sector oriented qualifications demonstrate the lowest match to ESCO and also vary most between countries. A better match is demonstrated for both the ICT and bricklaying qualifications, possibly reflecting the fact that these qualifications operate in areas with clearly defined technologies and standards, organisation of work and professional practises.

As regards transversal skills and competences, Finland and Spain again demonstrate an almost full match with the ESCO terminology (although no country has a 100% coverage). The highest average percentage of coverage can be observed for the Hotel assistant/receptionist which is slightly higher than the figure for the other qualifications profiles.The lowest coverage (below 50%) is indicated for 5 qualifications: the Bricklayer in Bulgaria (31%) and Chile (33%), the hotel assistant/receptionist in Ireland (46%) and the healthcare assistant in Korea (38%). The comparison across qualification profiles shows that language competence is more important for the hotel assistant/receptionist than for the other qualification profiles which is understandable given the nature of the job. Learning outcomes related to numeracy/mathematics are more often included in bricklayer/mason and ICT service technician qualifications while items related to health and safety seem to be less relevant for the ICT service technician qualifications compared to the other profiles.

Transversal competences related to the areas of thinking skills and competences and social skills and competences (see previous sections) vary little between the different qualifications and also across countries, indicating that these are considered relevant across the board. Only three of the 81 qualifications covered demonstrate a full match with ESCO: the Hotel assistant/receptionist from the Philippines and the ICT service technician from Mauritius and Spain. The lowest coverage (below 60%) is indicated for the Hotel assistant/receptionist from Bulgaria (29%), the Bricklayer from Chile (48%) and from Bulgaria (51%), the Hotel assistant/receptionist from Ireland (55%), the ICT service technician from Bulgaria (56%), the Netherlands (58%) and Barbados (59%). In the majority of qualifications analysed (55%), a clear focus on job/occupation-specific learning outcomes can be observed; but in many qualifications (45%), there is an equal balance between these types of learning outcomes. An equal balance can a bit more often observed for health care assistant qualifications and for newer qualifications than for the other qualifications. However, this trend is not very pronounced.

While the distinction between broad and narrow qualifications profiles is interesting and indicate that countries define their qualifications in different ways, real added value is linked to the detailed comparison of which concrete occupational and transversal skills and competences have been covered or not. As indicated above, **the strength of the ESCO terminology lies in its detailed approach, operating at a level of granularity making it possible to analyse which specific skills and competences are being addressed by each single qualification.** This approach is demonstrated by the following two tables, showing how the 21 national bricklayer qualifications covered by the study match the occupation specific and the transversal skills and competences.

Table 10. Job/occupation-specific KSC – Bricklayer

KSC preferred title	AL	KR	PH	NZ	ZA	ZM	MU	BB	CR	CL	TN	NA	AT	BG	DK	ES	FI	FR	LT	NL	UK-EN
check straightness of brick																					
fill up mortar joints																					
finish mortar joints																					
follow health and safety procedures in construction																					
lay bricks																					
secure working area																					
use measurement instruments																					
use safety equipment in construction																					
work safely at heights																					
keep workplace tidy																					
maintain equipment																					
work in a construction team																					
interpret 2D and 3D plans																					
mix construction pastes and grouts																					
sort waste																					
split bricks																					
calculate needs for construction supplies																					
mix concrete																					
inspect construction supplies																					
apply finish to concrete																					
install construction profiles																					
transport construction supplies																					
work ergonomically																					

building codes																						
apply damp-proofing and waterproofing membranes																						
build scaffolding																						
operate masonry power saw																						
remove concrete forms																						
apply restoration techniques																						
inspect supplied concrete																						
place concrete forms																						
pour concrete																						
screed concrete																						
install falsework																						
install insulation material																						
keep records of work progress																						
reinforce concrete																						
rig loads																						
snap chalk line																						
monitor stock level																						
operate surveying instruments																						
process incoming construction supplies																						
set up temporary construction site infrastructure																						
use squaring pole																						
estimate restoration costs																						
keep personal administration																						
document survey operations																						
order construction supplies																						

Table 11. Transversal KSC – Bricklayer

KSC preferred title	AL	KR	PH	NZ	ZA	ZM	NA	MU	BB	CR	CL	TN	AT	BG	DK	ES	FI	FR	LT	NL	UK-EN
follow hygienic work practices	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
carry out work-related measurements	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
work with shape and space	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■
apply quality standards		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
support company plan	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■
manage time	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■
memorise information	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■
follow safety precautions in work practices	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■		■
communicate mathematical information	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	
evaluate information	■		■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■
make decisions	■	■	■	■	■	■	■	■	■	■		■	■		■	■	■	■	■	■	■
process qualitative information	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■		■	■	■	■
handle quantitative data	■	■	■	■	■	■	■	■	■	■		■	■		■	■	■	■	■	■	
accept constructive criticism	■	■	■		■	■	■	■	■	■		■	■	■		■	■	■	■	■	■
lead others	■		■		■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■
support colleagues	■	■	■	■	■	■	■	■	■	■		■	■			■	■	■	■	■	■
develop strategy to solve problems	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■		■	
carry out work-related calculations	■	■	■	■	■	■	■	■	■	■	■	■	■		■		■	■	■		
interact with others	■	■	■	■	■	■	■	■	■	■		■			■	■	■		■	■	■
use mathematical tools and equipment	■	■	■	■	■	■	■	■	■	■		■	■			■	■	■		■	
report facts	■		■	■	■	■	■	■	■	■	■	■			■	■	■		■		■
work in teams	■	■	■	■	■	■	■	■	■	■		■			■	■	■		■		■
use learning strategies	■		■		■	■	■	■	■	■		■	■		■	■	■	■	■	■	

motivate others																						
recognise opportunities																						
think creatively																						
follow environmentally-sustainable work practices																						
support cultural diversity																						
instruct others																						
demonstrate intercultural competence																						
give advice to others																						
negotiate compromise																						
persuade others																						
use body language																						
address an audience																						
use questioning techniques																						
support gender equality																						
mother tongue																						
foreign language																						

Source: Template 3, n = 81 qualifications. Blue-shaded cells mark KSC terms that are either explicitly or implicitly covered. White-shaded cells refer to KSC terms that are not covered at all

The overviews provided by these tables are unique in the sense that they provide a direct and detailed comparison of the intentions of national qualification authorities. Using the bricklayer qualification as an example, we can immediately detect a number of critical issues.

Occupationally specific content

The **most important findings** regarding the occupationally specific content can be summarised as follows:

- **A common core of occupational specific skills and competences exist**; while we above have distinguished between broad and narrow qualification profiles, it is interesting to note that among the 21 countries studied (covering all corners of the world), a strong common core exists. **Looking at the total 48 occupationally specific skills and competences listed by ESCO for bricklayers, 27 of these are covered and shared by more than 18 countries**. While not surprising in an area characterised by long and strong skills traditions, awareness of this common core could facilitate cooperation between countries, facilitate transfer and recognition of qualifications and support mobility of learners and workers across borders.
- However with different occupational expectations; **10 of the occupationally related skills and competences are shared by less than 15 countries.** Half of these are **related to activities linked to the management and organisation of the working process.** Skills related to 'ordering of construction stock' and 'keep personnel administration' exemplifies skills not prioritised by a significant number of countries. This may indicate different perspectives on what a bricklayer is expected to know, be able to do and understand. Should tasks be limited to 'putting bricks on brick' , should broader skills be encouraged and developed; for example linked to the management of equipment, team and neighbouring trades?
- While a strong common core can be observed, **a few countries stand out as operating with significantly different profiles.** For the occupational specific skills Albania, Bulgaria, Chile and Denmark operate with clearly narrow profiles than most others.

Cross sector and transversal skills and competences

The most important findings regarding the transversal skills and competences can be summarised as follows:

- **A common core of cross-sectoral and transversal skills and competences also can be identified**: **half of the transversal skills and competences listed by ESCO are covered by 18-21 countries.** This points to the existence of a strong core of broader skills and competences, in a majority of country cases being combined with the occupational specific skills.
- However with **different degrees of integration of transversal skills and competences**: The study, in the case of bricklayers, shows that countries differ significantly as regards the attention paid to transversal skills and competences. 16 out of the 38 skill listed are shared by 15 countries and less. It is **difficult to point to particular categories of skills** and competences not addressed, the lack of focus might reflect that priority is given to occupational specific skill.
- And, again, when they exist with significant national differences; **Three countries - Bulgaria, Chile and South Korea - stand out as having a significantly different approach to transversal skills and competences** than the majority of countries covered and compared. These countries miss between 19 and 28 of the in total 38 transversal skills and competences listed by ESCO.

While only related to one of the qualifications, the above points illustrate the potential of the comparative approach in terms of identifying similarities and differences. The methodology is not, as already stated, aiming at a ranking of countries. It should instead be used by national stakeholders to reflect on the priorities set at national level and whether the choices of other countries might be of interest.

Concluding remarks and issues

The 80 profiles compared reveal a range of shared characteristics among the countries' qualifications for the same occupation.. This could benefit education institutions and companies working at international level, and facilitate decisions on recognition and transfer of individual qualifications.

Common elements include: most of the qualifications have been reviewed in the last 6 years; they operate at what can be understood as EQF levels 3 and 4; their aim is to capture and communicate the education and training of skilled workers; and they are normally understood as a desirable (even if not legally required) for access to and practising an occupation. The majority of these qualifications furthermore give access to further education and training and in some cases to higher education, too.

At the same time, this comparative approach, illustrated by the bricklayer case, raises a number of questions for further work and research:

- **How accurate are the national qualification profiles; how can we work to further validate the data underpinning the comparison?**
- Can the ESCO approach, given publication of a quality assured official version in 2017, be used as a basis for future comparative work?
- Who, at national and international level, could be involved to further validate and strengthen the data?
- How can these comparisons, when further strengthened and stabilised, support national and international policy developments related to qualifications?
- How digitalisation, including digital learners records and credentials, will affect the way we access data and use it for faster and larger comparison

The study will be followed up by Cedefop in the coming period with particular focus on the processes adopted by the countries to review and update their qualifications. ETF, CEDEFOP and UNESCO are actively discussing the continuation of their collaboration to ensure that this global perspective on TVET is further developed and strengthened.

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