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Executive summary

Methodologies for analysing and comparing VET qualifications

This report brings together research findings from three separate, but related studies conducted in the framework of the Cedefop project ‘Comparing Vocational Education and Training Qualifications: towards a European Comparative Methodology’ between 2019 and 2020. The project explored a specific approach of mutual learning: It focused on methodologies for the in-depth analysis and comparison of the profile and content of VET qualifications. The purpose of these methodologies is not to promote a standardisation and harmonisation of qualifications and their learning outcomes but to provide countries with a better evidence basis on which to systematically judge their own priorities and solutions and to increase the quality and relevance of their national VET qualifications.

The first part of this project (Luomi-Messerer, Broek, Auzinger et al., 2019a), explored and tested potential reference points and focussed on their usability for analysing and comparing qualifications. The second part (Luomi-Messerer, Broek, Auzinger et al., 2019b) explored the key sources for data on national qualifications, in particular related to their content and profile and to their relevance for the cross-national comparison of qualifications; and explored the use of new digital technologies to support the automated gathering, structuring analysis of data on qualifications, the mapping to a reference point and the comparison of qualifications. The third part of the project specifically focussed on improving the relevance of qualifications and looked for ways to gather and analyse data from employers and the labour market for supporting the review and renewal of VET qualifications (Cedefop, 2021 - forthcoming).

The research activities of the overall project included ten countries (Austria, Bulgaria, Denmark, Finland, France, Ireland, Lithuania, the Netherlands, Spain, and United Kingdom-England) and focussed on two qualification profiles (Healthcare assistants (assistant nurses, practical nurses) and ICT service technicians).

For this final work assignment, in a first step, the findings and lessons learned from the previous research phases were summarised and relevant recent policy initiatives and activities (mainly of DG EMPL and Cedefop) were explored and linked to these developments, where appropriate. In a second step, potential use cases for the methodologies explored were identified and described (using material...
developed in the project to illustrate methodologies) to inspire further developments. In a third step an online workshop with country experts was organised to discuss the purposes for analysing and comparing qualifications (focussing on intended learning outcomes) and the methodological approaches identified; and the feasibility of applying the methodologies, as illustrated in the potential use cases, in their national contexts. This finally, resulted in a report providing descriptions of use cases and recommendations on how the methodological elements can be further developed to strengthen quality and relevance of VET qualifications.

The analysis and comparison of qualifications should not serve an end in itself or merely satisfy research interests. Rather, it is intended in a broader sense as an approach to support the review and renewal of national qualifications and to support the transferability of learning outcomes and flexible learning pathways. This report therefore explores, at a conceptual level, potential use cases or applications of the methodologies explored. It discusses for what purposes, for whom and by whom these methodologies could be used to contribute to the achievement of different objectives, which methods and instruments are already available, which need to be adapted and which conditions need to be met for their potential application. Furthermore, the added value of applying these methods in specific contexts is discussed. However, the use cases do not offer ready-made solutions for specific problems and needs. Rather, this report is oriented towards providing technical support and discussing options for possible future solution steps to support policy processes with regard to specific needs and discusses three research questions:

(a) How can methodologies for analysing and comparing qualifications support European cooperation in VET and support national stakeholders in strengthening quality and relevance of VET qualifications?
(b) Which purposes, target groups and stakeholders for analysing and comparing qualifications in this context can be identified (use cases)?
(c) What is needed in terms of methodologies and necessary conditions to implement the use cases?

Conclusions

Conclusion 1: The use of learning outcomes in describing the content and profile of VET qualifications opens up opportunities for applying methodologies for
analysing and comparing qualifications that contribute to improving the relevance of VET qualifications and supporting transferability of VET qualifications.

The study showed that VET qualifications described in terms of learning outcomes can be analysed and compared across profiles, sectors and countries, and that analyses and comparisons can even be conducted on the intended and acquired learning outcomes. Learning outcomes are central to this as they allow for a breakdown of qualifications that can be systematically applied and analysed in different (national VET) contexts; furthermore, learning outcomes descriptions allow for the analysis and better understanding of the content of qualifications, their orientations in relation to labour market access or further learning.

The comparative approaches that use learning outcomes as a basis allow to reflect on the content and orientations of VET qualifications in different contexts and thereby offer insights that can be used to improve the relevance of VET qualifications. Furthermore, learning-outcomes-based methodologies for analysing and comparing VET qualifications allow multiple stakeholders to increase their engagement in review and renewal processes of VET qualifications, and allow for using the outcomes of this exercise in other processes such as (career) guidance to VET students/graduates, supporting transnational mobility of qualifications and labour mobility.

Conclusion 2: A methodology for analysing and comparing qualifications based on learning outcomes can be supported by the use of a reference point that includes a set of skills appropriate for the respective purpose for the analysis and comparison of qualifications.

As the content of VET qualifications is constantly changing under the influence of labour market, technological, pedagogical, societal and political developments, there is no fixed point at which the content of VET qualifications can be compared to this yardstick. However, methodologies for analysing and comparing the content of VET qualifications benefit from an agreed reference point to allow for the mapping and comparison of qualifications in different contexts. Such a reference point is only a ‘translation device’ and a methodological tool and should not be seen as anything more than that.

The purpose of applying these methodologies based on learning outcomes and the specific use case determine the demands placed on the reference point. Each purpose of analysing and comparing qualifications, and each context in which this is done, places different demands on the reference point. These requirements can relate to the applicability of the reference point in different national contexts (for instance offering different linguistic versions), but they can also relate to the structure and hierarchy applied in the set of skills used in the reference point, level
of detail, types of skills included (occupational or transversal ones), or whether different performance levels are expressed in the set of skills included. The research found that the ESCO skills pillar represents a promising reference system that can possibly be applied in many contexts, albeit with some specific adaptations depending on the specific purpose and context of use. However, ESCO is far from being perfect, it needs an improved conceptual basis and of continuous updating and further development.

Conclusion 3: The study identified seven potential use cases for methodologies for analysing and comparing the content of VET qualifications based on learning outcomes that, while not immediately applicable, can orient future developments in using these methodologies for improving the relevance of VET qualifications and supporting transferability of VET qualifications and their learning outcomes.

The research project identified a variety of contexts in which comparative methodologies can be applied, contributing to 1) improvements of the quality and relevance of the content of VET qualifications; and 2) improvements in transferability of qualifications and learning outcomes across borders and sectors; and finally, 3) developments towards European Vocational Core Profiles. Within these broad purposes, seven specific use cases were identified for potential applications of the methodologies explored in the future. These potential use cases can be positioned in relation to the orientation towards conceptualisation or towards application and in relation to the three purposes for comparison.

Figure  
**Potential applications and use cases situated within the analytical framework**

Source: Authors.

It should be emphasised, however, that these potential use cases are to be seen as conceptual considerations that can serve relevant stakeholders as a basis
for further development. At present, it is not possible to offer ready-made tools and solutions, not least because ESCO, the reference system used in several of the applications to support the analysis and comparison of VET qualifications, as well as other reference points and related technical solutions are still work in progress. Moreover, conceptual challenges and shortcomings of the approaches also need to be considered.

Conclusion 4: National VET system characteristics and developments greatly influence the relevance and applicability of the potential use cases for methodologies to improve the relevance of VET qualifications and to support transferability of VET qualifications.

There are, besides generic challenges related to applying use cases (see next conclusion), specific national VET characteristics that impact the relevance and applicability of the use cases. This depends on the particular application, but overall it can be observed that some countries are less likely to use the methodologies explored and developed. Furthermore, it should be mentioned that as VET systems are not static and are subject to periodical reforms, methodologies for analysing and comparing VET qualifications and the potential use cases can show their relevance also at a later stage when national stakeholders seek instruments and approaches to support their reform agendas.

Conclusion 5: Generic challenges associated with applying the use cases and the methodologies for analysing and comparing VET qualifications relate mainly to the quality of the reference point (set of skills included), to the learning outcomes descriptions of qualifications, the issue of expressing the level of proficiency of learning outcomes as well as to including context features in comparisons.

When further elaborating on the use cases, there are a number of generic challenges that need to be addressed. The challenges are slightly different for each use case, but refer to similar problems:

(a) **Set of skills included in a reference point**: Each use case puts different demands on the reference point and the set of skills included. Thus, for each use case, further conceptual work is required to support decisions related to the content, scope and orientation of the reference point.

(b) **Learning outcomes descriptions of qualifications**: A key factor for successfully applying comparative methodologies is the extent and how the qualifications are described in terms of learning outcomes. While substantial progress has been made during the last years, descriptions of qualifications still need to be improved in many cases to better serve the needs in this context.
(c) **Level of proficiency expressed in learning outcomes:** In several potential use cases, the ability to distinguish the proficiency levels of learning outcomes is desired. While there are reference points that allow differentiating competence areas and higher and lower level abilities (such as the VQTS-based Competence Matrices), such reference points are not systematically available, are available for a few occupational fields and in few languages only.

(d) **Contextual factors not expressed in learning outcome statements:** A crucial challenge for applying comparative methodologies based on learning as expressed in the use cases, is that national contexts, conceptualisations, philosophies and approaches underlying the design of VET qualifications, the descriptions of learning outcomes and the assumptions behind these descriptions are not explicitly expressed in the learning outcome statements. This could result in identifying similarities between qualification descriptions from different countries while there are underlying key differences in terms of what these descriptions actually mean in their national context. This is a key conceptual challenge to be considered in any further developments.

**Conclusion 6:** To ensure zones of mutual trust based on comparative methodologies, these methodologies need to be based on solid research and evidence. This could be associated with cost implications that could exceed the potential benefits.

The background of comparative methodologies lies in the development of the EQF and the idea that within increased transnational mobility, there is a need to establish zones of mutual trust related to qualifications. Zones of mutual trust relate to trust in the levelling of VET qualifications, but also, for making zones of mutual trust applicable to end-users (citizens and employers) to better understand the content of qualifications. The comparative methodologies can support the development of zones of mutual trust, but only if the comparative methodologies result in useful outcomes and benefits for the end-users. This can only take place when the comparisons are based on solid research approaches, sound conceptual clarifications and solid evidence on similarities and differences between qualifications.

Related to this, comparative methodologies could be associated with cost implications that exceed their potential benefits. Many of the potential use cases require investment to become fully operational. These investments relate, for example, to further conceptual clarifications and conceptual development of the reference points and tools to making national qualifications descriptions suitable and accessible to comparison, to implementing support structures to make the outcomes of the comparisons available for the right stakeholders and users, and
to support structures to continuously keep reference points, national descriptions and the comparison of qualifications up-to-date.

Recommendations

The recommendations below do not focus on fully implementing the use cases, but more on preparing the conceptual ground for applying these methodologies and for further research on them and the use cases.

Recommendation 1: Conduct further conceptual work

The research conducted in this project points to several needs for improvements related to reference points and sources of information on qualifications as well as to further conceptual work related to applying the learning outcomes approach for analysing and comparing qualifications and using digital tools for supporting comparison.

(a) **Further development of reference points**: The main advantages of ESCO include the fact that it has a wide coverage of occupations and a multilingual approach. However, the shortcomings of ESCO, as identified in this study but also in other activities, need to be addressed and its conceptual basis improved. There are a number of aspects in which ESCO requires further development, including the conceptual foundation for the set of skills included per occupation and the integration of transversal skills. Moreover, it is recommended to explore approaches to include proficiency levels related to the skills included in ESCO. In addition, even if ESCO has turned out to be the most promising reference system for many reasons, this is not to disregard the fact that other reference points may be more suitable for certain purposes of use. Conceptual development should therefore not focus exclusively on ESCO.

(b) **Further development of and conceptual work on sources of information on qualifications**: Although much has already been achieved in this respect, further work needs to be done regarding the transparent description of qualifications. In particular, further efforts are needed to develop common structures of presenting qualifications in the European context (e.g. in qualification databases, as suggested by the EQF Recommendation). In addition, it is recommended to further explore and develop learning outcomes descriptions and the concept of qualifications (without interfering with national priorities) as more clarity is needed on what role learning outcomes play in the overall qualification (e.g. do they refer to the overall profile or to parts/units of a qualification) and on what actually is a qualification (e.g. how to deal with
qualifications that have a high number of optional parts; what could be the role of emerging micro-credentials).

(c) **Further conceptual work related to using the learning outcomes approach for analysing and comparing qualifications:** The use of learning outcomes provides a lot of opportunities but – as the research has shown – there are also many challenges and ambiguities that need to be addressed to improve this approach and its use for comparing qualifications. Further considerations would be important, for example, related to how contextual factors, that are of crucial importance for understanding qualifications and how they are embedded in the national context, could be better considered when interpreting the outcomes of comparisons. Learning outcomes are not neutral statements and need to be interpreted within the context for which they have been developed. Understanding this context is essential in understanding the outcomes of the analysis. Contextual factors that could be taken into account refer in particular to the design approach and the philosophy behind developing learning outcomes. This relates to the guidelines used for developing learning outcomes, understanding the level at which learning outcomes are described for a qualification and the structure in which learning outcomes are described. Moreover, the following contextual aspects should be considered: the role qualifications play in linking VET to the labour market, the extent to which labour market stakeholders are involved in the development of qualifications, and the roles a VET qualification has in the labour market and for society.

(d) **Further work on digital tools to support the analysis and comparison of qualifications:** In order for the methods for analysing and comparing qualifications based on learning outcomes to be used more widely, it is not possible to solely rely on manual mapping of learning outcomes to reference points. This would require far too many resources. There is a need for solutions that are at least semi-automatised. It is therefore recommended to further explore the use of artificial intelligence and digital tools, bearing in mind that it will not be possible in the near future to achieve valid results entirely without human intervention when using digital tools to compare qualifications.

**Recommendation 2: Identify needs and explore feasibility of application**
In order to ensure the engagement of stakeholders, it is recommended to explore in which countries, in which VET sub-systems, in which economic sectors, and by which stakeholders there actually is an interest in applying the methodologies developed. The interest could be due to the provision of specific solutions to their current or (anticipated) future needs. It is also possible that only by reflecting on
the possible use cases they will get ideas about the extent to which these methodologies could be helpful for them.

As indicated, the potential use cases presented in this report are primarily aimed at orienting reflections on how comparative methodologies can support services to improve the relevance of qualifications and to support flexible pathways, mobility and career guidance. They are not directly applicable and might not always be relevant or needed in a given national or sectoral context. Further research is needed to explore which conditions need to be in place and in which contexts the use cases are relevant and add value to the existing structures and instruments. Aspects to be taken into account concern in particular the following:

(a) Would a specific use case solve an existing problem/challenge for which there are no other national/sectoral solutions available?
(b) What conditions need to be in place to have the use case solve the problem?
(c) Would the benefits of developing and implementing the use case outweigh the costs?

In any case, this approach would help to identify those areas and sectors that have an interest in the further conceptual work described above and that can also be involved in these activities to generate ownership. Moreover, this exploration should also include an estimation of the resources needed and a clarification of the support structures required. Subsequently, it would of course be necessary to provide the corresponding resources and the required support. It is recommended to carry out a cost-benefit assessment to clarify to what extent the application of the methodologies actually represents an advantage over other approaches.

Furthermore, this approach could also help to find out from those stakeholders who clearly express a lack of interest in the methodologies what the reasons for this are (such as other priorities or better solutions in place). This could also be used to identify other solutions and approaches that could be integrated or at least considered in these methodologies.

**Recommendation 3: Disseminate results in an attractive and accessible way**

In order for stakeholders and beneficiaries (such as VET authorities, VET providers, employers, career guidance professionals) to make use of the methodologies developed, they need to be informed about the benefits involved for them in a way that spark their interest. Thus, potential use cases and (further developed and improved) methodologies and tools need to be tailored to their specific needs and presented in an attractive accessible way.

One element of this approach could be to develop a database that is structured according to the purposes for which these methodologies can be used (and which need to be closely linked to the needs of the potential users and
beneficiaries). This database could be designed to allow different search options, such as for specific purposes, context of use, profile of users and beneficiaries, reference points applied and examples presented.
Chapter 1. Introduction

1.1. Aim of this report

This publication presents results of a study that was carried out between 2019 and 2021 and explored a specific approach of mutual learning: It focused on methodologies for the in-depth analysis and comparison of the profile and content of VET qualifications. The purpose of these methodologies is not to promote a standardisation and harmonisation of qualifications and their learning outcomes but to provide countries with a better evidence basis on which to systematically judge their own priorities and solutions and to increase the quality and relevance of their national VET qualifications.

The overall study is comprised of four separated but closely related parts (‘):

(a) Countries describe their qualifications and the learning outcomes included in them in different ways, so for a comparative methodology a neutral terminological reference point is important. The first part of the study therefore aimed to explore and test potential reference points and focussed on their usability for analysing and comparing qualifications (Luomi-Messerer, Broek, Auzinger et al., 2019a).

(b) Two key objectives were set for the second part of the study (Luomi-Messerer, Broek, Auzinger et al., 2019b):

(i) To explore the key sources for data on national qualifications, in particular related to their content and profile and to their relevance for the cross-national comparison of qualifications; specific attention was given to the question on to what extent national qualifications databases can support the comparison of VET qualifications;

(ii) To explore the use of new digital technologies to support the automated gathering, structuring analysis of data on qualifications, the mapping to a reference point and the comparison of qualifications; in particular the role of the multilingual classification ESCO in supporting gathering, structuring and classifying qualifications data was explored.

(c) The third part specifically focussed on improving the relevance of qualifications and looked for ways to gather and analyse data from employers

and the labour market for supporting the review and renewal of VET qualifications (Cedefop, 2021 - forthcoming). It aimed to address the link between the intended outcomes of the VET system, which was the focus of parts one and two of the project, and the actual outcomes experienced by employers and the labour market by developing and pre-testing an Employer Reflection Survey.

(d) The final part, this publication, is bringing together these different elements. It takes stock of the lessons learned during the previous research phases and of further relevant developments and introduces ‘use cases’ as potential orientations or applications of the methodologies developed and tested. They are aimed at supporting stakeholders in further reflecting on the methodologies explored, by showing their potential, their opportunities and limitations, and at inspiring them for further developments based on their needs.

Before presenting the specific objectives and research questions for this report, we will outline the policy background that underpins the relevance of methods for analysing and comparing the content of VET qualifications.

1.2. Policy background: the relevance of methods for analysing and comparing the content of VET qualifications

Education systems have faced various external pressures or megatrends shaping the future demand for skills, including fast moving technologies (e.g. digitalisation), labour markets and demographic trends (the ageing population, increased longevity, and the possibility that people will stay in the labour market for longer) and migration (OECD, 2019). This requires individuals to engage in learning throughout their working lives if they are to have rewarding careers, or even to remain employable. Reskilling and upskilling of ‘the existing workforce are essential levers to fuel future economic growth, enhance societal resilience in the face of technological change’ (World Economic Forum et al., 2018, p. 17). In order to achieve this, VET provision needs to be constantly renewed and modernised in response to these rapidly changing policy needs and priorities. It is also seen as important to balance stability and a certain degree of flexibility allowing for responsiveness. Such responsiveness of national VET systems requires, for example, high quality evidence on trends in the labour market and skill needs as well as cooperation between stakeholders (including social partners), institutions and VET providers to work in partnerships for matching supply and demand.
Improving individual’s knowledge, skills and competence and enhancing the quality and relevance (in terms of responding to needs of the labour market and the society and reflecting rapidly changing priorities) of VET systems is therefore the core of European policies. This includes in particular the *New skills agenda for Europe: working together to strengthen human capital, employability and competitiveness* (Council of the European Union, 2016), the Council Recommendation on *Upskilling pathways: new opportunities for adults* (European Commission, 2016) and the recently published *European Skills Agenda for sustainable competitiveness, social fairness and resilience* (European Commission, 2020a). The *European Skills Agenda* also takes into account the COVID-19 pandemic that has not only accelerated the digital transition of learning and working but has also significantly impacted the socio-economic situation and the career opportunities for many people: The disruption in VET (in the context of lockdowns, social distancing and travel restrictions) and the cuts in apprenticeship offers (due to a widely anticipated economic recession) might lead to shortages of skilled workers in the long term, thereby hindering the recovery process (OECD, 2020). The *European Skills Agenda* therefore aims at strengthening sustainable competitiveness, ensuring social fairness and improving resilience of people and educational systems through skills. It sets ambitious, quantitative objectives for upskilling (improving existing skills) and reskilling (training in new skills) to be achieved within the next five years through a set of 12 ‘actions’, including a proposal for a *Council Recommendation on Vocational Education and Training for sustainable competitiveness, social fairness and resilience* that was finally adopted in November 2020 (Council of the European Union, 2020). One of the aims of the VET Recommendation is to develop strong, resilient and future-proof VET systems and to ensure that VET is agile, adapting swiftly to future labour market needs. This objective should be achieved, for example, with VET programmes that ‘offer a balanced mix of vocational and technical skills well aligned to all economic cycles, constantly evolving jobs and working methods and key competences, including solid basic skills, digital, transversal, green and other life skills which provide strong foundations for resilience, lifelong employability, social inclusion, active citizenship and personal development.’ Moreover, ‘VET curricula, programme offers and qualifications are continuously updated using strong skills intelligence (i.e. graduate tracking systems, skills anticipation mechanisms, including at sectoral and regional levels)’ (Council of the European Union, 2020, pp. 5-6). This is further emphasised by the *Pact for Skills* (European Commission, 2020b), launched in November 2020, which includes as one of its principles ‘Monitoring skills supply/demand and anticipating skills needs’ and ‘Building strong skills partnerships’. With the Osnabrück Declaration
(2020), the ministers responsible for VET in the Member States, the EU Candidate Countries and the EEA countries, the European social partners and the European Commission agreed on a new set of policy actions in VET for the period of 2021-2025 to complement and operationalise the vision and strategic objectives formulated in the VET Recommendation. One of its main areas refers to ‘Resilience and excellence through quality, inclusive and flexible VET’ and calls for the development of ‘national and regional skills intelligence systems including skills anticipation and graduate tracking; enable social partners, decision-makers, stakeholders and providers to adapt and update VET programmes, curricula and guidelines in a timely and effective manner’. The VET Recommendation and the Osnabrück Declaration also refer – among other things – to the implementation of a strategic approach to international cooperation in VET, to improved opportunities for learning mobility and recognition of learning outcomes, and to user-friendly information on learning and career opportunities within the EU.

Various measures have been and are being used to support the achievement of these objectives, including the exchange of information and mutual learning between countries.

### 1.3. Key objectives, main research questions and methodological approach

The key objective of this report is to take stock of the research done in the different parts of the overall project and to bring together the different findings related to the methods and instruments explored. It builds on the lessons learned during the previous research phases, but since this project was not carried out in isolation, this report will also reflect on important developments and new policy discussions and refer to other relevant methodological approaches (in particular to those relevant for the updating and renewal of qualifications).

The analysis and comparison of qualifications should not serve an end in itself or merely satisfy research interests. Rather, it is intended in a broader sense as an approach to support the review and renewal of national qualifications and to support the transferability of learning outcomes and flexible learning pathways. This report therefore explores, at a conceptual level, potential use cases or applications of the methodologies explored. It discusses for what purposes, for whom and by whom these methodologies could be used to contribute to the achievement of different objectives, which methods and instruments are already available, which need to be adapted and which conditions need to be met for their potential application. Furthermore, the added value of applying these methods in specific contexts is discussed. However, the use cases do not offer ready-made
solutions for specific problems and needs. Rather, this synthesis report is oriented towards providing technical support and discussing options for possible future solution steps to support policy processes with regard to specific needs.

The key research questions for this final part of the overall Framework Contract are presented in the box below:

Box 1. **Revised key research questions for WA4**

1. How can methodologies for analysing and comparing qualifications support European cooperation in VET and support national stakeholders in strengthening quality and relevance of VET qualifications?
2. Which purposes, target groups and stakeholders for analysing and comparing qualifications in this context can be identified (use cases)?
3. What is needed in terms of methodologies and necessary conditions to implement the use cases?

*Source: Authors.*

The research activities of the overall project included ten countries (Austria, Bulgaria, Denmark, Finland, France, Ireland, Lithuania, the Netherlands, Spain, and United Kingdom-England) and focussed on two qualification profiles:

(a) Healthcare assistant: Healthcare assistants (assistant nurses, practical 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.

(b) ICT service technician: They provide ICT support and systems service in companies/institutions; the focus is on more technical aspects of ICT installation, service and maintenance.

For this final work assignment, in a first step, the findings and lessons learned from the previous research phases were summarised and relevant recent policy initiatives and activities (mainly of DG EMPL and Cedefop) were explored and linked to these developments, where appropriate.

In a second step, potential use cases for the methodologies explored were identified and described (using material developed in the project to illustrate methodologies) to inspire further developments.

In order to broaden the feedback on the applicability of the methodological elements (and their potential combinations) for systematically analysing and comparing qualifications for different purposes as well as on the potential use
cases, an online workshop with country experts was organised. The workshop was in particular used to discuss:

(a) the purposes for analysing and comparing qualifications (focussing on intended learning outcomes) and the methodological approaches identified;
(b) the feasibility of applying the methodologies, as illustrated in the potential use cases, in their national contexts.

Based on these discussions and reflections, the report was further fine-tuned, possible caveats were identified and recommendations developed on how the methodological elements can be further developed to strengthen quality and relevance of VET qualifications.

1.4. Overview of this report

Chapter 2 is dedicated to reflect on findings and lessons learned from the previous research phases related to reference points for analysing and comparing VET qualifications, data sources for national VET qualifications and their learning outcomes, the use of digital technologies to support analysis and comparison of VET qualifications and methodologies for closing the feedback loop between VET and the labour market (with a particular focus on Employer Reflection Surveys). It also takes stock of relevant recent developments and activities to be considered, in particular in the context of ESCO.

Chapter 3 reflects on the purposes and stakeholders for using methodologies for analysing and comparing the content of VET qualifications and discusses selected potential use cases related to three broad purposes: Supporting quality, relevance and excellence of VET qualifications, supporting the transferability of learning outcomes and flexible learning pathways in the national and international context, and supporting the development of European Vocational Core Profiles.

Chapter 4 presents conclusions and recommendations.
Chapter 2. Taking stock of methodological developments

2.1. Introduction

It is worth noting that this study has a strong focus on the supply side of education and training, on the provision of knowledge, skills and competences, while many other research activities (including those conducted by Cedefop) have a stronger focus on the demand side.

As introduced in the previous chapter, the analysis and comparison of qualifications can on the one hand contribute to quality improvement in VET and the pursuit of excellence, and on the other hand to more transparency of qualifications from different countries and thereby facilitate transferability of qualifications and mobility. These two orientations form the basis for situating the reflections on:

(a) Reference points for analysing and comparing VET qualifications;
(b) Data sources for national VET qualifications and their learning outcomes;
(c) The use of digital technologies to support comparison of VET qualifications;
(d) Methodologies for closing the feedback loop between VET and the labour market (with a particular focus on Employer Reflection Surveys).

The following figure situates these methodological reflections in relation to the above orientations for the analysis and comparison of VET qualifications. It also points to the focus of the methodological reflections, on the conceptualisation or application of analysis and comparison, as some reflections are more related to conceptual considerations, while others are directly focused on improving the quality of national VET qualifications and supporting transferability of learning outcomes and mobility.
Moreover, this chapter considers relevant recent developments and activities (mainly by DG EMPL and Cedefop) related to the aspects addressed.

2.2. Reflection on reference points for analysing and comparing the content of VET qualifications

2.2.1. Reference points and systems – introduction

In the context of this study, a reference point is understood as conceptual fixed point for mapping learning outcomes included in national qualifications in order to analyse and compare them and identify commonalities and differences of their content and profile. A reference point itself does not necessarily have to use learning outcomes, but descriptors to which learning outcomes contained in qualifications can be mapped. Different objectives and use contexts require different levels of abstraction of reference points. Examples of such reference points or systems include:

(a) World Reference Levels (WRL);
(b) European Qualifications Framework (EQF) and other regional qualifications frameworks;
(c) National Qualifications Frameworks (NQF);
(d) Sectoral qualifications frameworks;
(e) Competence frameworks (such as e-competence framework, competence framework for languages);
(f) Occupational skills profiles (OSP).
Only the latter three are usually at a level of detail that allows for mapping of learning outcomes and comparing the content of individual qualifications. Qualifications frameworks can be used for comparing the levels of qualifications but usually do not go deeper and the WRL only provide a rather broad picture (see description in the box below). Competence frameworks are more detailed but typically focus on a specific competence area and are therefore of limited use for comparing more comprehensive VET qualifications.

Box 2. **World Reference Levels**

UNESCO’s work on WRLs was undertaken in response to a recommendation of the Third International Congress on TVET in Shanghai in 2012, as a result of which UNESCO was called upon ‘to identify a set of world reference levels, to facilitate the international comparison and recognition of TVET qualifications’. The result of this work is a WRL tool in two forms: a digital levelling instrument (https://worldreferencelevels.org/) and a back-up paper-based instrument. WRL are based on **eleven elements of capability and eight stages of progression**. The stages are identified as A1 and A2, B1 and B2, C1 and C2, and D1 and D2. The **WRL tool** is used to create a graphical profile that translates any set of outcomes into WRL terms, and a more detailed report for any qualification or credential that has been awarded on the basis of quality-assured assessment. The WRL digital tool takes the form of a survey in which the user selects the most appropriate terms from lists provided. **WRL profiles** are designed to give a broad picture of what individuals will be able to do in a wide range of academic, occupational and social situations. They can be created for full qualifications, part qualifications, credentials, level descriptors, entry requirements for courses of learning, occupational standards, and job specifications. The main purpose of the WRLs should be to assist actors across the world to make comparisons of the outcomes of lifelong learning and reach agreements on the recognition of qualifications and credentials. The WRL tool itself should not act as a qualifications framework.
The WRL tool has been piloted throughout 2019. An example of a WRL profile is displayed below.

Reference points and systems taking the form of OSP were used and tested in this study. OSP refer to profiles that describe the requirements or essential characteristics of occupations in terms of knowledge, skills, competences, professional interests, work values, etc. They can be independent profiles, e.g. referring only to a specific occupational profile, or they can be part of a more complex ‘reference system’. A ‘reference system’ is a systematic approach to develop and maintain OSP for different economic sectors and occupational fields. It defines how OSP are developed and provides some kind of structuring the content of OSP. They can be developed at national and international level. Reference systems can also include other aspects. For example, they can show relations between OSP. In this study, we examine the possibility of a broader scope of use and therefore reference systems (which include reference points, i.e. OSP, are more interesting. However, since individual reference points (not specifically linked to a reference system) also have the potential to form the basis for the development of a reference system, they are not categorically excluded.

2.2.2. The use of reference point or systems in the different strands of the study

The aim of the first part of the study was to test appropriate reference points and systems for the cross-country comparison of the content and profile of
qualifications (Luomi-Messerer, Broek, Auzinger et al., 2019a). It explored the relative strengths and weaknesses of the following examples:

(a) ESCO (v1), the multilingual classification of European Skills, Competences, Qualifications and Occupations (²);
(b) Occupational Information Network (O*NET), the USA’s primary source of vocational intelligence (³);
(c) WorldSkills Standards Specifications (WSSS), which are used as the reference points for the WorldSkills Competition (⁴);
(d) the VQTS (Vocational Qualification Transfer System) model, which was developed and further applied in a series of EU funded projects developing VQTS-based Competence Matrices (⁵).

The learning outcomes of national qualifications (healthcare assistant and ICT service technician) from ten countries (Austria, Bulgaria, Denmark, Finland, France, Ireland, Lithuania, the Netherlands, Spain, and United Kingdom-England) to the selected reference points, which included the following occupational skills profiles (OPS):

² https://ec.europa.eu/esco/portal
³ O*NET Online is available at https://www.onetonline.org/
⁴ https://www.worldskills.org/what/education-and-training/wsss/
Table 1. Reference points used for testing in WA1

<table>
<thead>
<tr>
<th>Reference point</th>
<th>Healthcare assistant</th>
<th>ICT service technician</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESCO (v1) occupational</td>
<td>Healthcare assistant</td>
<td>ICT technician (7)</td>
</tr>
<tr>
<td>profile O'NET</td>
<td>Nursing Assistants (6)</td>
<td>Network and Computer</td>
</tr>
<tr>
<td>WSSS (10)</td>
<td>Health and Social Care</td>
<td>Systems Administrators (9)</td>
</tr>
<tr>
<td>VQTS</td>
<td>VQTS-based Competence</td>
<td>IT Network Systems</td>
</tr>
<tr>
<td></td>
<td>Matrix ‘Professional Care’</td>
<td>Administrator (WSSS39)</td>
</tr>
<tr>
<td></td>
<td>developed in the EU project</td>
<td>(13)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HCEU (13)</td>
</tr>
</tbody>
</table>

Source: Authors.

In the second part of this study (Luomi-Messerer, Broek, Auzinger et al., 2019b), the ESCO skills pillar (v103) was used to explore to what extent and how digital tools can support the analysis and comparison of VET qualifications. For the texting exercise, the Dutch qualification of ICT service technician (core tasks / work processes) was selected.

In the third part of this study (Cedefop, 2021 – forthcoming), a reference point, partly building on the ESCO occupational profiles for healthcare assistant and ICT service technician, was specifically designed for pre-testing an employer reflection survey in Lithuania and the Netherlands related to the two profiles.

2.2.3. Lessons learned

In the first part of the study, country researchers, supported by sector experts, conducted the mapping and reflected on strengths and weaknesses of each reference point. The approach taken for the mapping exercise is presented in the box below:
The KSC concepts included in each reference point are listed in an Excel file, complemented by more detailed descriptions, if available. For each term listed, it can then be assessed whether it is ‘explicitly’, ‘implicitly’ or ‘not at all’ covered in the national qualification description. In addition, it is recommended to include the exact wording of the learning outcomes in question (in national language and in English) and possibly also complementary information on whether the learning outcomes were optional or mandatory. Moreover, learning outcomes included in the national qualifications but not in the reference point can also be documented. Ideally, this mapping is carried out by an expert for the respective qualification or at least validated by an expert.

The mapping needs to be done for all qualifications that need to be compared and the results can then be merged into one Excel database, to allow for comparison of the qualifications as well as for an assessment of the reference point itself. The reference point can be assessed related to its comprehensiveness and its relevance: An indication of how well a reference point is able to reflect the learning outcomes of a national qualification is whether all learning outcomes of the qualification are represented in the reference point (‘reference point is comprehensive’). A second aspect is whether the reference point does not exceed too much the learning outcomes of national qualifications (‘reference point is relevant’). Ideally, the reference point is sufficiently comprehensive and relevant for the VET qualifications mapped to it. If this is not the case for the majority of the qualifications, it should be considered whether another reference point (such as another ESCO occupational profile) might fit better.

Sources: Authors.

The mapping exercise revealed that all four analysed reference points show potential to be generally applicable as reference points for analysing and comparing VET qualifications. They provide opportunities in different contexts in which comparison of VET qualifications is involved and their use could be further explored (14). Moreover, they all show strengths and weaknesses when used in this context. A common weakness is that they are all only to a certain extent able to capture the scope of the national qualifications and they all face challenges in terms of comprehensiveness and relevance in relation to different country contexts. The comparison of qualifications with each other based on the reference points is therefore only of limited informative value, as there are learning outcomes in some national qualifications that are not reflected in the reference points.

An ideal reference point for analysing and comparing VET qualifications should facilitate the weighting of knowledge, skills and competences (KSC) within the overall profile, i.e. indicating the importance of specific learning outcomes by at least distinguishing e.g. between ‘core’ and ‘supplemental’, or between

(14) Particularly the use of VQTS-based Competence Matrices, which is strongly linked to work tasks and activities, or WSSS can be further explored in cross-country cooperation activities within Europe, possibly at a sectoral level (such as in Erasmus+ projects, Sector Sills Alliances, Centres of Vocational Excellence).
‘essential’ and ‘optional’. Such a distinction should be drawn in a concise, systematic manner, based on empirical evidence and could further be specified by a numerical indication ranking KSC within the overall profile. However, none of the reference points tested provide sufficient ground to apply weighting approaches in the sense of providing an insight into what are considered to be essential and less essential learning outcomes. Some reference points, such as ESCO occupational profiles, make such a distinction (ESCO profiles clearly distinguish between ‘essential’ and ‘optional’ demands for ‘skills/competences’ and ‘knowledge’, and thus indicating the varying degrees of importance of individual or groups of learning outcomes included). However, it is generally unclear on what basis the weighting of different learning outcomes in national qualification descriptions should be based on. National qualifications also tend to use other ways of grouping learning outcomes that do not match those in the reference points. Therefore, even if qualifications distinguish between essential and optional units, an indication of the weighting of the individual learning outcomes included in the units is not easily ‘translatable’ in the mapping process.

When analysing and comparing learning outcomes descriptions of VET qualifications, it is not sufficient to look only at the KSC a learner should have acquired at the end of education and training, but also at the required level of performance. Performance levels or levels of mastery refer to the ‘vertical’ dimension of learning outcomes. Sometimes specific systems, concepts or taxonomies are used for indicating the performance level of learning outcomes. The one most often used is the Bloom’s taxonomy, others include the Dreyfus and the SOLO taxonomies (Cedefop, 2017, pp. 33-36). However, another weakness of most of the reference points explored is that they do not reflect the performance level of learning outcomes.

(15) Also O*NET uses ‘importance’ (e.g. of certain tasks, knowledge, skills, abilities, work activities), ‘frequency’ (e.g. of tasks), ‘extent’ (e.g. of work values), specific rating scale for work context (e.g. ‘every day’, ‘never’ etc.) and in WSSS, percentages are indicated per section, showing the relative importance of a group of skills within the respective ‘Skill’. However, the weighting approaches used in O*NET and WSSS were not visualised in the reference points tested in this project in order to reduce complexity.

(16) Of the four models analysed, the VTQS/HCEU reference point is the only one that addresses the issue of competence levels of vocational learning outcomes (complexity levels or performance levels) in a logical and consistent way by distinguishing levels of competence development. The World Reference Levels with eight stages of progression can also be mentioned here as an exception; however, as already indicated, they only provide information on qualifications at a more general level and were therefore not included in the analysis in this study.
In general, it is also important to mention that the same learning outcomes statement does not necessarily mean the same in different VET or labour market contexts. They are open for different interpretations as a term has a meaning in a specific context and it might have another meaning in another context. It was also noted that the sole focus on learning outcomes constitutes a certain restriction for the international comparison of qualifications. VET qualifications are more than just a list of learning outcomes and are embedded in the respective national context. They have a signalling function based on their value for the labour market, further learning and the society in general and might be linked to specific rights, entitlements or status. This cannot be expressed by mapping the learning outcomes of qualifications to reference points composed of skills concepts and is therefore not considered in the comparison of qualifications based on this mapping exercise.

Nevertheless, a reference point (based on learning outcomes or on concepts that can be related to learning outcomes) can support the reflection on the content of VET qualifications (in particular if learning outcomes are articulated at the level of qualifications and not only at sub-levels, such as modules) and can serve at least to some extent as translation hub between VET qualifications (usually as a starting point for further analysis) as well as between the supply and the demand side, in different usage contexts.

Based on the analysis and testing of existing options, ESCO was identified as currently best positioned for the purpose of analysing and comparing VET qualifications in terms of sectoral and linguistic coverage (17) and also because a distinction between transversal and occupation-specific knowledge, skills and competences is applied. Moreover, ESCO also appeared to be the most relevant reference system (compared to the other three) for other usage contexts, including the automated collection/analysis of national qualifications data, the data collection/survey on (mis)match between qualifications and labour market requirements, for structuring online information systems on labour market and VET related topics (e.g. the EU Skills Panorama (18)), and the (automated) collection and analysis of national vacancy data (e.g. Cedefop’s project on real-time labour market information – RTLMI (19) or the European Skills & Jobs Survey (20)). Again, this is due to the far greater coverage of ESCO in terms of sectors and languages (17) ESCO is now available in 27 languages (all official EU languages plus Arabic, Icelandic and Norwegian).

and the reference to labour markets in EU countries. Moreover, ESCO is strongly promoted by the European Commission and it can therefore be expected that it will continuously be maintained and conceptually improved.

However, it needs to be pointed out that some usage contexts required an adaptation of the ESCO occupational profiles. This was the case in the first part of the study where some changes were made to the ESCO occupational profiles in order to support the mapping process. The main purpose of the amendments was to keep in check the overall length of the reference points (so that an individual list would consist of no more than 125 terms) and to group the occupational knowledge, skills and competences in order to provide a better overview. Therefore, some overly granular terms were replaced with their broader/superordinate ones and the knowledge, skills and competences were structured and grouped according to the WSSS (World Skills Standards Specification) sections. In the list of transversal knowledge, skills and competences, adaptations concerned the group of digital competences. Whereas with all other groups, narrower terms where used when available, digital competences were reduced to their five broader terms.

While the first part of the study used ESCO occupational profiles and the second part used the whole reference system, the ESCO skills pillar (v103), for the third part of the study, the ESCO occupational profiles for healthcare assistant and ICT service technician had to be adapted by reducing the skills concepts included to ensure usability in the specific context, the employer reflection survey. Inspired by existing national approaches, the research team developed a reference point that included a list of generic skills (around 75% of the skills) and a list of qualification profile-specific skills (around 25% of the skills). The latter is based on the respective ESCO occupational profiles but only including those skills that were identified in the mapping exercise of the first part of this study as ‘core skills’ since they are included in at least eight of the ten national VET qualifications analysed (21). For the purpose of the study, that included a reflection on the skills obtained by the VET provider, the graduate and the employer, it was essential to develop a reference point allowing for reasonable skills assessments, striking a balance between occupation-specific and generic skills, while keeping the total number of skills at a manageable level that allows their application in employer and graduate surveys. It deemed important to develop a reference point based on existing

(21) It should be mentioned that the notion of ‘core skills’ might not be entirely correct: It just shows the skills set that is common in VET qualifications of least 8 of the 10 countries. However, it does not reflect on the importance of these common skills within each national qualification and it could be the case that knowledge, skills and competences, that are of high importance in a national qualification do not appear in this common set of skills at all.
trusted skills sets (in order not to undermine the use of the tool), thereby avoiding both oversimplification (with the risk of being potentially meaningless) and overcomplexity (with the risk of not being understood by graduates and employers). Thus, a balance needs to be achieved related to the level of detail of the skills set included in the reference point.

While ESCO was used in all parts of the study, several areas were identified where ESCO needs to be further developed in order to make better use of it: For example, ESCO could introduce levels of proficiency into its occupational skills profiles to be better able to differentiate between qualifications at different levels. In particular, it was found that the conceptual foundation of ESCO would be needed to be improved to ensure consistency in the description of knowledge, skills and competences (vocabulary control) and that can be used to cluster, classify and organise knowledge, skills and competences for designing occupational skills profiles. The improved conceptual foundation should also ensure to better embed the transversal and occupational learning outcomes in a systematic manner. It was suggested that, besides other sources, inspiration for further development could be taken from WSSS (clustering learning outcomes), O*NET (conceptual model) and the VQTS model (both regarding embedding transversal and occupational learning outcomes, and regarding levels of proficiency).

The exploration of the use of digital tools in the mapping exercise also concluded that the ESCO skills concepts should be better aligned with the language found in qualification descriptions or vacancies, e.g. including these as synonyms. This could transform ESCO into a valuable lexical resource for (further) attempts to (automatically) compare qualifications. This includes, amongst others:

(a) Enriching the vocabulary – with stemmed versions of skills phrases via generating skills phrases from existing texts (e.g. vacancies or qualifications) or via incorporating suitable resources from existing projects that process such texts \(^{(22)}\);
(b) Supplementing semantic structure to enable aggregations;
(c) Dissecting complex skills into enabling skills components to make implicit components visible and to gain insight into performance levels;
(d) Consolidating terminology (e.g. summarising skills expressing the same meaning with different words under one concept).

The set of skills that was used in the third part of the study for the employer reflection survey applied a similar structure for categorising transversal skills and

\(^{(22)}\) Textkernel, for example, generates skills phrases from millions of vacancies, thus creating a vocabulary bottom-up. Unfortunately, this vocabulary cannot be structured by machines alone, and it would require human intelligence to connect terms.
competences as suggested in the further development of ESCO (for more information see section 2.2.4.3 below): it applied an internal structure that is moving from skills related to the ‘self’ to skills related to a ‘wider context’. This seems to be an appropriate approach that is understandable for employers and graduates, as the feedback from respondents shows. The distinction between transversal and occupation-specific skills and competences, however, still needs further consideration. ESCO distinguishes knowledge, skills and competences (KSC) concepts based on their ‘skill reusability level’, indicating how widely a concept can be applied:
(a) ‘transversal KSC’ (broad range of occupations and sectors, such as work in teams),
(b) ‘cross-sectoral KSC’ (relevant to occupations across several economic sectors),
(c) ‘sector-specific KSC’ (specific to one sector, but relevant for more than one occupation within that sector) and
(d) ‘occupation specific KSC’ (usually applied only within one occupation and its specialisms) (23).

The first part of this study already pointed to some shortcomings of ESCO related to the separation of transversal and occupation specific skills. For example, the distinction between occupational and transversal KSC was considered as unclear and the list of transversal KSC as too detailed and in some cases an overlap was observed since transversal KSC were also included as occupation specific KSC. For the employer reflection survey, this separation was also not sufficiently useful: The aim was to use a limited skills list that can be applied in different occupations and qualifications to allow comparison between them. Thus, a solution was to introduce the concept of ‘general occupation-related skills and competences’ which are transversal in the sense that they transcend particular skills (see Winch, 2015, p. 170), meaning that they mean something differently in different occupational contexts. It also means that these skills are not necessarily transferable between contexts. For ESCO, it could be relevant to further explore this tension between generic and job-specific competences and between transversal and transferable competences.

The final reports for the first and second parts of the study were finalised in Spring (Luomi-Messerer, Broek, Auzinger et al., 2019a) and in December 2019 (Luomi-Messerer, Broek, Auzinger et al., 2019b), respectively, and the research for the third part was carried out 2019/2020. The assessment of the use of ESCO as reference system for the different purposes refers to the versions of the skills

(23) ESCOPedia – see https://ec.europa.eu/esco/portal/escopedia/Skill_reusability_level
thesaurus available at that time. During the last months, ESCO has been further developed and some of the shortcomings referred to above have already been addressed. The following sections will therefore take stock of these developments.

2.2.4. Taking stock of developments within ESCO

2.2.4.1 Introduction
ESCO describes occupations and knowledge, skills and competences of all sectors and levels relevant for ‘building an integrated labour market across Europe’ and for bridging ‘the communication gap between the world of work and the world of education and training’ (European Commission, 2017, p. 5). The ESCO (v1) skills pillar distinguishes between two different types of concepts (called ‘skill type’): skill/competence concepts and knowledge concepts. Both of these types of concepts may also be defined in the skills pillar as ‘transversal’. Transversal knowledge, skills and competences are said to be relevant to a broad range of occupations and economic sectors (such as work in teams) and as the cornerstone for the personal development of an individual.

The ESCO (v1) skills pillar has thesaurus structure, in the sense that concepts are expressed by a unique preferred term, and supplemented by non-preferred and hidden terms. However, a fully developed hierarchical structure summarising skills of related content systematically under broader skills groups was only developed for the relatively small subset of transversal knowledge, skills and competences. The other items in the skills pillar, the ‘occupational’ knowledge, skills and competences, are not grouped into a general hierarchy (24) although they have all been assigned a skill reusability level of either cross-sectoral knowledge, skills and competences (relevant to occupations across several economic sectors), sector-specific (specific to one sector, but relevant for more than one occupation within that sector), or occupation specific (usually applied only within one occupation and its specialisms) (25).

The European Commission is continuously working to improve ESCO (launched in July 2017) and supports its users. In recent months, the ESCO skills pillar has been further developed: In May 2020, the Commission released an improved version, ESCO v1.0.5 (26). This version introduced a skills hierarchy, a

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(24) There is one exception: occupation- or sector-specific skills which were interpreted as a contextualisation of transversal skills by the ESCO team have been subordinated to transversal skills.


(26) The current version is ESCO v1.0.8, published in August 2020 (with minor revisions compared to v1.0.5).
classification of all 13,485 skills concepts under broader concepts. Furthermore, consideration has been given to a further development of transversal skills; however, a revised version of transversal skills will not be shared with the public before the release of ESCO v 1.1 (scheduled for end 2021).

Since a classified presentation of ESCO skills is also reflected in occupational profiles it is interesting to compare these new profiles of Healthcare assistant and ICT technician with their previous versions, and to investigate how these changes potentially affect the mapping process and ESCO’s evaluation as a reference point for comparing qualifications. In the following sections, the recent and ongoing developments and improvements of the ESCO skills pillar are presented first, before the mapping results are analysed on the basis of the revised reference points.

However, it is important to be aware that ESCO developments are in progress (some might say that ESCO is a moving target) and it is therefore not possible to take into account all changes within the current project. Therefore, the revised reference points and the results of the mapping discussed below reflect the status quo of the ESCO revisions in April (occupational skills) and November 2020 (transversal skills).

2.2.4.2 Occupational skills
In 2019, an expert working group was established for introducing a skill hierarchy (to allow for a more easy and intuitive access to ESCO skills and knowledge concepts) and for defining principles which will form the basis for mapping the ESCO skill concepts to this new hierarchy. This new ‘ESCO Skills and Knowledge Classification’ was developed as a single hierarchical framework containing four distinct sub-classifications, structured according to different principles and targeting different KSC concepts. Within each of these four broad sections the concepts are structured in a three-level hierarchy based on characteristics customized for each sub-classification. These sub-classifications include:

(a) K – Knowledge: Knowledge concepts are grouped according to ISCED-Fs 80 detailed fields of education (27);

(b) S – Skills/competences: These concepts are grouped by a separate three-level structure, influenced by a Canadian classification (the Canadian Skills and Knowledge glossary) (28) and O*NET’s Intermediate Work Activities

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(28) https://www.jobbank.gc.ca/career-planning/skills-knowledge#skills-201113
The categories of the skills classification were designed to be as homogenous as possible in relation to one of the following characteristics:

(i) Tools and equipment used;
(ii) The type of object on which the work is performed;
(iii) The function or outcome of the task or activity.

The nature of the associated interpersonal interaction was also taken into account. The expert group finally suggested eight categories for structuring and classifying skills concepts (30).

(i) S1: Communication, collaboration and creativity;
(ii) S2: Information skills;
(iii) S3: Assisting and caring;
(iv) S4: Management skills;
(v) S5: Working with computers;
(vi) S6: Handling and moving;
(vii) S7: Constructing;
(viii) S8: Working with machinery and specialised equipment.

The ESCO skills concepts were assigned to the most detailed level of the hierarchy, but the skills concepts themselves remained untouched, even if shortcomings were found when assigning them to the new classification. It needs to be noted that the classification and its application will need to be adapted to address feedback currently collected from implementors (such as EURES, Europass, Skills OVATE) and potential users (such as national public employment services which will find it easier to map their national skills taxonomies to a classified version of ESCO skills) (32).

(c) A – Attitudes and values: The current ESCO (v1) structure is retained;
(d) L – Language skills and knowledge: The current ESCO (v1) structure is also retained here (aligned with the Common European Framework of Reference for Languages – CEFRL) (31).

The ESCO skills concepts were assigned to the most detailed level of the hierarchy, but the skills concepts themselves remained untouched, even if shortcomings were found when assigning them to the new classification. It needs to be noted that the classification and its application will need to be adapted to address feedback currently collected from implementors (such as EURES, Europass, Skills OVATE) and potential users (such as national public employment services which will find it easier to map their national skills taxonomies to a classified version of ESCO skills) (32).

(29) O*NET is the Occupational Information Network of the U.S. Department of Labor. Every IWA is linked to exactly one Work Activity from the O*NET Content Model - https://www.onetcenter.org/dictionary/24.1/mssql/iwa_reference.html

(30) Originally there was an organisation leading from the internal to the external, but this was only consistently applied for the top-level of the classification. Clearly, this issue needs to be addressed at a later stage again.


(32) EURES is a cooperation network designed to facilitate the free movement of workers within the EU-27 countries plus Switzerland, the United Kingdom, Iceland, Liechtenstein and Norway – https://ec.europa.eu/eures/public/en/homepage; Europass consists of documents and tools designed to help European citizens make their skills and qualifications in Europe clear and easy to understand –
This new skills classification does not only allow for a structured presentation of occupational profiles, it also supplements an additional generalisation level for ESCO skills concepts, which are often very detailed. Furthermore, the classification also provides a template or frame of reference for creating or revising occupational skills profiles. In particular, the eight-category structure of skills could help provide a more accessible reference point for mapping and comparing qualifications.

2.2.4.3 Transversal skills

Transversal skills and competences in ESCO (v1) are structured along the following classificatory categories:

(a) application of knowledge;
(b) attitudes and values;
(c) social interaction;
(d) thinking.

These four main categories are organised as hierarchies, ranging from general to specific. Although considerable effort has been invested in the development of the transversal KSC in ESCO, experience with the use of this terminology has revealed some shortcomings that need further improvement. The joint meeting of the EQF Advisory Group and the ESCO Member State working group (February 2019) also acknowledged the need for an agreed terminology on transversal skills and competences. A consistent terminology was considered suitable to serve as a reference point and resource for a variety of applications dealing with the needs of education, training and work.

Thus, a separate expert working group was set up to further develop the terminology on transversal skills and competences currently forming part of ESCO (v1). Deliverables of this work include, among other things, a proposed definition of the term ‘transversal skills and competences’ and a proposed structuring of transversal skills and competences through the identification of main terminological categories and clusters. A proposal for structuring transversal skills and competences (TSC) in ESCO was finalised in September 2020 and is currently being discussed.


(33) See Note AG 49-4 / JAG 2-4: ‘The need for an agreed terminology on transversal skills and competences’ - Meetings of the EQF Advisory Group and ESCO Member States Working Group, 5-6-7 February 2019.
The current proposal recommends the use of five categories for structuring TSC in ESCO:

(a) Language skills and competences;
(b) Thinking (cognitive) skills and competences;
(c) Self-management skills and competences;
(d) Social and communication skills and competences;
(e) Life skills and competences.

These five categories are arranged ‘from internal to external’, or from more dispositional categories, depending on a clear internal perspective, to more situational categories, requiring clear external perspectives. This was also considered as a useful approach in the employer reflection survey (as mentioned earlier) and is shown in the figure below.

Figure 2. **Transversal skills and competences in ESCO**


Unlike the restructuring of the ESCO occupational skills, the restructuring of the transversal skills is currently still at draft stage, and has not been directly implemented in the ESCO classification. As the result, for the revisited mapping
exercise, the ESCO occupational profiles have been separated from the ESCO transversal skills, and the mapping carried out separately.

2.2.4.4 Mapping exercise revisited (occupational KSC)

In a first step, the two ESCO occupational profiles for healthcare assistant and ICT technician were prepared with the new structure for occupational KSC. These more concise profiles were then, in a second step, used for post-coding the data collected for the two profiles in the ten countries in the first part of this project. The results of the comparison as well as the differences between them and the results of the comparison conducted in the first part of the project are discussed in this section.

It is important to take into consideration that for the mapping carried out in the first part of this project, ESCO profiles consisted of both occupational KSCs and the list of transversal KSCs. For this revisited mapping exercise, the transversal KSCs had to be separated from the occupational KSC, to account for the fact that so far only the revised structuring of occupational KSC has already been implemented in ESCO.

Healthcare Assistant

With the restructuring of ESCO occupational profiles, it is important to bear in mind that the KSC concepts themselves remained untouched. The same applies to the number of occupational KSC items included. Thus, the restructuring of ESCO profiles does not have an impact on the comprehensiveness and relevance of the reference point as such.

Average coverage remains at 75 percent, while median coverage remains at 76 percent, with coverage corresponding to the share of KSC terms that are either implicitly or explicitly covered in the national qualification. The mapping table below summarises this information.
### Table 2. Mapping table for healthcare assistant

<table>
<thead>
<tr>
<th>Level 1 Title</th>
<th>Knowledge</th>
<th>Attitudes</th>
<th>Values</th>
<th>Communication, collaboration and creativity</th>
<th>Information skills</th>
<th>Assisting and Caring</th>
<th>Management skills</th>
<th>Working with computers</th>
<th>Handling and moving</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KSC_Relation</td>
<td>KSC</td>
<td>Volume of additional LO</td>
<td>BG</td>
<td>DK</td>
<td>IE</td>
<td>ES</td>
<td>FR</td>
<td>LT</td>
</tr>
<tr>
<td></td>
<td>Type</td>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Optional</td>
<td>7</td>
<td></td>
<td>high</td>
<td>low</td>
<td>none</td>
<td>low</td>
<td>none</td>
<td>low</td>
</tr>
<tr>
<td>Optional</td>
<td>geriatrics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional</td>
<td>organisation techniques</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional</td>
<td>older adults needs</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional</td>
<td>disability types</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional</td>
<td>disability care</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td>Essential</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>respond to changing situations in health care</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>comply with quality standards related to healthcare practice</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Values</td>
<td>Essential</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>work in a multicultural environment in health care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>cooperate with healthcare user</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td>Essential</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Essential</td>
<td>develop a collaborative therapeutic relationship</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Essential</td>
<td>educate on the prevention of illness</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>provide health education</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td>Essential</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>inform policy makers on health-related challenges</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>advise on healthcare users' informed consent</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>convey medical routine information</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>interact with healthcare users</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>listen actively</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>work in multidisciplinary health teams</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>work in health nursing staff</td>
<td>7</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Essential</td>
<td>accept own accountability</td>
<td>7</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Essential</td>
<td>work under supervision in care</td>
<td>7</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td>Essential</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Essential</td>
<td>support nurses</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>communicate in foreign languages with health service providers</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>employ foreign languages for health-related research</td>
<td>1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Essential</td>
<td>employ foreign languages in care</td>
<td>2</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Information skills</td>
<td>Essential</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Essential</td>
<td>manage healthcare users' data</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Essential</td>
<td>identify abnormalities</td>
<td>9</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Essential</td>
<td>maintain basic patients' signs</td>
<td>10</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>support individuals to adjust to physical disability</td>
<td>9</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>use e-health and mobile health technologies</td>
<td>4</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Essential</td>
<td>contribute to continuity of health care</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>apply health sciences</td>
<td>7</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td>Essential</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>assist in the administration of medication to elderly</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>ensure safety of healthcare users</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td>Essential</td>
<td>10</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>comply with legislation related to health care</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>follow clinical guidelines</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>adhere to organisational guidelines</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>deal with emergency care situations</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management skills</td>
<td>Essential</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>provide basic support to patients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>apply organisational techniques</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>evaluate older adults' ability to take care of themselves</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working with computers</td>
<td>Essential</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Essential</td>
<td>basic computer literacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handling and moving</td>
<td>Optional</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional</td>
<td>conduct cleaning tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Database: List of transversal KSC excluded from the ESCO occupational profile.

The table below shows the profile that emerges when selecting those learning outcomes from the ESCO occupational profile that are covered (either explicitly or implicitly) in at least nine out of the ten qualifications. This set of KSC items can thus be considered as a 'set of core learning outcomes' (or 'common / core profile') across the ten qualifications covered. However, this needs to be treated with cautiousness since it does not provide any indication on the importance of the learning outcomes included in this common profile in the national qualifications. In
fact, it could even be the case that learning outcomes that are very relevant for a national qualification are not included in this 'core profile'. Their relevance (in terms of essential or optional items) can only be assessed related to the ESCO occupational profile: For the healthcare assistant, 16 out of 20 items in this profile are ‘essential’ (as opposed to optional) skills and competences. While the list of occupational KSC included in this ‘core profile’ is the same as the one identified in the first part of the study, the new conceptual structure clearly provides an improved illustration.

Table 3. ‘Core learning outcomes’ resulting from the mapping against the healthcare assistant profile

<table>
<thead>
<tr>
<th>Level 1 title</th>
<th>Level 3 title</th>
<th>KSC Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes</td>
<td>Apply quality standards</td>
<td>comply with quality standards related to healthcare practice</td>
</tr>
<tr>
<td>Values</td>
<td>Demonstrate consideration</td>
<td>empathise with the healthcare user</td>
</tr>
<tr>
<td>Communication, collaboration and creativity</td>
<td>Coordinating activities with others</td>
<td>communicate with nursing staff</td>
</tr>
<tr>
<td></td>
<td>Providing medical advice</td>
<td>interact with healthcare users</td>
</tr>
<tr>
<td></td>
<td>Listening and asking questions</td>
<td>listen actively</td>
</tr>
<tr>
<td></td>
<td>Working in teams</td>
<td>work in multidisciplinary health teams</td>
</tr>
<tr>
<td></td>
<td>Following instructions and procedures</td>
<td>work under supervision in care</td>
</tr>
<tr>
<td></td>
<td>Assisting and supporting coworkers</td>
<td>support nurses</td>
</tr>
<tr>
<td>Information skills</td>
<td>Monitoring health conditions</td>
<td>identify abnormalities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>monitor basic patients signs</td>
</tr>
<tr>
<td>Assisting and Caring</td>
<td>Providing support to resolve problems</td>
<td>support individuals to adjust to physical disability (optional skill/competence)</td>
</tr>
<tr>
<td></td>
<td>Compliance with health and safety procedures</td>
<td>ensure safety of healthcare users</td>
</tr>
<tr>
<td></td>
<td>Compliance with legal and organisational guidelines</td>
<td>comply with legislation related to health care</td>
</tr>
<tr>
<td></td>
<td>Assisting with personal needs</td>
<td>provide basic support to patients</td>
</tr>
<tr>
<td>Management skills</td>
<td>Planning and scheduling events and activities</td>
<td>apply organisational techniques</td>
</tr>
<tr>
<td>Knowledge*</td>
<td>Medical diagnostic and treatment technology</td>
<td>sterilization techniques (optional knowledge)</td>
</tr>
<tr>
<td></td>
<td>Care of the elderly and of disabled adults</td>
<td>disability types (optional knowledge)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>disability care (optional knowledge)</td>
</tr>
</tbody>
</table>

Source: Database. List of transversal KSC excluded from the ESCO occupational profile.

The bar chart below provides a visualisation of the mapping against the ESCO occupational profile and also highlights the key benefit of the new structure for this particular exercise, in that it allows to present the outcomes of the mapping
exercise in a generalised and comparable manner. The use of bar charts to illustrate the outcomes of the mapping has, however, a considerable drawback in that it suggests an (undesirable) benchmarking aspect. It is important to re-iterate that the resulting country profiles are the outcome of the mapping against the ESCO occupational profile. The country profile as such does not provide any information on the scope and breadth of the underlying qualification.

For the healthcare assistant, the visualisation using bar charts illustrates the focus on KSC related to communication, collaboration and creativity as well as assisting and caring. Using the same illustration, the bar chart for the ICT technician confirms the focus on KSC related to working with computers (see figure below).

Figure 3. **Mapping against the ESCO occupational profile for healthcare assistant**

![Mapping against the ESCO profile for healthcare assistant](image)

*Source: Database. List of transversal KSC excluded from the ESCO occupational profile.*

**ICT Technician**

As pointed out above, some amendments were made to ESCO occupational profiles in the first part of the project, in order to keep the size of the overall reference point (then also including transversal KSC) manageable. For the ICT technician profile, these amendments lead to an incomplete depiction of the actual ESCO occupational profile, as 40 optional knowledge items from the new profile could not be included, since they were not used in the mapping conducted in the
first part of the study. \(^{34}\) The resulting ESCO occupational profile includes 36 KSC items (again, mind that 40 optional knowledge items had to be excluded).

As before, the restructuring of ESCO occupational profiles does not have an impact on the comprehensiveness and relevance of the reference point as such. Average coverage remains at 73 percent, while median coverage remains at 74 percent, with coverage corresponding to the share of KSC terms that are either implicitly or explicitly covered in the national qualification. The mapping table below summarises this information.

\(^{34}\) Most of these items refer to programming languages, including ML (computer programming), Objective-C, OpenEdge Advanced Business Language, Pascal (computer programming), Perl, PHP, Prolog (computer programming), Python (computer programming), and many more.
The table below shows the profile that emerges when selecting those learning outcomes from the ESCO occupational profile that are covered (either explicitly or implicitly) in at least nine out of the ten qualifications, i.e. producing a set of 'core learning outcomes' across the ten qualifications. For the ICT technician, 10 out of 16 items in this profile are 'essential' (as opposed to optional) skills and competences.

The same observation can be made as with the healthcare assistant profile: while the list of occupational KSC included in this core profile is the same as the
one that emerged in the first part of the study, the new conceptual structure clearly provides an improved illustration.

Table 5. Core learning outcomes resulting from the mapping against the ICT technician profile

<table>
<thead>
<tr>
<th>ESCO – new structure</th>
<th>Level 1 title</th>
<th>Level 3 title</th>
<th>KSC Label</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge</strong></td>
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<td>ICT communications protocols (optional knowledge)</td>
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<td><strong>Communication, collaboration and creativity</strong></td>
<td>Coordinating activities with others</td>
<td>use different communication channels (optional skill/competence)</td>
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<td>Developing solutions</td>
<td>create solutions to problems (optional skill/competence)</td>
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<td><strong>Information skills</strong></td>
<td>Interpreting technical documentation and diagrams</td>
<td>use repair manuals</td>
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<td>Documenting technical designs, procedures, problems or activities</td>
<td>provide technical documentation (optional skill/competence)</td>
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<td>Monitoring developments in area of expertise</td>
<td>keep up to date on product knowledge</td>
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<td><strong>Working with computers</strong></td>
<td>Protecting ICT devices</td>
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<td>Resolving computer problems</td>
<td>perform ICT troubleshooting</td>
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<td>configure ICT system (optional skill/competence)</td>
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*Source:* Database. List of transversal KSC excluded from the ESCO occupational profile. 40 optional knowledge items from the new profile could not be included, as they were not used in the WA1 mapping in order to keep the size of the profile (then also including transversal KSC) manageable.
As with the healthcare assistant, the structured occupational KSC profile allows to present the outcomes of the mapping exercise in a generalised and comparable manner.

Figure 4. Mapping against the ESCO occupational profile for ICT technician

2.2.4.5 Reflections and observations from the revisited mapping exercise

This new classification introduced cannot eliminate the major shortcomings identified for ESCO occupational profiles to be used for the purpose of analysing and comparing qualifications. As described above, the skills concepts remained untouched, i.e. the overall coverage figures resulting from the mapping remain unchanged. However, as observed in the revisited mapping exercise, the classification helps to better structure the occupational profile and visualise the outcomes of the mapping in a more generalised way.

One of the key limitations for the use of ESCO identified in the first part of the study was the absence of a conceptual model underlying the approach to ensure consistency in the description of knowledge, skills and competences and the design of occupational skills profiles. The new structured display of occupational profiles can be considered as a first step towards addressing this issue.

The new classification might thus indeed help provide a more accessible reference point for mapping and comparing qualifications, in particular when the objective is to present the outcome of comparison in a more succinct way (instead
of a very detailed analysis item by item), thus presenting the information from the mapping by aggregating highly detailed information from the technical mapping process.

The added categories for structuring skills concepts also allow for better comparability between different ESCO occupational profiles, i.e. between the healthcare assistant and the ICT technician. A comparison between the ICT technician and healthcare assistant profiles visualise a larger emphasis on the ‘knowledge’ and ‘working with computers’ items for the ICT technician, and conversely, a larger emphasis on ‘communication, collaboration and creativity’ and ‘assisting and caring’. Taking the number of skills items as an indicator of the importance of a category (as suggested by a visualisation through bar charts as above) certainly has its flaws and shortcomings. Yet, it provides a first step to providing a rough overview of the focal points of an occupational profile.

2.2.4.6 Mapping exercise revisited (transversal KSC)
As done for the occupational KSC profiles, in a first step, the ESCO transversal skills were prepared with the new (draft) structure for transversal KSC. As the draft restructuring does not include a definite allocation of each KSC to one of the new categories and clusters, this allocation has been undertaken by the study team and should therefore only be considered as provisional.

The revisited mapping exercise based on the new draft classification for ESCO transversal KSC yields some additional insight concerning the weight of different KSC categories. This leads to an improved illustration compared to the ‘old’ structure of transversal KSC.

When comparing the healthcare assistant profiles with the IT technician profiles, the latter tend to show a higher coverage in the areas of both thinking skills and life skills (here above all in the cluster of digital communication and collaboration). In the table below, this is illustrated by a larger share of blue-shaded cells, and highlighted through red rectangles. The healthcare assistant profiles, on the other hand, tend to show a higher coverage of transversal skills pertaining to the ‘social and communication skills and competences’ category, although the difference is less marked here.

Table 6. Combined mapping table for ICT technician and healthcare assistant – transversal skills and competences
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Source: Database.
The two bar charts below present a different illustration of the same mapping against ESCO transversal skills and competences, offering another perspective at the weight of different KSC categories, as the following examples show. The Bulgarian healthcare assistant qualification used for the mapping shows an overall coverage slightly above the median value, but a comparatively high coverage of KSC pertaining to the ‘thinking skills and competences’ category. Conversely, the Irish health assistant qualification shows an overall coverage slightly below the median value, but a comparatively high coverage of KSC pertaining to the ‘social and communication skills and competences’ category (depicted in the yellow section of the bar). For the UK qualification, a very low coverage of KSC pertaining to the ‘thinking skills and competences category can be observed’.

Figure 5. **Mapping against the ESCO transversal skills and competences**

**Source:** Database.
2.2.5. Preliminary conclusions

It can be concluded that the ideal reference point might be one that is comprehensive, but not too complex and adaptable to different needs and users/applications. In general, the KISS principle needs to be considered (‘Keep it simple, stupid!’). Moreover, as the revised ESCO mapping exercise has shown, a well-structured reference point is important as it supports the analysis of qualifications and the comparison process and provides a better overview of the results. As ESCO lacks the important aspect of systematically expressing performance levels, it might be useful to consider how this could be integrated and whether and to what extent, for example, the approach of the World Reference Levels or the VQTS model could be used in this respect. Furthermore, it could be considered how it is possible to express a weighting when mapping learning outcomes contained in qualifications to ESCO occupational profiles.

However, in addition to the conceptual shortcomings of the current state of ESCO and general limitations for comparing qualifications when focusing on learning outcomes only, limitations of occupational skills profiles when used as reference points also have to be considered: Labour markets are fluid and dynamic, the contexts are constantly changing. This would require a constant updating of occupational skills profiles and also means that they can never be complete (35). The framework for a global skills taxonomy proposed by the World Economic Forum could be used as a source of inspiration in this regard: It ‘builds on the recognized work taken forward by ESCO (European Skills, Competences and Occupations) and the Occupational Information Network (O*NET) framework by integrating additional emerging skills and attitudes, particularly as they relate to the trends highlighted in the Forum’s ongoing insights on the future of work. It aims to take a matrixed approach that combines skills and occupations’ (World Economic Forum, 2021, p. 2) (36). The development and constant updating of ESCO occupational skills profiles, however, would require a high level of commitment and resources. These would be quite expensive systems and the cost-benefit ratio need to be considered: how do we justify the costs?

Multilingual occupational skills profiles as reference points are useful for the international comparison of qualifications, although only to a limited extent, as they lack relevant contextual information. This also leads to the question of translation

(35) Concerns in this regard are expressed in relation to ESCO: ‘One danger with such an approach is that ESCO simply mirrors the skills of yesterday and is unable to envisage or encompass changes required, whether in the labour market or the VET system’ (Clarke et al., 2020, p. 10).

(36) It is also suggested that this taxonomy could be used to define levels of performance for emerging skills (World Economic Forum, 2021, p. 15).
and the validity of the translation and to the conclusion that these reference points can always only provide an approximation.

Moreover, there is a risk that reference points may be used as standards (which entails the risk of reducing linguistic and cultural diversity), even though they were actually intended for enhancing transparency and comparison only without any normative function.

2.3. Reflection on data sources for national VET qualifications

2.3.1. Lessons learned
In the second part of this study (Luomi-Messerer, Broek, Auzinger et al., 2019b), in a first step, a set of criteria or conditions that need to be in place to support comparison of VET qualifications was introduced. This set of criteria built the basis for a template to analyse the data sources for qualifications (reference documents as well as qualifications databases or registers) in the ten countries covered by this study. The template was completed by country researchers, mainly based on desk research. In addition, expert interviews were conducted to validate the results and/or fill information gaps. If relevant, the qualification of the ICT service technician was used as an example to illustrate certain aspects.

The following sections discuss first observations related to the available documents for presenting qualifications before reflecting on qualifications databases and their usability for supporting comparison of qualifications.

2.3.1.1 Documents as key data sources for presenting VET qualifications and their learning outcomes (‘national reference documents’)
The analysis points to an increasing transparency of national qualification descriptions as the description of learning outcomes is included in most reference documents, usually along with an indication of the NQF or EQF level and additional contextual information, which together support a better understanding of qualifications. This provides a lot of opportunities since transparency is a necessary condition for the comparability of qualifications. Nevertheless, there are still a number of challenges for the international comparison of qualifications.

(a) Analysis of qualification-related documentation shows that learning outcomes are structured and expressed in a wide variety of ways. Any procedure for comparing qualifications will need to be able to cope with this diversity, in the absence of a common format among countries for presenting learning outcomes.
(b) In relation to different types of learning outcomes (general, occupation-specific, transversal) these are seldom identified separately. Indeed, even within countries, there may be mixed approaches in use, so that some modules of qualifications may integrate occupation-specific and transversal learning outcomes, whereas there are also occupation-specific modules without any transversal outcomes (and vice versa). Such variation can also be found between qualifications in the same country, where national regulations do not cover this dimension and where different groups – responsible for the writing of learning outcomes – have adopted different approaches.

(c) Similarly, when it comes to the domains of learning (such as knowledge, skills and competences, KSCs) these are not often separately specified, and, when they are used for structuring, different approaches are used across countries.

(d) Learning outcomes are also structured in terms of different levels of specificity, so that it is quite common to find an ‘upper’ level of learning outcomes written in a more general way, with more detailed learning outcomes ‘below’. However, the way in which learning outcomes are structured and the granularity of the descriptions differ. This would influence the comparison of qualifications – to the extent that it is difficult to compare descriptions at different levels of abstraction (e.g. it would open up some room for interpretation, as it is not immediately clear which detailed learning outcomes could be summarised in more abstract statements). It would therefore be helpful to identify a similar ‘description level’ when comparing qualifications.

(e) A systematic approach for expressing the complexity of learning outcomes (the performance level, i.e. the ‘vertical dimension’), such as the use of taxonomies, can be observed only in a few cases. Sometimes even a resistance towards using taxonomies can be observed. The reasons for this are not always clear but, in some cases, they are tied in to the issue of balance between centralising the structure and content of learning outcomes, on the one hand, and allowing flexibility between sectors and occupations in qualifications design, on the other hand.

(f) Variation also exists regarding the degree of autonomy within systems to adapt elements of qualifications, e.g. through local autonomy to adapt learning outcomes to local labour market needs. This variation means that qualifications at a ‘lower hierarchical level’ (e.g. regional or provider level) differ to some extent from the ‘higher level’ (e.g. national level) documents to which they refer and that they also differ from each other. The extension of cross-country comparison to the regional or provider level would require additional efforts, but might be worth doing since it must be recognised that
the ‘lower level’ documents may be more relevant to stakeholders at the regional or provider level than those at the ‘higher hierarchical level’.

(g) In addition, it will be difficult to compare qualifications where optional elements and electives are included which could be an effect of reducing the number of qualifications and broadening the qualification profiles, a quite common trend in Europe (37). There will be differences between individuals holding the same certificate, for the same qualification – in terms of the learning outcomes they have sought through the qualification. In some cases, these differences may be quite substantial. This suggests that any method for comparing qualifications will need to determine both the core and optional elements of qualifications, and, more than this, it may need to acknowledge that in certain circumstances it may make sense to compare only the ‘core’ elements of a qualification.

(h) Finally, the question of accessibility of qualifications data needs to be addressed. As for the access to national qualifications data, the most relevant aspect is whether the data at national level is accessible and traceable, while the place of storage is secondary. Findings show that relevant qualifications documents are not available in all countries or not for all levels (e.g. qualifications descriptions at regional or provider level are not always publicly accessible). In addition, the infrastructure behind the learning outcome descriptions is only in a few cases designed in a way that permits a simple extraction of the learning outcomes for different applications.

2.3.1.2 National qualifications databases

The analysis of the databases for storing and presenting qualifications, available in the countries covered by this study as of mid-2019, clearly revealed that there is a need for a commonly agreed definition of what can actually be considered to be a ‘qualifications database’. Up to now, manifold developments in national qualifications databases can be observed, with huge variations across countries. Moreover, the common principles for presenting learning-outcomes-based qualifications in databases, suggested by Cedefop (2017), are rarely used and only few databases are linked to the European portal. In general, the databases analysed in the ten countries covered by this study support the cross-country comparison of qualifications – and particularly the use of digital tools for this

(37) This is, for example, pointed out in the Cedefop study on the changing nature and role of VET (Cedefop, 2020) and currently further elaborated in the Cedefop project on the future of VET (https://www.cedefop.europa.eu/en/events-and-projects/projects/future-vet).
purpose – only to a very limited extent. This needs to be considered in future discussions on what the purpose of qualifications databases should actually be.

However, the research also shows that qualifications databases are emerging or are currently being developed further and, in particular, newer databases are being set-up in relation to the elements of data fields suggested by the EQF Recommendation (Council of the European Union, 2017). Thus, this ‘work in progress’ points to opportunities that could be further elaborated in the future, in order to support the international comparison of qualifications and the potential applications of this exercise for different target groups and needs.

2.3.2. Preliminary conclusions

An imperfect situation was noted with regard to the data sources of qualifications, which makes their international comparison difficult. VET qualifications are (obviously) mainly developed and described for the national context, not for comparison, and reflect the different national traditions and strategies and the different ways in which influences from the European level are taken up in the national context. There are problems related to the transparency and accessibility of national data on qualifications, which also affect the possibility of using digital tools to analyse qualifications (see discussion in the next section), including the following:

(a) Further efforts are needed to find solutions to improve access to data on qualifications; and to improve transparency to support the analysis and comparability of qualifications and their learning outcomes. Short, not too detailed presentations of qualifications should be developed that do not provide the full account of the learning outcomes of a qualification, but a synthesised and structured description of their core profiles.

(b) It is suggested to follow the Cedefop handbook on learning outcomes, which suggests using the following components as a basic structure to formulate learning outcomes statements: action verb and object of the verb, as well as a statement specifying the depth/breadth of learning to be demonstrated, and with an indication of the context (which can be related to learning, work or other relevant social contexts). Moreover, learning outcomes statements should express the level of complexity or proficiency (i.e. the ‘vertical dimension’ of learning outcomes). Taxonomies and the action verbs included can be used for this purpose but should serve mainly as a reflective tool - to support dialogue in the development and description process of qualifications, and not too rigidly.

(c) It is recommended to further explore the development of common principles and a common structure for developing qualification profiles for the European
context. This could also support the automated analysis and comparison of qualifications. These common principles and the common structure could be based on the elements of the Europass Certificate Supplement; the data fields for the electronic publication of information on qualifications (Annex VI in the EQF Recommendation); as well as the common principles for presenting learning-outcomes-based qualifications as proposed by Cedefop. It is suggested developing standardised learning-outcomes-based descriptions of national qualifications (of about 2,500 to 3,500 characters). These descriptions should follow a predefined structure and syntax; refer to a sensible and flexible way of clustering types of learning outcomes; and should be based on a standardised terminology, including lists of action verbs (which should not be used too rigidly). This would mean a more harmonised approach for presenting learning outcomes statements in the European context, which in turn would enhance the comparability of qualifications.

2.4. Reflection on the use of new digital technologies to support the automated analysis and comparison of data on qualifications

2.4.1. Lessons learned
In the first step of the second part of the study focusing on exploring the use of digital tools, the requirements to be met by these tools were defined: Ideally, the digital tool supporting the automated analysis and comparison of learning outcomes of VET qualifications should:

(a) have the ability to process different text formats (prior conversion or automated); allow extraction or labelling of key words; have the ability to deal with natural language (text parsing);
(b) be able to process different languages;
(c) use open-access software packages, to maximise inclusivity, and should not be too demanding to operate.

In a second step, a workflow was designed, outlining the separate sub-tasks that would be involved for the automated analysis and comparison of qualifications (within a context of text mining, text analysis and machine learning) and to identify existing or new digital technologies (preferably freeware) that could potentially be used for the purpose of automated analysis and comparison of qualifications. The sub-tasks of the proposed workflow include the following, in a more or less chronological sequence (i.e. pipeline):
(a) First of all, access to national VET qualifications in machine readable form (tap relevant sources, transform pdfs into txt, point the parser at the spot where the learning outcomes are being described etc.) has to be provided (^{38}).

(b) The included national learning outcomes descriptions need to be parsed (text segmentation, part-of-speech-tagging) and the segmented text parts of national learning outcomes descriptions need to be mapped onto the reference vocabulary, representing the meaning contained therein, in terms of the reference vocabulary (normalisation of learning outcomes).

(c) In the final step, the ‘translated’ national learning outcomes descriptions have to be mapped onto the most suitable occupational skills profiles (‘reference points’) of the reference system, registering overlap and divergence.

The development of the prototype (digital tool) included selecting a set of base tools to work with; and tailoring solutions provided on discussion forums to fit the workflow through trial and error. Additionally, experts were consulted for feedback on the proposed workflow, as well as on the use and feasibility of incorporating machine learning aspects into it. The suggestions and feedback from consulted experts referred to the following aspects: the aim should be to support rather than fully automate the process; the feasibility of integrating machine learning depends on the amount and diversity of data to be processed; and implementing a machine learning approach should require significantly less effort than carrying out the comparison manually.

The adapted approach to developing a prototype therefore included narrowing the focus on certain processing subtasks and using the whole reference system (ESCO skills pillar, v103), rather than pre-selected reference points (occupational skills profiles) only. Thus, it was not feasible to perform all of the envisioned ‘workflow steps’ for the final prototype within this project. The prototype developed for the testing exercise is a collection of resources that can be used through an open source Python programme (Anaconda Navigator). The testing exercise was conducted for analysing to what extent the texts included in the Dutch national documentation for the qualification of ICT service technician (core tasks / work processes) could be matched to the right skills in ESCO.

The results of the testing point to differences between the languages used in ESCO and in national qualification descriptions: On the one hand, when focusing on single terms as well as on bigrams (word pairs), present within ESCO, a highly skewed frequency distribution was found (e.g. a high share or terms – 46.2% –

[^{38}]: The challenge of this sub-task is that qualifications descriptions are not always written as learning outcomes and even when they are, learning outcomes may play different roles within different qualifications. There is also the question of the level at which learning outcomes are located.
occurs only once). On the other hand, some more commonly used tokens or bigrams were linked to so many skills (100+ for single tokens) that manually identifying the 'correct' matches – within their professional contexts – would require a significant increase in human capacity for each separate term / skill to be compared, which is undesirable.

Based on the results of the testing exercise, it was concluded that the national qualification descriptions and the selected reference point differ too much to allow sensible matching, based on automated processes. Moreover, there is too little qualification data available for the training of an automated system for comparing qualifications (i.e. machine learning is not a feasible approach). Finally, the study showed that there are currently limited possibilities for automated qualification comparison; even machine learning methods (artificial intelligence, AI) are currently only to a limited extent able to support a manual comparison in such a way that these efforts are significantly less labour-intensive.

### 2.4.2. Preliminary conclusions

With regard to the reference system used, the ESCO skills pillar, some of the suggestions for improvement already mentioned above are also relevant for this exercise. Moreover, provided that the necessary information related to data on qualifications is extracted beforehand, it is possible to use the prototype developed for some preliminary analyses, potentially contributing to the improvement of ESCO – with the goal of developing it into a lexical resource also suitable for natural language processing, e.g. by identifying specific terms within ESCO (or between ESCO and learning outcomes descriptions from other sources), which are most likely to cause mismatches (i.e. ambiguous terms, similar but different terms that would be those identified as one after stemming). Only after this challenge has been met, we may consider using machine learning elements for (supporting) the mapping of learning outcome descriptions to ESCO skills. If the project is limited to one language (English), it would be possible (through translating qualifications described in other languages into English) to manually prepare enough data for training a classification model for the full ESCO skills pillar. However, it must be recognised that a word has a meaning in a specific sentence and it might have another meaning in another context. There are also ambiguities in the language that need to be considered and since it often appears to be difficult for humans to have a common understanding, this might be even more challenging for machines and translations will further increase the complexity. Moreover, as seen in other projects (such as on vacancy analyses), it is important to note that it is generally an ongoing process of training and updating the model, especially considering terminology changes over time. All in all, a harmonised language repertory is
prerequisite to any form of automation in comparing qualifications. In this context it might be of interest to look at other countries dealing with the qualification-comparison problem for decades, e.g. Canada (francophone versus anglophone parts of the country) and explore to what extent and in which manner they have solved the problem.

Some activities for further improving ESCO have been described already above and they are still ongoing. Another project in the ESCO-context that was carried out to contribute to the potential use of digital tools for analysing and comparing qualifications is presented in the following sub-section.

2.4.3. Other relevant activities
There are also other projects and activities that have tested approaches for using digital tools for mapping learning outcomes of national qualifications to ESCO skills.

The ‘Qualifications Pillar Study’ (European Commission, 2019), carried out in 2018, was commissioned to provide insights into how the learning outcomes of qualifications included in the ESCO qualifications pillar could be linked with the ESCO skills pillar, and how technical tools could provide the most effective and cost-efficient solution. A proof of concept was developed to illustrate and explore how linking could be automated, what technical approaches work best, and understanding the resource requirements for the possible approaches. The study discussed different options, including a wholly ‘human’ solution (i.e. manual linking) and a highly intensive artificial intelligence solution, and also ‘shows the potential for a more pragmatic solution which embraces both the best use of human and technologies’ (European Commission, 2019, p. 8).

Following up on the conclusions of this study – based on the experiences from the testing exercise related to (semi)automated linking for eight qualifications –, ‘the Commission decided to test the use of an automated approach based on methods for natural language processing with an initial degree of human intervention’ (European Commission, 2020d). A pilot project for ‘Linking Learning Outcomes of qualifications with ESCO skills’ was conducted for further testing the linking with qualifications from different countries, in different EU languages, with different EQF levels and in different subject areas. To this end, a user-friendly IT tool has been developed to support the linking process based on natural language processing, providing automatic suggestions for ESCO skills on learning outcomes of selected qualifications in different EU languages. This IT tool (39) has the following three main functionalities (European Commission, 2020d, p. 3):

(39) https://lo-linking.esco-projects.eu/upload
(a) ‘Split learning outcomes description texts into separate conceptual entities;
(b) Provide suggestions of matching ESCO skills through a Machine Learning algorithm;
(c) Export a list of ESCO skills concepts that relate to the learning outcome of the qualification.’

The box below illustrates how this tool can be used to support the mapping exercise (as described in section 2.2.3):

Box 4. **Mapping exercise – supported by the learning outcomes linking tool**

For supporting the mapping exercise, users can type in learning outcomes descriptions from their national qualification descriptions (with or without selecting one of the suggested languages) and the tool will provide suggestions of matching ESCO skills through a Machine Learning algorithm. In a next step, the skills concept that fits best to the learning outcomes description in the national qualification can be selected.

This is illustrated in the figure below that shows the results generated when typing in the learning outcomes description text ‘communicate with patients’. The suggested ESCO skills concept ‘interact with healthcare users’ could then be selected by clicking on the + button and it would appear in the list of ‘linked skills’.

This can be repeated for the whole qualifications profile. It is then possible to export a list of ESCO skills concepts that relate to the learning outcomes of the qualification and is also included in the respective ESCO occupational profile.

Sources: Authors.
The pilot project for ‘Linking Learning Outcomes of qualifications with ESCO skills’ demonstrated that an automated approach based on the use of artificial intelligence provides for a significant reduction of the costs and resources needed to perform the exercise and makes the process more sustainable for public authorities. However, in line with the findings from the testing exercise carried out within our study, the ‘Comparing VET qualifications’ project, it was pointed out that the ‘human component is fundamental in order to understand the context of data and review and validate the results provided by AI and machine learning technology’ (European Commission, 2020c, p. 3). Also, the need for sufficient data and information to train the AI algorithm in all languages was emphasised. Moreover, the pilot project also referred to the potential of how such exercises and particular the use of technologies based on Natural Language Processing can support the feedback process for further improving ESCO.

In 2020, the pilot project was extended with the following objectives for the second phase (European Commission, 2020d, p. 2):

(a) ‘Improve the technology supporting the automated linking of learning outcomes of qualifications with ESCO skills, through an enhanced matching algorithm based on artificial intelligence.’

(b) Test the automated linking and the performance of the matching algorithm in different EU languages.

(c) Test the usability of the hierarchical structure of ESCO skills and introduce rules and matching relations between skills and learning outcomes of qualifications, allowing users to define exact matches between skills and learning outcomes or attribute broader/narrower properties.

(d) Develop guidance materials to support countries interested in creating such links.

(e) Make suggestions on the ESCO skills pillar that will feed into the ESCO continuous improvement process.’

After this second phase of the pilot project, it is expected that an improved IT tool will be available (reflecting e.g. the new hierarchy of skills and knowledge of ESCO) and that the quality of the results delivered by the IT tool will also be improved (based on the use of a wide range of data for training the matching algorithm and adapting it to the different EU languages). Thus, the potential use cases and applications presented in Chapter 3 of this report will refer to the advantages provided by this IT tool when using ESCO as reference system for analysing and comparing VET qualifications.
2.5. **Reflection on methodologies for closing the feedback loop between VET and the labour market**

2.5.1. **Lessons learned**

The third part of this project focussed on methods and approaches for exploring, gathering and analysing data on the match/mismatch between qualifications and labour market requirements. Focusing on this aspect should not mean that meeting economic needs is the only purpose of VET. This is of course not the case, as in many countries VET also provides, at least in part, general education, gives access to higher or further education programmes and also serves social purposes. These other purposes of VET should not be neglected and should be taken into account in the revision and further development of qualifications. However, the central focus in the third part of the project was on what methods can be used to better identify labour market needs and incorporate them in the revision of qualifications. To this end, particular emphasise was put on the feedback loop between VET and the labour market based on learning outcomes which refers to a continuous dialogue on intended and acquired learning outcomes, trying to improve the stated expectations (intended learning outcomes) on the basis of actually acquired outcomes as applied and perceived in the labour market (40). This feedback loop is presented in the figure below:

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(40) As mentioned above, this feedback loop focuses on the feedback between VET and the labour market. Another feedback loop could be established between VET provision and further learning opportunities. For example, higher education institutions could reflect on the competences of students with a VET qualification and the extent to which they have the competences required to study at a higher education institution. This reflection could also be used by VET providers when reviewing their provision to ensure that the programmes they offer and the associated learning outcomes provide a solid foundation for higher education study, if applicable.
This study first explored what data is already available in the countries showing the relevance of qualifications for workers, employers and other labour market actors, and in particular the match between the intentions of the VET system and the needs of the labour market. To this end, we examined VET graduate tracking surveys, skill mismatch analyses and the European Skills & Jobs Survey, online vacancy advertisements, including Cedefop’s Skills-OVATE, forecasting procedures at national level and Cedefop’s pan-European skills as well as employer reflection surveys. Particular emphasis was placed on the extent to which these approaches are actually useful in completing the feedback loop based on learning outcomes, i.e. whether they consider actually acquired learning outcomes as experienced and monitored by employers (see stage 4 of the figure presented above).

The analysis of these methods and tools showed that they provide rich insights into the degree of match between skills supply and demand, into current skill demands and future trends, and that they all provide important data for the creation of skills intelligence. However, they are usually not sufficient to complete the feedback loop, as they often refer to a higher aggregated level rather than to individual qualifications and generally do not relate to the perception of the learning outcomes acquired by the graduates and realised on the labour market. Moreover, they are often biased as they preliminary or even exclusively focus on the demand side (labour market) and do not sufficiently consider the supply side of skills, the provision of education and training and the various related purposes beyond meeting labour market needs.

VET graduate tracking surveys could be considered, at least in part, as approaches to closing the feedback loop (and they often consider other post-graduation pathways or purposes that might be associated with the VET qualification, in addition to labour market integration), but in many cases, they focus on more general issues and only in a few cases on specific learning outcomes. Moreover, they are concentrated on the graduates and do not consider...
the employers' perspective or explore whether the intended learning outcomes are actually acquired.

Employer reflection surveys, defined as approaches in which employers (or their representatives) are asked to give their reflections on the relevance of qualifications in the labour market, could play an important role in completing the feedback loop, as they can examine whether employers are generally satisfied with the graduates and the learning outcomes they bring to the workplace. In the ten countries included in this study, we identified surveys that address employer perception of and demand for qualifications and employer reflection surveys without or with reference to specific learning outcomes included in qualifications. The latter could, thus, be seen as the most direct means of monitoring the link between intended and actual or realised learning outcomes.

The figure below provides an overview of the approaches analysed for closing the learning outcomes feedback loop between VET and the labour market and positions them related to their focus: demand or supply side on the one hand and individual qualifications and learning outcomes or broader categories on the other hand.

Figure 7. **Positioning the approaches and tools analysed for closing the learning outcomes feedback loop**

Source: Authors.

Employer reflection surveys are, however, usually not conducted in a systematic way at national level. The examples identified in the countries covered by this study show a variety of different approaches and there are several
challenges associated with their design. Their usefulness to illustrate the match between the intentions of the VET system and the demands of the labour market seems to be assessed higher in countries with weaker governance and system links between the labour market and the VET system. In countries where there are already strong links and functioning feedback mechanisms between the labour market and the VET system, the introduction of regular employer reflection surveys might even be perceived by stakeholders as an unnecessary administrative burden. Furthermore, in countries with dual systems (apprenticeships), specific approaches to collecting feedback from employers need to be used, as in this case employers are not only recipients of what the education and training system delivers and have a need for a certain set of skills, but they are involved in the supply process during the in-company training itself. Moreover, based on the research conducted, it can be assumed that such surveys provide the most direct added value for VET providers (in this case: VET schools or centres) (41), and not necessarily for the VET system level: If they are conducted at the provider level, they offer the VET providers an additional tool to engage with their graduates and the employers in their region, to initiate a dialogue with them, in order to inform the further development of their offers.

Within the framework of this study, a prototype of an employer reflection survey was developed, which focused on the VET provider (school) level. The objective was to develop a tool for supporting VET providers to better match their offers with the needs of their direct labour market stakeholders. Rather as an accountability tool, it is understood as a tool to initiate a dialogue between VET providers and employers (and graduates). Moreover, the data collections should also allow aggregation of the data to sectoral, national and cross-national levels. While the focus of this part of the study is somewhat different from the previous parts, which were strongly focused on the analysis and comparison of qualifications, this aggregation of data should also allow for comparison at different levels.

It was decided to test the prototype for two profiles (healthcare assistant and ICT technician) in two countries (Lithuania and the Netherlands). For the pre-test of the online survey, three questionnaires were developed (in English and translated into Lithuanian and Dutch): for VET providers, graduates and their employers. First, VET providers were asked to complete the questionnaire and to

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(41) The situation is somewhat different for companies that offer vocational training (e.g. apprenticeship training): they will probably only hire those graduates anyway with whom they are satisfied. In addition, they have the opportunity to directly use the experience gained from each training process to improve their vocational training offering as much as possible (while respecting national or sectoral standards).
send the link to the questionnaire for graduates to their recent graduates. Originally, the workflow envisaged that the VET graduates who completed the questionnaire would then provide contact details of their employers, who would then be invited to complete the questionnaire for employers. However, the approach had to be changed because few VET graduates provided contact details of their employers (possibly because they feared that this survey would be an assessment of their competences). Therefore, VET providers were asked to compile a list of employers who might potentially have hired (recent) graduates from their programme and these were then asked to complete the questionnaire.

Since the survey was designed as a tool to complete the feedback loop on learning outcomes, the respondents were asked to reflect on these learning outcomes. Each questionnaire presented a set of skills (as a reference point) and contained related questions, e.g. to what extent the VET programme had provided the graduates these skills for effective work in a company/organization and which of them were rated as the five most important and the five least important. For the design of this survey it was considered crucial to use a reference point that would allow for a reasonable assessment of competences, striking a balance between occupation-specific and general competences, while keeping the total number of competences at a manageable level suitable for use in this context. In addition, a common set of skills was required to enable comparison between qualifications. Thus, for the purpose of this survey, a tailor-made reference point was developed consisting of the following skills clusters (42):

(a) General occupation-related skills and competences as exercised in the workplace (total 6 learning outcomes);

(b) Specific occupation-related skills and competences as exercised in the workplace: This cluster differs per qualification. In the pilot for healthcare assistant and ICT technician, the list of 11 learning outcomes is based on the learning outcomes mapping to the ESCO profiles conducted in the first part of the overall project. The skills identified as part of the core profiles were selected, i.e., those that were included in qualifications from at least 8 out of the 10 countries;

(c) Teamwork and interpersonal skills as exercised in the workplace (6 learning outcomes);

(d) Employability and enterprise skills as exercised in the workplace (15 learning outcomes).

The analysis and the feedback from the respondents show that the skill lists used were considered detailed enough to allow in-depth reflection on the content

42 The development of this reference point was inspired by an Australian employer satisfaction survey (Social Research Centre, 2019) and the ESCO skills pillar.
of the qualifications, but short enough (38 items) to be used in such a survey without burdening respondents with cumbersome skill lists (the average time taken by employers to complete the full survey was 15 minutes). The structure with the four clusters worked well and allowed comparisons between the two qualification profiles. The occupation-specific skills list seemed to work better for the healthcare assistant than for the ICT technician. The skills listed for the latter were less well recognised by VET providers, graduates and employers.

The main challenge experienced in the pilot exercise concerns reaching out to VET graduates and their employers. To a certain extent, this was a result of the generally difficult period in connection with the Covid-19 pandemic, during which the pre-test of the survey was conducted; and this in occupational fields that were of central importance in this situation. In order to reach graduates and their employers, however, VET providers must have up-to-date data on their graduates and operate an active alumni policy. Such a policy existed among VET providers for whose graduates a good response rate was recorded in the survey, but it seems that the other VET providers did not have a sufficient alumni policy. The pre-testing exercise also showed that establishing contact with graduates and employers in the ICT sector seemed even more difficult than in the healthcare sector. In the ICT sector, there is a less clear idea of who the employers of graduates are, as the sector consists of more SMEs. In addition, the labour market is less regionally limited compared to the healthcare sector, and there appears to be a dynamic in the labour market that is related to the fact that these graduates change jobs earlier in their careers than healthcare graduates.

Nevertheless, the pre-testing exercise pointed to interesting results and opportunities. For example, different perspectives of the three types of respondents (VET providers, employers, graduates) on the extent to which the VET programme has actually provided the graduates with specific skills for effective work in a company/organisation and on the most important and least important of the listed skills can be used to start a dialogue on how to improve VET provision. In addition, a comparison of results in relation to different VET providers, different sectors and countries can serve as a stimulus for the review and renewal of qualifications. The figure below presents the objectives and opportunities that the employer reflection survey (ERS) developed provides.
2.5.2. Preliminary conclusions

At least in some VET contexts, more work needs to be done to ensure that the achieved learning outcomes of graduates as perceived by their employers are considered in the review and renewal of VET qualifications. Relevant methods should be integrated more strongly in the VET governance and quality assurance procedures and structures. This requires not only relying on feedback mechanisms at national or system level, but also strengthening more direct feedback loops between VET providers and their (local or regional) labour market stakeholders. In addition, a combination of different sources and methods is recommended, as each of them has its specific advantages, provides special insights into the relevance of qualifications and can add value for a particular purpose, thus helping to create skills intelligence. The use of skills intelligence and feedback loops is also emphasised in a recent discussion paper by Cedefop and ETF (2020, p.11): ‘…in a fast-changing and uncertain economy, the development and use of labour market and skills intelligence and strategic foresight is essential to informing VET policy, practice and potential learners as part of a well-defined skills governance framework and infrastructure. It is also important to create direct communication lines and coordination mechanisms (feedback loops) between VET actors and the economy.’ While much research has been done on labour market needs, more needs to be done on exploring and ensuring the relevance of VET qualifications to these needs. The feedback loop on learning outcomes can serve as a key reference point in this dialogue between the world of work and the world of education. In particular, the approach of the employer reflection survey provides a kind of ‘reality check’ for VET providers as to whether their offer of VET
qualifications (and the learning outcomes contained therein) is also perceived by employers as acquired by graduates and as important for the specific work context.

However, there are also some challenges to be considered. One challenge concerns the interpretation of the data collected: There might be problems with subjectivity on the part of the respondents. Furthermore, it must be recognised that employers may reflect on the competences of their employees but do not know the source of the competences, i.e. how and where they were acquired. The assumption of the existence of a direct link between intended and acquired learning outcomes is a simplification, which leaves out the fact that competences can be acquired in different ways and in different contexts (e.g. someone may have acquired teamwork skills in community work, but the employer would probably not know that they were acquired in this context and not in the VET programme – it is then questionable how the employer’s feedback on this can be used to draw conclusions about the learning outcomes included in the VET programme). So more conceptual work is needed in this regard.

Since the prototype of the employer reflection survey was only pre-tested within this project and with a limited number of respondents, further development and experimentation is suggested. This could include setting up an infrastructure inspired by the SELFIE-360-methodology (to allow VET providers to conduct a self-assessment supported by input from different stakeholders) (43), including additional or other countries, for which this approach is of interest, more VET providers and other qualification profiles. Moreover, the further testing could be combined with support to VET providers to develop their policies on employer engagement as well as alumni policies (44) and also to build sufficient capacity to conduct such surveys and analyse and interpret the data gathered. Finally, the results of employer reflection surveys at national or system level could be combined with information from other sources for completing the feedback loop. Overall, this approach could be further explored and developed within the EQAVET Framework in the context of the implementation of the VET Recommendation (Council of the European Union, 2020).

(44) The EU-funded project ‘Advancing Graduate Tracking and Alumni Relations in VET Schools – TRACKTION’ focuses on strengthening graduate tracking capacity and fostering alumni relations in VET institutions. The guide developed in this project (TRACKTION partnership, 2020) showcases a range of different approaches and good practice examples to inspire and support practitioners, institutions and policymakers across Europe in developing or further strengthening alumni culture in VET schools.
2.6. The important role of learning outcomes and the way forward

The activities carried out in the different parts of this study have clearly shown the opportunities offered by the use of learning outcomes. By describing the content and profile of VET qualifications in terms of learning outcomes it becomes possible, for example, to look more closely at the content of qualifications, analyse them and compare them with each other and with the requirements of the labour market. The sole focus on learning outcomes constitutes a certain restriction for the analysis and international comparison of qualifications as does the fact that words can mean different things in different contexts and that shifts in meaning are also possible in translations. Nevertheless, a reference point (based on learning outcomes or including descriptors to which learning outcomes contained in qualifications can be mapped) can to some extent support the analysis of the content of qualifications and serve as translation hub between VET qualifications (particularly those described in terms of learning outcomes) as well as between the supply and the demand side in different usage contexts.

The study has also shown that reference points including a set of skills that is appropriate for the respective purpose for the mapping and comparison of qualifications is essential. However, the quality of the outcomes of mapping to a reference point depends on the one hand on the type and quality of the reference point, and on the other hand on the quality of the descriptions of the entity mapped to it, the way learning outcomes are described and at which degree of detail, and how differently the qualifications to be compared are structured and described in each case. For example, for mapping VET qualifications to an occupational skills profile, the comparison works best when there are well structured concepts or learning outcomes descriptions in both, the reference point and the qualifications descriptions. Thus, the study clearly showed the need for further developments at both sides.

The study identified and piloted interesting development paths but also pointed to limitations of using digital technologies to support automated gathering, structuring and analysing data on qualifications, and to support the comparing of qualifications. However, the identification of these types of barriers provides insights into what aspects need to be further developed and points to possible directions for further action, in particular related to the presentation of data on qualifications in the European context and related to reference points or systems.

Bearing in mind the aforementioned limitations, the analysis and the comparison of the contents of VET qualifications (intended learning outcomes) can reveal interesting results in terms of their similarities and differences (between qualifications, between countries, but also at a national level). The part of the
project that focused on the intended learning outcomes of VET systems is important, but further insights can be provided when complemented by exploring the achieved outcomes experienced by employers and labour market stakeholders (i.e. by comparing the intended learning outcomes with the achieved and realised learning outcomes from the perspective of the VET provider, the graduate and the employer).

The methodology explored provides the basis for understanding how these intentions relate to the labour market and society. Thus, it has the potential to contribute to a better understanding of the link between the demand for skills and their supply and clearly indicates that the comparison should not be seen as a purely abstract or academic exercise. It can serve various purposes of interest to VET policy makers, VET providers and other stakeholders and can meet the needs of different stakeholders with their specific interests. The following section therefore discusses different purposes and introduces a number of potential applications (use cases) linked to the methodologies developed and tested within this study.
Chapter 3. Potential applications and use cases

3.1. Introduction

Although the overall title of this project refers to the comparison of VET qualifications, it should be noted here again that the comparative element might not necessarily be considered as the only central aspect, since the information obtained by analysing qualifications and mapping their learning outcomes on a reference point also provides the basis for other processes that require a deeper understanding of the content of qualifications.

It is necessary to clarify the specific objectives, purposes and needs of the potential users’ groups using the results of the analysis and comparison of VET qualifications since this is important for the selection of the respective methodological approach. They determine, for example, the reference points or systems and the sources used as well as the level of detail required and the type of tool that can be applied. In general, in order for stakeholders to actually perceive added value of applying the methodologies and tools explored, information overload should be avoided and for the majority of applications, there is probably a need for a light, practical and flexible approach. Also, for the application in many contexts, some intermediate level of information will be needed as well as some sort of structured instrument. For example, for ‘importing foreign labour’, an overview of an individual’s qualifications and competences will be important (short and simple learning outcomes descriptions are needed, e.g. through an enhanced Europass Certificate Supplement). Clear and standardised information is needed to match the labour market needs with the learning outcomes that people bring with them. For recognition purposes in the educational context, a higher level of detail might be needed in some cases, but not in all – sometimes there is a need to go into the subject matter, while in other cases short descriptions are sufficient. In recruitment situations, less detailed comparison is usually needed. For employers, comparison can give valuable information but they will almost always prefer something short and succinct that does not need to be very detailed, as long as the description gives them a solid and credible overview; other aspects play a role as well for recruitment decisions. Moreover, the results obtained, including the way they are presented (the depth or level of detail) and what is considered as ‘meaningful’ result, must meet different requirements.
It is also important to consider the limitations of the tools and methods used since one tool can impossibly fulfil all different purposes: It is important to keep in mind, that in attempting to cover all aspects (of all envisioned purposes) would result in an overly complex system – an information overload. Thus, even though the analysis and comparison of qualifications can serve many purposes, it is not feasible to include them all into one tool or approach. In general, however, the analysis and comparison, although probably always with limitations, can in most cases at least serve as a starting point for further steps.

In the context of this study, the following broad purposes which can be supported by the analysis and comparison of VET qualifications, their profile and content, were identified:

(a) **Supporting quality, relevance and excellence of VET qualifications**: The comparison of VET qualifications based on intended learning outcomes allows national policy-makers and stakeholders to systematically judge their own priorities and solutions and to gain inspirations from other countries’ choices for revising or further developing, improving (towards enhanced quality and excellence) and updating their own qualifications and the learning outcomes included. The reflection on the results can support mutual learning between countries and can be used as a starting point for improving and further developing VET qualifications with a view of enhancing their quality, relevance and excellence.

Moreover, comparisons of the profile and content of qualifications (in terms of learning outcomes) across countries could be complemented by an analysis of how the intentions of the education and training system (i.e. intended learning outcomes as included in qualifications descriptions) match the expectations and needs of employees and employers in a given context, and to what extent they are satisfied with what they get (i.e. acquired learning outcomes as applied in the work context). How the learning outcomes acquired by the holders of qualifications are perceived in the labour market and in particular by their employers provides crucial feedback related to the relevance of qualifications for the labour market and the match (or mismatch) between VET provision and demand. This type of feedback can help to better shape the specific profile of qualifications and therefore to provide important information for qualifications authorities and for providers offering these qualifications to enhance their labour market relevance (45).

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(45) The methods studied in this project focus on the relevance of VET qualifications to labour market needs. However, VET qualifications must also be equally relevant to, for example, social or other needs of the individual.
(b) **Supporting the transferability of learning outcomes and flexible learning pathways in the national and international context**: International cooperation for enhancing mobility and recognition of qualifications can be considered at several levels and from various angles. At policy level, comparison of qualifications can be used as a means of quality assurance and enhancing mutual trust. For example, in the EQF context, comparing qualifications can be used to explore the consistency of levelling decisions (‘horizontal comparison’ – see IBE, 2016) or just to visualise the similarities and differences of these qualifications.

The comparison of qualifications across countries can support the identification of learning outcomes to be addressed in mobility phases or in joint programmes and can support sectoral initiatives, such as the ‘Blueprint for sectoral cooperation on skills’ (46). Also, in the national context the comparison of qualifications can help to identify common learning outcomes and facilitate transfer of learning outcomes and progression in learning. Thus, it can contribute to enhancing the flexibility of learning pathways.

In general, comparison of qualifications could support employers in the recruitment of mobile workers from abroad or individuals applying for a job or a further learning programme in another country with a VET qualification or for obtaining a VET qualification based on work experience and non-formal learning in another country. Moreover, the information on similarities and differences of qualifications can also be useful for career guidance professionals or Public Employment Services. The information gained can, for example be used to support migrants, e.g. for identifying training needs and potential career pathways.

However, it should also be noted that any methodology or instrument supporting the comparison of qualifications in this context can currently only support transfer and recognition processes, but the results do not automatically lead to a right of transfer or recognition of learning outcomes for individuals.

(c) **Supporting the development of European Vocational Core Profiles**: The comparison of VET qualifications could help identifying the similarities of qualifications and their learning outcomes, indicating a certain core profile. ‘European Vocational Core Profiles’ are promoted as part of the *Council Recommendation on Vocational Education and Training for sustainable competitiveness, social fairness and resilience*: The European Commission intends to support ‘the goal of gradually establishing and developing European

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(46) [Blueprint for sectoral cooperation on skills - Employment, Social Affairs & Inclusion - European Commission (europa.eu)](europa.eu)
Platforms of Centres of Vocational Excellence and exploring European Vocational Core Profiles together with Member States and relevant stakeholders, as part of Europass platform and complemented, where possible, by vocational digital content developed in the framework of European transparency tools, with a view to facilitating mobility of learners and workers and the transparency and recognition of qualifications’ (Council of the European Union, 2020, p. 9).

The following figure situates the potential use cases within the analytical framework as presented in Chapter 2.

Figure 9. Potential applications and use cases situated within the analytical framework

The following sections present specific applications of the methodologies developed and tested related to these broad purposes as potential use cases and discuss options for how the analysis and comparison of qualifications can contribute to the achievement of the related objectives. The description of potential use cases refers both to the specific context and needs (for what?) and to the beneficiaries (for whom?) and the stakeholders involved carrying out the activity (by whom?). With regard to the methodological approach, the requirements that the methodology has to fulfil in order to meet the needs of the specific context of use/purpose/user are described and a possible approach is suggested, using examples from the research activities and test exercises carried out in this study to illustrate this. Considerations of limitations and necessary steps for improvement are also included.
It is important to stress that these potential use cases should be seen as conceptual considerations that can inspire relevant stakeholders for further developments. It is not possible at this stage to provide ready-made tools and solutions, not least because ESCO, the reference system used to support the analysis and comparison of VET qualifications in many of the use cases, and the related technical solutions are still in progress. Furthermore, it is worth mentioning here – in order not to refer to it again when describing each use case – that the general caveats and limitations related to the comparison of qualifications based on the mapping of learning outcomes to reference points and conceptual considerations related to the learning outcomes approach, which have been pointed out at various places in the previous sections, also need to be taken into account in any future developments.

3.2. Supporting quality, relevance and excellence of VET qualifications

3.2.1. Introduction
This section will present the following potential use cases.

(a) **Improving the content and structure of VET qualifications:** The analysis and comparison of VET qualifications based on intended learning outcomes allows national policy-makers and stakeholders to systematically judge their own priorities and solutions and to gain inspirations from other countries' choices for revising or further developing their own qualifications. For example, they could see how to improve the description of certain types of learning outcomes; or how to better ensure the consistency of descriptions. The reflection on the results of the comparison can support mutual learning between countries and can be used as a starting point for improving and further developing qualifications.

(b) **Improving the relevance of VET qualifications:** Analyses and comparisons of the content of qualifications (in terms of learning outcomes) across countries could be complemented by an analysis of how the intentions of the education and training system (i.e. intended learning outcomes as included in qualifications descriptions) match the expectations and needs of employees and employers in a given context, and to what extent they are satisfied with what they get (i.e. acquired learning outcomes as applied or realised in the work context). How the learning outcomes acquired by the holders of qualifications are perceived in the labour market and in particular by their employers (employer satisfaction survey) provides crucial feedback related to
the relevance of qualifications for the labour market and the match (or mismatch) between VET provision and demand. This type of feedback can help to better shape the specific profile of qualifications and therefore to provide important information for qualifications authorities and for providers offering these qualifications. This in particular refers to the delivery of qualifications – local level/provider level could make use of these insights.

3.2.2. Use case: Improving the content and structure of VET qualifications

3.2.2.1 Purpose and relevance

VET qualifications are first and foremost designed to serve the national context and there are also variations within countries (e.g. because of regional structures, such as in Spain, or of different sub-systems of VET, such as in Austria). Thus, even if qualifications from different countries and sub-systems refer to the same occupation, they usually include different elements and qualifications with similar titles from different countries can have quite different contents. However, while VET qualifications will always have to respond to national, regional and local needs, their relevance and quality increasingly depend on their ability to respond to international developments and requirements, imposed by global markets and rapidly developing and changing technologies. National VET qualifications are not developed in a national vacuum but respond to skills and competence needs shared across national and institutional borders. How this balancing of local, national and international needs and requirements is carried out in practice, however, varies across countries. Countries also organise the interaction between their education and training and labour markets in different ways, meaning that qualifications are reviewed and renewed in different ways. The analysis and comparison of VET qualifications and their content (the intended learning outcomes), which helps to identify differences and similarities, allows national policy-makers and stakeholders to systematically reflect and evaluate their own priorities and solutions and to draw inspiration from other countries’ decisions and solutions to design, revise or develop their own qualifications. For example, they can learn from other countries how they include transversal learning outcomes in their VET qualifications or which types of learning outcomes are represented in a qualification. Thus, the analysis and comparison of VET qualifications can support mutual learning across European countries. Another application could be in development aid projects to help the countries concerned develop or improve their VET qualifications.
3.2.2.2 Using ESCO occupational profiles for the cross-country comparison of qualifications

Requirements that the methodology must fulfil in order to meet the needs of this context of use

Cross-country comparison of qualifications in this context means mapping of national VET qualifications – their intended learning outcomes – to selected reference points in order to identify similarities and differences in their content and profile and to use the results for drawing conclusions for the renewal of the qualifications. Thus, a reference point or system is needed that meets the following necessary requirements: It should ideally

(a) be available in all languages used in the Member States to describe VET qualifications;
(b) be as comprehensive as possible and cover the learning outcomes contained in the VET qualifications in all Member States;
(c) be structured in a way that supports the mapping of national qualifications;
(d) be based on a robust methodology for development and review;
(e) be generally recognised in all Member States;
(f) enable the use of digital tools to support comparison.

Introduction of the methodology

While not meeting all the requirements mentioned above perfectly, ESCO is well placed to be used for the cross-country comparison of qualifications. This relevance mainly relies on the great coverage of ESCO in terms of concepts, sectors and languages, the reference to labour markets in EU countries and the public commitment to its long-term development. The latter is evidenced, for example, by the ongoing revision of the structure of the skills pillar. Moreover, the use of digital technologies to support the comparing of qualifications has been piloted and a tool for linking learning outcomes of qualifications with the concepts of the ESCO skills pillar has been developed (47).

In order to compare VET qualifications from different countries that refer to the same occupational profile, first, the relevant occupational profile in ESCO needs to be identified: Every occupation in the ESCO occupational pillar has a profile. The occupational profiles contain an explanation of the occupation in the form of a description, scope note and definition. They also list the knowledge, skills and competence concepts (KSC; included in the skills pillar), which experts consider relevant terminology for this profession at European level. When the relevant ESCO occupational profile has been identified, the learning outcomes of national qualifications

(47) https://lo-linking.esco-projects.eu/upload
qualifications can be mapped to the concepts included in the profile. This can be done either ‘manually’ (as presented in the boy in section 2.2.3) or supported by the learning outcomes linking tool (as presented in the box in section 2.4.3).

**Example to illustrate the approach**

The result of the mapping process can be illustrated in a table, as illustrated in the example (embedded document) that presents the outcome of the mapping of health care assistant qualifications from ten countries to the respective ESCO occupational profile (48): The blue shaded fields indicate that the respective concept is either explicitly or implicitly covered in a national VET qualification. The volume of additional learning outcomes covered in a VET qualification but not in the reference point can also be indicated in the comparison table (assessed as ‘none’, ‘low’, ‘medium’ or ‘high’).

![Sample_full_profile_ESCO_health.docx](image)

The overview offered by this table provides a direct and detailed analysis and comparison of the intentions of national qualification. It makes the content of the qualifications transparent as it explicitly visualises the choices made in terms of the content and profile of a qualification and shows the similarities and differences between qualifications. It shows, for example, that the essential skills concept ‘use e-health and mobile health technology’ is only included in half of the national qualifications analysed and that only the Finnish qualifications includes learning outcomes related to ‘communicate in foreign languages with health service providers’ and ‘employ foreign languages for health-related research’.

This offers a range of opportunities. For example, the results of the comparison can initiate a reflection on whether significant differences in intended learning outcomes contained in qualifications are the result of different national approaches and requirements, or whether not including specific learning outcomes is simply due to lack of information and oversight. This comparison could be fed into discussions with national stakeholders responsible for the review and renewal of qualifications to inspire this development process. This approach could, for example, be most applicable to companies operating in global markets where countries will want to make sure their qualifications are ‘competitive’.

**Limitations and necessary/potential steps/improvements**

(48) The mapping was carried out in the first part of the study; hence the content of the qualifications might have changed since then. The results should therefore be used with cautiousness and only be considered as illustration of the approach.
The opportunities and challenges in this context largely depend on the following aspects:

(a) A well-developed and maintained reference point: As discussed above, ESCO is and still needs to be further developed to be used as an ideal reference point in this context.

(b) Transparent and well-structured qualification descriptions: The mapping exercise benefits from data sources of qualifications that are accessible and provide a structured description of their content in terms of learning outcomes. While substantial progress has been made during the last years, descriptions of qualifications still need to be improved in many cases to better serve the needs in this context.

(c) Digital support: A fully automated comparison of qualifications is currently not possible. However, since doing the mapping manually is quite resource intensive, the further development of solutions for the digital support of qualifications comparison is important.

3.2.3. Use case: Improving the relevance of VET qualifications

3.2.3.1 Purpose and relevance

It should be noted that this potential use case also starts from the analysis of qualifications, but, unlike the use case presented above, focuses on the comparison between intended and achieved and realised learning outcomes. This is therefore primarily an ‘intra-qualification’ comparison. However, the methodology presented here also includes cross-national comparison.

A feedback loop that is based on learning outcomes helps to get deeper insights into what is required at the labour market, what is offered in training provisions and assessed at the end of a learning programme. It can also provide insights into how the learning outcomes acquired by qualification holders are perceived in the labour market and, in particular, by their employers. This type of feedback, also in a comparative perspective, can help to better shape the specific profile of qualifications and therefore to provide important information for qualifications authorities and for providers offering these qualifications for ensuring their labour market relevance. The use of learning outcomes is crucial in this approach as it not only allows to identify (new) skills needs in the labour market, but also to reflect on the learning outcomes acquired with a specific qualification as they are realised in the workplace. The feedback loop on learning outcomes refers to a continuous dialogue on intended and acquired learning outcomes, trying to improve the stated expectations (intended learning outcomes) on the basis of actually acquired outcomes as applied and perceived in the labour market.
While the demand side of the labour market is covered by various methods (e.g. online job vacancy analyses), there are few sources that refer to whether VET qualifications and programmes really deliver the intended learning outcomes. One approach that is not systematically implemented in European Member States but might have the potential to provide the reflection on individual learning outcomes is the employer reflection survey that takes into account the content of qualifications. These surveys are aimed at employers to measure their satisfaction with VET graduates working in their company in terms of the skills and competences acquired and their use in the workplace. Surveys of employers exploring their satisfaction with their employees’ learning outcomes are the most direct means of tracking the link between intended and achieved or 'realised' learning outcomes, as they ask employers whether graduates can actually apply the skills and competences 'promised' in their qualification and in particular whether graduates have the skills to meet the requirements of the job.

However, employer reflection surveys that look at the content of qualifications are only used in a few countries \(^{(49)}\). In some countries, this was due to the absence of any surveys addressed to employers at all, while in cases where employers were addressed, the type of survey generally tended to focus on identifying skill needs rather than on gaining insights into their satisfaction with learning outcomes achieved by their employees. Examples of six European and one non-European ERS that could be used for inspiration are presented in the box below \(^{(50)}\):

\(^{(49)}\) In the third part of this study, the research conducted in the ten countries only identified a few examples (Cedefop, 2021 – forthcoming).

\(^{(50)}\) It is important to note that, in most of these examples the ERS is either systematically performed (IE, NL, AU) or was developed as a one-off study (AT, LT1 and 2). Spain is an exception here, in that the survey was meant to be systematically performed (every two years), but has not been repeated after the first iteration.
Box 5. Examples of employer reflection surveys

**Austria** – Employer Survey from the University of Applied Sciences Carinthia 2014 (51). This is a regional survey, as part of a one-off study carried out in 2014 by the University of Applied Science (52).

**Ireland** – Irish National Employer Survey (NES). This (national) survey covers graduates from HE (53) and Further Education and Training (FET – the Irish equivalent of VET), and distinguishes between HE and FET in the analysis. Drivers for the NES are the national strategies for FET and HE, both of which stress the need for closer relationships between business and education and training (54).

**Spain** – Employment Monitor Training needs in the Community of Madrid. Community of Madrid, 2016 (55). This concerns a primary investigation of the market needs of workplaces through a survey of companies, representative in terms of economic activity and company size.

**Lithuania (1 – ‘QA’)** – Survey on employers’ satisfaction with the skills and competences of VET graduates in the framework of the project ‘European programme of the VET quality assurance national guidance points activities No. 2016-0783/001-001’ (56).

**Lithuania (2 – ‘SCQ’)** – Survey on employers’ satisfaction with the skills and competences of VET graduates executed by the Business Employers Confederation of Lithuania (LEC) in the framework of Erasmus+ mobility projects since 2016 (57). This survey was developed and used by the employers’ organisation, following the needs and focused on the requirements of employers.

**Netherlands** – Employer satisfaction measurement: Transition of (VET) MBO – Labour Market (58). This is a survey developed by SBB on request of the Ministry of Education,

(51) In national language: ‘Arbeitgeberbefragung der Fachhochschule Kärnten 2014’. Source: Fachhochschule Kärnten (2014). Arbeitgeberbefragung 2014. Summary der Ergebnisse [Employer survey 2014. Summary of the results]. (Not published). This survey does not refer to IVET, but to higher education. Nevertheless, it has been included in this analysis as there is no ESS for IVET in Austria and the regional approach applied was considered interesting for the design of the ESS prototype in this study.

(52) In preparation for the institutional evaluation (in 2015) by the Austrian Quality Assurance body for Higher Education (AQ Austria).

(53) Higher education in Ireland includes ‘Institutes of Technology’, which provide, inter alia, higher VET programmes.

(54) An objective of the Further Education and Training Strategy 2014-2019 is to ensure that the relevant FET provision is informed directly by employers.


(57) In national language: ‘Lietuvos verslo darbdavių konfederacijos atliekamas darbdavių pasitenkinimo profesinio mokymo įstaigų absolventų, dalyvaujančių Erasmus+ mainų programoje kompetencijomis ir kvalifikacijomis tyrimas’

Culture and Science (OCW) in 2015. The survey was conducted by an organisation that already has a registry of recognized (VET) training companies. Furthermore, the sample was expanded for the 2nd iteration (including unregistered ‘non-training’ companies).

**Australia** – 2018 Employer Satisfaction Survey (ESS). The ESS is an annual national survey involving two rounds of data collection each year (in November and May). The ESS looks at university and non-university higher education graduates. The specific targets are the supervisors of recent graduates. The ESS in Australia is a national wide approach, with a well-developed methodology. The downside of this ESS is that it focused on higher education and that it is a non-European survey.

*Source: Cedefop, 2021 - forthcoming.*
3.2.3.2 Methodological approach

Requirements the methodology must fulfil in order to meet the needs of this context of use

An employer reflections survey (ERS) approach that allows a direct reflection on VET qualifications' content (i.e. which focuses on learning outcomes) requires to have the following preconditions in place:

(a) The **starting point for ERS implementation** should be with **VET providers** (for organisational reasons since they can reach out to the graduates and their employers and because they can use this approach as part of their quality assurance arrangements), but they should also allow for comparisons beyond individual VET providers, e.g. at qualification, sectoral, national or international levels (i.e. data collections should allow aggregation of the data to sectoral, national and cross-national levels).

(b) The ERS should be designed to include the **perspective of employers, but also that of the VET provider and graduates**, to ensure a comprehensive picture in terms of intended and realised learning outcomes and whether they match the skills needed in the labour market.

(c) VET providers should be able to reach out to graduates and employers of recent graduates and this requires the VET providers to have a **functioning alumni-policy** and an idea where graduates work after their studies.

(d) The ERS should have **questionnaires with lists of skills (reference point)** that are detailed enough to allow in-depth reflections on the content of the qualifications, but are short enough to be used in a survey without burdening the respondents with **tiresome lists of skills**. Thus, this points to a good balance regarding complexity and simplicity of the reference point used.

(e) Moreover, the reference point used for the ERS should have an **appropriate balance of transversal and occupational skills**.

(f) The **anonymity of respondents** should be respected and it needs to be ensured that assessments of learning outcomes cannot be traced back to graduates and employers. This requires sufficient responses for VET provider and qualification profile, while the full population of learners obtaining a specific qualification and graduates that enter a qualification-related job is often quite small.

(g) The ERS should not be considered as an accountability tool but rather a **tool to initiate a dialogue between VET providers and employers (and graduates) as part of the quality assurance measures** at provider level. This approach can support VET providers to better match their offers with the needs of their direct labour market stakeholder as it provides them a possibility
to better engage with their beneficiaries (both graduates and employers) and reflect together with them on the outcomes of the VET programme offered as well as on the regional labour market.

**Introduction of the methodology/tool**

*Questionnaires for reflecting on intended and acquired learning outcomes*

The core part of the questionnaire is the skills typology (reference point – see embedded document below) that will be reflected upon by the respondents (see Section 2.5). The prototype of the ERS developed in this study comprises three online questionnaires (see embedded documents below):

(a) Questionnaires for VET providers,
(b) Questionnaires for VET graduates, and
(c) Questionnaires for employers.

**Workflow of the ERS**

The following workflow for implementing the ERS is suggested:

(a) **Step 1**: The VET provider provides a characterisation of the VET qualification in terms of a learning outcomes profile in relation to the reference point for the VET qualification (*questionnaire for VET provider*).

(b) **Step 2**: The VET provider sends a link to the questionnaire (*questionnaire for graduates*) to the graduates. In the invitation-email, the researchers outside the VET provider who will be analysing the data are also introduced. Although the VET provider is responsible for inviting the graduates, the individual data gathered will not be available to them (i.e. they will not be able to trace the answers back to the individual respondents).

(c) **Step 3**: The VET provider compiles a list of employers that potentially hired graduates from the programme and sends the invitation-link to participate in the survey to the employers (*questionnaire for employers*). This survey also includes questions on whether the employer consents with being contacted by the researchers to discuss the aggregated results.

(d) **Step 4**: The researchers analyse the survey results and discuss the outcomes with the VET providers and employers to initiate a dialogue on intended and achieved learning outcomes and the content of the VET qualification.
Example to illustrate the approach

The pre-test was conducted in the ROC van Tilburg school for care and well-being (NL: School voor Zorg en Welzijn) and focused on the healthcare assistant qualification at EQF level 3 (Verzorgende – IG). The VET provider facilitated the distribution among graduates of the last two years (2018/2019 and 2019/2020) and approached a group of employers that regularly hire graduates (or that on an ongoing basis have apprentices and interns from the VET provider). This resulted in 12 employer responses and 7 full responses from graduates. As around 20 employers and around 75 graduates were invited, the response rate among employers (60%) is higher compared to the response rate among graduates (9%). Many graduates however were excluded as they continued studying, or as they were not in a job or a job related to the qualification. The employers range from organisations with 150 employees to organisations with 5,000 employees. They all have a regional focus, providing healthcare services. All employers indicate that the qualification is a formal requirement for entering the job.

While the small number of responses cannot justify representativeness, as a general overall assessment, the employers and graduates are positive concerning whether the VET programme prepared the graduate for his or her job. 83 percent of the employers and 86 percent of the graduates indicated that the programme prepared the graduate ‘well’; 17 percent of the employers and 14 percent of the graduates even assessed the preparation as ‘very well’. Furthermore, 58 percent of the employers considered it very likely that based on the experience with the graduate they were reflecting on they would consider hiring another graduate of this VET programme.

A more detailed question related to whether graduates actually have acquired the skills and hence to what extent the respondents believe that the VET programme has provided the graduates with the skills for effectively working in a company/organisation. This question was asked to the VET provider (1 respondent), the graduates themselves (7 respondents) and the employers (12 respondents). The first figure shows the average score per cluster of skills.
This cluster overview shows that employers and graduates are most positive about seeing specific occupation-related skills and competences and that this is also recognised by the VET provider. Employers are of the opinion that the skills in the employability and enterprise skills cluster have been the least offered. Compared to the VET provider, the employers and graduates are generally more positive on employability and enterprise skills, such as meeting deadlines and persistence and endurance. This might not be a core competence offered by the VET programme, but in the labour market, these skills are well recognised. On the other hand, more data-related learning outcomes (manage data, work with numbers) are assessed as being less present compared to what the VET provider assumes. Besides asking whether the graduates actually have obtained the skills, the pre-test survey also asked about which learning outcomes are considered most and least important.

To conclude, while there is an overall high level of satisfaction among the employers and the graduates concerning the learning outcomes provided by the VET provider, there are learning outcomes that need further reflection and discussion between the employers, graduates and the VET provider in terms of whether they are sufficiently acquired during the programme and/or related to their importance. Examples of learning outcomes that deserve a discussion concern B10) Manage healthcare users’ data and D2) Reflect work processes and procedures: VET providers have a more positive view on whether graduates obtained these learning outcomes compared to employers and graduates. Furthermore, ability to work under pressure (D1) is considered a priority by graduates and is assessed as being acquired, but the VET provider is more negative about whether graduates obtained this learning outcome. Apparently,
graduates feel that they have obtained more learning outcomes than what the VET provider can oversee.

**Limitations and necessary/potential steps/improvements**

First of all, organisational issues need to be considered: VET providers need resources and capacity to administer the survey and could probably not use this approach en masse for all qualifications they offer during a single year. They also need to be consulted on the survey and probably need some additional support or extra staff. Implementing employer reflection surveys requires VET providers to have a functioning alumni-policy in which contact details of graduates are kept up to date and that also assured that graduates provided consent in being approached for surveys after obtaining their VET qualification. VET providers also need to have a good overview of which companies or institutions graduates start working in. The time investment from the VET providers' side in launching the surveys is significantly reduced when there is a functioning alumni-policy (59) and overview of companies that take in graduates.

Of key importance is to have a suitable list of skills (reference point) to allow in-depth reflections on the content of the qualifications; but that is at the same time short enough to be used in a survey without burdening the respondents with tiresome lists of skills. Thus, this points to a good balance regarding complexity and simplicity of the reference point used. In order to be able to include a cross-country comparison in this approach, it is also necessary that the reference point is relevant to and can be agreed upon by all stakeholders and countries involved. Moreover, more work needs to be done to address conceptual challenges of this survey approach.

3.3. **Supporting the transferability of learning outcomes and flexible learning pathways – national & international context**

3.3.1. **Introduction**

The first potential use cases presented in this section relate to the national (such as qualifications authorities) and institutional (such as VET providers) level, while the other use cases focus on the individual level (such as learners, employees or job seekers as well as employers). It should be noted in advance that the latter group of beneficiaries will most likely need the support of career guidance

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(59) For guidelines in this regard see e.g. TRAKTION partnership, 2020.
professionals for analysing and comparing qualifications; without this support, it is difficult to imagine how the potential applications could actually be used in practice.

National and institutional level:
(a) **Supporting the levelling of VET qualifications**: Comparing VET qualifications can help to identify the levels of qualifications and to better understand the allocation decisions. To this end, it is necessary to gain a deeper insight into the content of the qualifications.
(b) **Supporting mobility in VET**: Comparing training programmes and understanding qualifications from other countries’ systems and their learning outcomes is one of the main challenges in implementing transnational mobility and the recognition of competences acquired abroad. Comparison can help identifying learning outcomes that can be addressed in mobility phases.

Individual level
(a) **Exploring opportunities for flexible learning pathways**: Comparing VET qualifications can help to show opportunities for individual and flexible learning pathways within the national context as well as at the international level.
(b) **Applying for a job in another country with a VET qualification**: Comparing VET qualifications can help to decide whether it is worth applying for a job in another country and it can provide insights into what additional learning outcomes would be required. In addition, the comparison of qualifications could support employers in the recruitment of mobile workers with a VET qualification from abroad.

3.3.2. **Use case: Supporting the levelling of VET qualifications**

3.3.2.1 **Purpose and relevance: consistency of levelling decisions**
The EQF aims to contribute to a better understanding of different qualification systems and to aid the transparency and comparability of qualifications and their portability and transfer across countries, systems, sectors and learning contexts. Through the EQF referencing process, national authorities responsible for qualifications systems, in cooperation with stakeholders responsible for developing and using qualifications, define the correspondence between the levels of their national qualifications system, usually defined in terms of a national qualifications framework, and the eight levels of the EQF. The EQF aims to provide a comprehensive map of all types and levels of qualifications in Europe, which are increasingly accessible through qualification databases and, thus, to serve as a translation tool. However, when looking at qualifications linked to the same EQF level, it is not always clear at first sight why they are actually linked to the same level, as the qualifications themselves can be quite different in scope or specific
content. Furthermore, qualifications from the same occupational field and possibly with a similar title can end up at different EQF levels. Therefore, in order to understand the allocation decisions, it is necessary to have a deeper insight into the content of the qualifications. In order to address this issue, the EQF Advisory Group has therefore set up a project group on ‘horizontal comparison’. The main purpose of ‘horizontal comparisons’ of qualifications relates to the consistency of levelling qualifications based on learning outcomes across countries to achieve transparency and comparability of qualifications. A pilot exercise was carried out in 2016 (IBE, 2016) and the current project group is looking into comparing ICT and social care qualifications at levels 4-6 and intends to present their results to the EQF Advisory Group by the end of 2020.

3.3.2.2 Methodological approach: using a VQTS-based Competence Matrix

Requirements the methodology must fulfil in order to meet the needs of this context of use

A reference point suitable to support the comparison of qualifications and the discussions on the consistency of levelling decisions should have at least the following characteristics: It should make it possible to distinguish between descriptions of learning outcomes that reflect different levels of proficiency, thereby making the level assignment of qualifications more transparent and easier to follow. It should therefore make it possible to visualise the similarities and differences between the qualifications mapped on it in relation to the level in question.

Introduction of the methodology /

A reference point that allows for identifying different performance levels and that can be used to compare qualifications and to check whether and how the different performance levels are expressed, is a ‘VQTS-based Competence Matrix’, based on the model developed in the project ‘Vocational Qualification Transfer System (VQTS)’ (Luomi-Messerer, 2008).

Box 6. VQTS-based Competence Matrix

Competence areas (based on core work tasks) are the main structural element of a VQTS-based Competence Matrix: A Competence Matrix displays competences structurally in a table according to core work tasks in a specific occupational field and the progress of competence development. Competence areas form the vertical axis of the table. The acquisition of competences by a person in training with reference to core work tasks is described for each competence area as steps of competence
development (horizontal axis). Between two and six successive steps of the competence development process within certain core work tasks are described. The Competence Matrix can be used to show similarities and differences of qualifications preparing for the same occupational field.


Example to illustrate the approach

The use of a VQTS-based Competence Matrix for comparing qualifications was discussed in the first part of the overall study and tested with the Competence Matrix ‘Professional Care’. This matrix was developed in the EU project HCEU and describes the steps of competence development in the field of nursing starting with helper professions within nursing up to Bachelor level (60).

The figure below (see embedded document) provides an example of the comparison between the Danish and the Irish healthcare assistant qualification (both are linked to EQF level 4) based on the mapping on the VQTS/HCEU Competence Matrix. The mapping shows clear differences between these qualifications which are both linked to the same EQF level through their inclusion in the respective NQF: The Danish qualification (blue shaded fields) generally includes more steps of competence development, i.e. it refers to higher performance levels than the Irish one (orange shaded fields). These differences cannot be made visible with reference points that do not reflect different levels of proficiency (61). However, in order to interpret them further information would need to be collected on these qualifications.

Limitations and necessary/potential steps/improvements

VQTS-based Competence Matrices are available for a few occupational fields and in few languages only. They are often developed in EU-funded projects and not updated after the end of the project’s lifetime.

The VQTS/HCEU Competence Matrix is very good in differentiating competence areas and higher and lower level abilities. However, the differentiation of the steps of competence development makes the mapping process more time-


(61) The mapping result also shows the overlapping areas of the two qualification profiles. This information could be used, for example, as a starting point for cooperation purposes, such as designing mobility phases (see Section 3.3.3).
consuming and requires deeper expertise related to these work processes. In addition, the core work task approach followed here might fit well with qualifications that use an activity-based description, while it might be less suitable for mapping qualifications that use a different structural approach.

3.3.3. Use case: Supporting mobility in VET

3.3.3.1 Purpose and relevance: ensure quality of mobility in VET
The use of learning outcomes is an important element to help ensure the quality of VET mobility, and to make sure that the learning achieved in another country or context can be recognised, and if possible, that mobility-related achievements can be fully integrated into new or existing learning pathways. The recognition of learning outcomes acquired abroad is likely to become more important if longer duration mobility becomes more common (62). However, descriptions of qualifications, programmes or parts thereof, even if described in terms of learning outcomes, vary greatly and very often are not immediately comparable at first glance.

When preparing for learning mobility in VET, mobility partners will need to agree on a set of learning outcomes that can be achieved by a learner during a mobility phase, typically a stay abroad at another VET institution or as company internship and potentially also as virtual mobility (wholly or partly). Mobility partners will first need to establish a common understanding of the learner’s current progress, and agree on learning outcomes to be achieved during mobility. Mobility can focus on learning outcomes that are covered in both qualifications or programmes. Alternatively, mobility partners can also agree on a set of learning outcomes that the ‘home’ qualification or programme cannot offer.

Here, comparison using a common reference point can help identifying learning outcomes that can be addressed in mobility phases. This will be done by mapping a VET qualification, programme or parts thereof – its intended learning outcomes – to a selected reference point in order to identify similarities and differences in content and profile. This can then build the basis for deciding which parts of a qualification/programme could be the objective of a learning stay abroad.

3.3.3.2 Methodological approach (incl. tools) and necessary conditions to implement the use cases

Requirements the methodology must fulfil in order to meet the needs of this context of use

For this purpose, the same general requirements apply as described above for the reference point in the use case ‘Comparison of VET qualifications based on intended learning outcomes’.

More specifically, a reference point or system that supports mobility in VET should be widely understood and recognised across countries, so as to help create mutual trust between mobility partners. Descriptions should be universally understandable and avoid any ambiguity. This also requires that the reference point provides a certain level of detail. Ideally, it should also refer to the level of performance.

**Introduction of the methodology**

One example of a reference point that can be used to support mobility in VET are World Skills Standards Specifications (WSSS).

WSSS have been developed to serve as reference points for the biennial WorldSkills Competition. They attempt to be a broad representation of one or more work roles, as required across the world by expansive, competitive organisations.

WSSS are well placed to be used for their purpose. Their descriptions are clear and easily understandable. They integrate both occupational and transversal skills; descriptions are clearly oriented towards activities. World Skills currently has 85 member countries and regions (63). The WSSS are reviewed and updated following each WorldSkills Competition, which take place every second year.

In a first steps, a suitable WSSS needs to be identified. As of 2019, there were 56 WSSS in six sectors available. As of early 2021, the WSSS website offered 63 different WSSS in six sectors available for download (64). The mapping can be done ‘manually’ (similarly to the ESCO mapping as presented in the box in section 2.2.3).

**Example to illustrate the approach**

The example inserted below provides an exemplar comparison between the IT technician qualification of Denmark and of Austria (both are linked to EQF level 4), using the World Skills Standards Specifications as a reference point. The resulting mapping highlights both the similarities and differences of the two qualification profiles (65).

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(63) [https://worldskills.org/members/](https://worldskills.org/members/).
(64) [https://worldskills.org/what/projects/wsos/](https://worldskills.org/what/projects/wsos/).
(65) If it is only a question of identifying learning outcomes for mobility phases between two qualifications from two countries, a reference point is of course not absolutely necessary. This approach could complicate the process if it were enough to compare two qualifications. However, when dealing with several countries or a more extensive or multi-year project, a reference point can be quite helpful. Moreover, it is worth mentioning that the approach presented here helps to solve some issues related to mobility but not all (e.g. assessment practices are not addressed here).
The blue shaded fields indicate a ‘match’ between each qualification and the WSSS, and hence shows where a particular learning outcome is covered by both qualifications. The overview provided by this table visualises both the similarities and differences between the two qualifications or programmes. It can help visualise the learning progress of an individual, and the learning outcomes that a host organisation can offer. This can then build the basis for formulating the learning outcomes to be achieved by a learner (e.g. as part of their mobility learning agreement).

The mapping shows significant similarities for the three areas of configuring networking devices; installing, up-grading, and configuring operating systems; and work organization and management. For these areas, both qualifications cover the skills items in the WSSS profile to a very similar extent.

While the Austrian IT technician qualification covers more skills items in the categories related to user support and consultancy, and to communication and interpersonal skills, the Danish IT technician qualifications covers more skills items in the area of troubleshooting. The overview generated by this mapping can provide a useful basis for mobility partners’ exchange on the learning outcomes to be achieved during a mobility phase. Mobility could then focus either on the ‘common’ learning outcomes or on learning outcomes not included in a qualification to enable the mobile learner to acquire additional learning outcomes.

Limitations and necessary/potential steps/improvements

Reference points representing the qualification profile, i.e. the learning outcomes to be achieved at the end of the learning programme, might be of limited use for learner mobility, since in these cases, VET learners are still in the process of competence development. Therefore, a reference point that allows distinguishing between different steps of competence development, such as a VQTS-based Competence Matrix as presented above, might be more suitable for this purpose. Nevertheless, it might be feasible to select those learning outcomes from the profile that have already been acquired before the mobility starts, or to put additional effort into ‘translating’ learning outcomes that reflect the intended achievements at the end of a learning programme into ‘intermediate learning outcomes’.

The WSSS are not designed to cover the full range of economic sectors or occupations or to provide for a comprehensive representation of qualifications at all levels. Their primary usage context are competitions which are focussed on high performance work practice in medium work areas; higher or lower levels are
therefore excluded from this reference point from the outset. Learning outcome statements are also rather broad and leave room for interpretation which might create some ambiguity.

While the WSSS are widely known across countries, detailed information on updates or traceability of amendments of WSSS is not publicly available. The availability of WSSS in different language versions is limited. World Skills International publishes them in English language only, although some members produce (unofficial) translations for their use in preparation for the competitions.

3.3.4. Use case: Exploring opportunities for flexible learning pathways

3.3.4.1 Purpose and relevance: enabling learners’ smooth transition across education, training and employment

For choosing a VET programme in another country, it might be important to learn which VET programmes cover similar learning outcomes and therefore, which opportunities there are for changing pathways at a later stage. This could support reducing drop-out, and could facilitate career switches. Moreover, in case a specific VET qualification is an access requirement for a further learning programme in another country, identifying similarities and differences can help to decide whether it is worth applying and which additional learning outcomes would be required. A reference point that facilitates the mapping of learning outcomes contained in national qualifications and their translation into other languages can also be used for validation of prior learning (VPL). It supports the identification and documentation of a person’s learning outcomes acquired through non-formal and informal learning in another country with a view to obtaining a vocational qualification (i.e. identification of training needs to make up for missing competences or where training would unnecessarily replicate existing skills held).

The ultimate goal is thus to provide a tool that supports learners to make smooth transitions from one learning pathway to another. This implies that learners are given the opportunity to recognise their prior learning from various contexts in working towards achieving a new qualification. This may refer to supporting learners to identify and build on skills and competences they already possess, e.g. by identifying opportunities for credit transfer or recognition of prior learning. This may also refer to an improved presentation and understanding of education and training options that are available to an individual, or to a reorganisation of educational offers in order to better respond to learners’ needs.

3.3.4.2 Methodological approach (incl. tools) and necessary conditions to implement the use case

Requirements the methodology must fulfil in order to meet the needs of this context of use
As above, the same requirements apply as described above for the reference point in the use case ‘Improving the content and structure of VET qualifications’.

**Introduction of the methodology**

ESCO is well placed to meet these requirements due to its broad scope and availability in many languages. In order to compare two different VET qualifications, the most suitable ESCO occupational profile needs to be identified. Each occupational profile consists of a list of knowledge, skills and competence concepts (KSC), which are structured into different categories. In a second step, the learning outcomes of two qualifications to be compared can be mapped to the profile.

The mapping can be done either ‘manually’ (as presented in the box in section 2.2.3) or supported by the learning outcomes linking tool (as presented in the box in section 2.4.3).

**Example to illustrate the approach**

The outcome of this mapping presents the similarities and differences between the selected qualification descriptions in relation to the ESCO profile. The exemplar table below displays the comparison between an Irish and an Austrian IT technician qualification (both EQF level 4). The blue shaded fields indicate that a given KSC concept is covered by a qualification. Both qualifications display a similar coverage of the ESCO occupational profile. In terms of transversal skills and competences, however, the Irish qualification displays higher coverage in particular for social and communication skills, and for thinking skills and competences. For an individual seeking to acquire a certain qualification, such an overview can show which learning outcomes they need to acquire, and which learning outcomes they have already achieved through prior education and training, and/or work experience.

**Limitations and necessary/potential steps/improvements**

While the mapping against ESCO profiles can indeed highlight differences and similarities between qualifications in terms of which knowledge, skills and competence concepts they cover, the ESCO profiles in most cases will not be able to capture the full scope of national qualifications. I.e. national qualifications will include additional learning outcomes that cannot be captured by one single occupational profile. Individual learners will probably require support from guidance professionals.
3.3.5. Use case: Applying for a job in another country with a VET qualification

3.3.5.1 Purpose and relevance: identifying similarities of VET qualifications required for a job abroad

Intra-EU mobility of workers, i.e. mobility between Member States, as well as labour migration from third countries are important aspects in responding to the rapidly changing labour market needs, skills shortages and demographic situation in Europe. In particular, people applying for a job in another country need to know whether their qualification meets the requirements for that job (or what additional learning outcomes they would need to obtain for a proper match), and employers need to know whether the VET qualification of the applicant from abroad is comparable to a national VET qualification normally required for the specific job (and indicated in the job advertisement as desired or required). To facilitate worker mobility, tools and procedures are needed that can support a better understanding of VET qualifications acquired abroad as well as its comparison with a corresponding national qualification.

3.3.5.2 Methodological approach (incl. tools) and necessary conditions to implement the use cases

Requirements the methodology must fulfil in order to meet the needs of this context of use

For the comparison of VET qualifications acquired abroad with national qualifications, the same requirements apply as described above for the reference point in the use case ‘Improving the content and structure of VET qualifications’.

However, in case the comparison is carried out either by the person applying for a job or by the employer assessing the application or by an intermediary organisation, the methodology needs to be simplified as much as possible. Moreover, the availability of learning outcomes descriptions and the use of digital tools to support the comparison are of crucial importance.

Introduction of the methodology

ESCO is the reference system that is well-placed to be used in this context because of its scope and the available language versions but also because of the ongoing developments related to the technologically supported linking of learning outcomes included in qualifications to the concepts of the ESCO skills pillar.

In case of already existing mapping results of a cross-country comparison of the respective qualifications (i.e. the results of a mapping of qualifications to ESCO occupational profiles is already available), it could be made available at the EURES platform. EURES is the network of European employment services and provides information, advice and recruitment and placement services for workers and employers wishing to benefit from the principle of the free movement of persons
The decision on sufficient or not sufficient similarity of the qualification obtained and the qualification desired or required can then be done based on this mapping exercise. Thus, identifying similarities and differences in the content of qualifications can help the individual decide whether it is worth applying for the job (for example, if the majority of the required learning outcomes are also included in the acquired qualifications) and the employer decide whether there is sufficient reason to invite the applicant who has applied to the next round, such as an interview.

In case such a mapping result is not yet available and the comparison needs to be done by the person looking for a job abroad, by the employer looking for a new employee or by, for example, a career guidance professional, specific support tools should be made available. For example, the IT tool based on Natural Language Processing that was developed to support the automated linking of learning outcomes of qualifications with ESCO skills could be integrated into a dedicated page of the EURES platform. While the tool does not offer a full automatic comparison of qualifications, the automatic suggestions of ESCO skills against the learning outcomes of selected qualifications, that can be provided in different EU languages, can help to analyse and better understand the content of the qualifications.

Example to illustrate the approach

The overview offered by the mapping table – here for the ESCO occupational profile ‘healthcare assistant’ – shows the similarities (blue shaded cells) and differences between qualifications:

The larger the number of blue shaded cells contained in both qualifications (with a simultaneous presence of few additional learning outcomes in both qualifications), the stronger a similarity of the qualifications can be assumed with regard to the intended learning outcomes. However, a special focus must be placed on the fields that remain white when mapping one's qualification to the ESCO occupational profile. If, for example, the skills ‘use e-health and mobile technologies’ or ‘instruct others’ are included in the required but not in the acquired qualification, it is important to find out whether these skills are essential for the job.

(66) EURES - EURES - The European job mobility portal - European Commission (europa.eu)

(67) ESCO LO Linking (esco-projects.eu)
offered and whether they can be acquired in further training programmes or through on-the-job learning. Individuals might need support from career guidance professionals in this process.

**Limitations and necessary/potential steps/improvements**

For this usage context, generally the same limitations and improvements as for the use case on ‘Improving the content and structure of VET qualifications’ can be indicated. In addition, it must be borne in mind that in the case of mobile workers, the acquisition of the qualification must not have taken place too long ago for this approach to make any sense at all. If the acquisition of the qualification is too long ago, then the qualification awarded itself most likely still plays a role in the recruitment process, but less so the individual learning outcomes it contains. Rather, what counts for potential employers is the work experience gained and built upon since then and how job applicants present themselves. Moreover, guidance and professional support for mobile workers and their potential employers need to be provided in this context.

### 3.4. Development of European Vocational Core Profiles

**3.4.1. Introduction**

The creation of European Vocational Core Profiles is called for in the 2020 VET Recommendation (European Commission, 2020e) and is linked both to the development and enhancement of excellence of VET qualifications and to the recognition of learning outcomes.

The concept, however, is not new. For example, a 1992 report prepared for Cedefop on the comparability of VET qualifications in Europe suggested exploring European-wide modules 'to facilitate both personal career planning (in that comparable modules for different occupations could be combined) and a flexible response to trends and changes in national and Community labour markets' (Koelink, 1991, p. 31). In 2000, France proposed the development of common certificates with a European vocational standard. A pilot project in the logistics and hotel management sectors was funded by the European Commission, in cooperation with some Member States and Cedefop, and proposed a ‘common architecture for diplomas/certificates/qualifications’ divided into two parts: the first as a common part for all partner countries (containing a professional profile and describing professional competences) and the second as a specific part for each partner (e.g. national regulations related to access, organisation of teaching, etc.) (Rudowski and Asseraf, 2008). The experience from this pilot initiative was (somewhat) incorporated into the Copenhagen process launched in 2002 and the
development of both the EQF and ECVET. Although many subsequent projects explored ways to compare qualifications and facilitate mobility through commonalities in qualifications, the development of European Vocational Core Profiles was not an explicit target. However, some initiatives at European level of 2015/2016 explicitly referred to common core profiles, such as the ‘Study on the feasibility of setting institutional arrangements at European level to ensure management and quality assurance of issues related to an extended scope of the European Qualifications Framework (EQF)’ (PPMI and 3s, 2016), a call for proposals referred to supporting de facto recognition of qualifications from European core profiles of qualifications (68) and the selected project ‘Transparency in Arts Levels and Qualifications’ (TALQ, 2017). Moreover, the 15th meeting of the ECVET User’s Group in February 2016 discussed common core profiles, finding that, ‘there are some experiences from ECVET projects that have developed competence matrices or occupational/professional profiles as part of the process of comparing qualifications’ (69). However, participants considered the purpose and value of common core profiles unclear.

It seems that the progress made during the last years related to the learning outcomes approach, the implementation of the EQF and of NQFs referenced to it, ESCO, the Europass platform, digital tools for supporting the analysis of learning outcomes and for identifying rapidly changing skills needs as well as related to initiatives such as the ‘Blueprint for Sectorial Cooperation on Skills’ or the ‘common training frameworks’ (CTF) or ‘common training tests’ set up in the context of the Professional qualifications Directive (70) has at least contributed to the new attempt of developing common core profiles.

3.4.2. Use case: Supporting the development of European Vocational Core Profiles

3.4.2.1 Purpose and relevance: identifying common learning outcomes

The proposal for the Council Recommendation on VET (European Commission, 2020e) introduces the concept of European Vocational Core Profiles, which would

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define a certain share of common training content at European level and should support transparency and recognition. This is further specified in the tender specifications for the ‘Support services related to quality assurance (EQAVET), graduate tracking and flexibility in Vocational education and training (ECVET)’ (European Commission, 2020f, p. 10) (71): ‘The Core Profiles should be a common European reference tool as the latests skills needs emerging in the European labour market identified primarily by vacancy analysis.’ These Core Profiles should be part of the Europass platform and complemented, where possible, by vocational digital content. They would reflect the dynamism of skills requirements in the labour market and aligned VET content, making them an innovative support for VET mobility and excellence.

Although there may be some reluctance on the part of some national stakeholders to adopt these Core Profiles (fearing a move towards harmonisation), this approach could be particularly relevant in economic sectors characterised by a high degree of internationalisation or transnational mobility. Furthermore, these Core Profiles could be useful for countries that want to revise their VET qualifications or develop new ones.

The concept of the European Vocational Core Profiles (that is currently being elaborated) aims at defining a minimum set of learning outcomes to be common across Member States. Thus, for developing European Vocational Core Profiles based on existing VET qualifications, methods are needed to support the identification of such common learning outcomes (72).

3.4.2.2 Using ESCO occupational profiles for identifying common learning outcomes

Requirements the methodology must fulfil in order to meet the needs of this context of use

The reference point to be used in this context should ideally
(a) be available in all languages used in the Member States to describe VET qualifications;
(b) be as comprehensive as possible and cover the learning outcomes contained in the VET qualifications in all Member States;
(c) be structured in a way that supports the mapping of national qualifications;
(d) be based on a robust methodology for development and review;
(e) be generally recognised in all Member States;

(71) This support service includes the development of a concept for European Vocational Core Profiles, including an assessment of operational and technical feasibility.

(72) Another option could be to develop them on the basis of emerging skills needs, where the common part could then be incorporated into national qualifications or new qualifications could be created.
enable the use of digital tools to support comparison.

Introduction of the methodology
ESCO is well placed to meet these requirements. Every occupation in the ESCO occupational pillar has a profile. The occupational profiles contain an explanation of the occupation in the form of a description, scope note and definition. They also list the knowledge, skills and competence concepts (KSC; included in the skills pillar), which experts consider relevant terminology for this profession at European level. ESCO has a wide coverage of sectors and languages, relates to labour markets in EU countries and although there are shortcomings related to its quality, the European Commission is continuously working to improve ESCO. For example, the ESCO skills pillar has been and is being further developed by introducing classifications for the occupational and the transversal skills concepts. Moreover, the use of digital technologies to support the comparing of qualifications has been piloted and a tool for linking learning outcomes of qualifications with the concepts of the ESCO skills pillar has been developed (73). Thus, the common concepts can either be identified 'manually' (see mapping approach presented in the box in section 2.2.3) or supported by the learning outcomes linking tool (as presented in the box in section 2.4.3).

Example to illustrate the approach
The table below shows the set of KSC items resulting from the mapping against the ESCO occupational profile 'healthcare assistant'. It includes those KSC concepts that are covered (either explicitly or implicitly) in at least nine out of the ten qualifications that were mapped to the profile in the first part of the study. This set of KSC items might thus be considered as a set of 'core learning outcomes' across the ten qualifications covered.

Limitations and necessary/potential steps/improvements
The notion of 'core learning outcomes' needs to be used with caution here since the result of the mapping exercise only reveals the lowest common denominator; however, it says nothing about the relative importance of these skills in the respective qualifications. Furthermore, it is quite possible that learning outcomes that are of particularly high importance in the context of a qualification

(73) https://lo-linking.esco-projects.eu/upload
are not included in these 'core learning outcomes'. In this case, the Core Profile created in this way would be of little relevance in the country concerned. The approach described above can therefore only be a first step towards developing a Core Profile, which will need to be continued through further discussion or negotiation processes with relevant stakeholders.

To address rapidly changing skills needs, the European Vocational Core Profiles will need to be regularly updated and also the reference point used, the ESCO occupational profiles, would need to be regularly updated to consider and reflect new developments. Thus, appropriate mechanisms and structures need to be in place and relevant sources are required to inform about emerging skills needs. To this end Cedefop’s Skills-OVATE: Online Vacancy Analysis Tool for Europe (74) could be used. This tool offers detailed information on jobs and skills employers demand in online job advertisements. Since it also uses ESCO terminology, it could contribute to the identification of latest skills needs to be included in the Core Profiles.

In addition to the lack of a fully automated approach for comparing qualifications, there are also problems of access to national data on qualifications and a lack of common technical formats for presenting qualifications and their learning outcomes. Thus, improvements from both sides – IT solutions and national qualifications – are necessary.

(74) https://www.cedefop.europa.eu/en/data-visualisations/skills-online-vacancies. For challenges analysing this type of data see, for example JANZZ.technology, 2021.
Chapter 4. Conclusions and Recommendations

4.1. Conclusions

The synthesis of the three research phases, the further reflections on the approaches developed and tested as well as on relevant further developments (stock-taking), and the development of potential use cases for applying methodologies for analysing and comparing VET qualifications lead to the following conclusions. These conclusions are structured according to the three research questions underlying this report.

4.1.1. Conclusions related to research question 1. How can methodologies for analysing and comparing qualifications support European cooperation in VET and support national stakeholders in strengthening quality and relevance of VET qualifications?

4.1.1.1 Conclusion 1: The use of learning outcomes in describing the content and profile of VET qualifications opens up opportunities for applying methodologies for analysing and comparing qualifications that contribute to improving the relevance of VET qualifications and supporting transferability of VET qualifications.

The study showed that VET qualifications described in terms of learning outcomes can be analysed and compared across profiles, sectors and countries, and that analyses and comparisons can even be conducted on the intended and acquired learning outcomes. Learning outcomes are central to this as they allow for a breakdown of qualifications that can be systematically applied and analysed in different (national VET) contexts; furthermore, learning outcomes descriptions allow for the analysis and better understanding of the content of qualifications, their orientations in relation to labour market access or further learning.

The comparative approaches that use learning outcomes as a basis allow to reflect on the content and orientations of VET qualifications in different contexts and thereby offer insights that can be used to improve the relevance of VET qualifications. Furthermore, learning outcomes based methodologies for analysing and comparing VET qualifications allow multiple stakeholders to increase their engagement in review and renewal processes of VET qualifications, and allow for
using the outcomes of this exercise in other processes such as (career) guidance to VET students/graduates, supporting transnational mobility of qualifications and labour mobility.

4.1.1.2 Conclusion 2: A methodology for analysing and comparing qualifications based on learning outcomes can be supported by the use of a reference point that includes a set of skills appropriate for the respective purpose for the analysis and comparison of qualifications.

As the content of VET qualifications is constantly changing under the influence of labour market, technological, pedagogical, societal and political developments, there is no fixed point at which the content of VET qualifications can be compared to this yardstick. However, methodologies for analysing and comparing the content of VET qualifications benefit from an agreed reference point to allow for the mapping and comparison of qualifications in different contexts. Such a reference point is only a ‘translation device’ and a methodological tool and should not be seen as anything more than that.

The purpose of applying these methodologies based on learning outcomes and the specific use case determine the demands placed on the reference point. Each purpose of analysing and comparing qualifications, and each context in which this is done, places different demands on the reference point. These requirements can relate to the applicability of the reference point in different national contexts (for instance offering different linguistic versions), but they can also relate to the structure and hierarchy applied in the set of skills used in the reference point, level of detail, types of skills included (occupational or transversal ones), or whether different performance levels are expressed in the set of skills included. The research found that the ESCO skills pillar represents a promising reference system that can possibly be applied in many contexts, albeit with some specific adaptations depending on the specific purpose and context of use. However, ESCO is far from being perfect; it needs an improved conceptual basis and of continuous updating and further development.

4.1.2.1 Conclusion 3: The study identified seven potential use cases for methodologies for analysing and comparing the content of VET qualifications based on learning outcomes that, while not immediately applicable, can orient future developments in using these methodologies.
for improving the relevance of VET qualifications and supporting transferability of VET qualifications and their learning outcomes.

The research project closely explored different reference points, analysed national sources for information on qualifications data (reference documents and databases of qualifications), explored ways for the automated comparison of qualifications and explored methods for comparing intended and acquired learning outcomes. Through this, the research project identified a variety of contexts in which comparative methodologies can be applied, contributing to 1) improvements of the quality and relevance of the content of VET qualifications; and 2) improvements in transferability of qualifications and learning outcomes across borders and sectors; and finally, 3) developments towards European Vocational Core Profiles. Within these broad purposes, seven specific use cases were identified for potential applications of the methodologies explored in the future. These potential use cases can be positioned in relation to the orientation towards conceptualisation or towards application and in relation to the three purposes for comparison.

Figure 11. Potential applications and use cases situated within the analytical framework

[Diagram]

Source: Authors.

It should be emphasised, however, that these described potential use cases are to be seen as conceptual considerations that can serve relevant stakeholders as a basis for further development. At present, it is not possible to offer ready-made tools and solutions, not least because ESCO, the reference system used in several of the applications to support the analysis and comparison of VET qualifications, as well as other reference points and related technical solutions are still work in progress. Moreover, conceptual challenges and shortcomings of the approaches also need to be considered. The table below provides a concise overview over the identified use cases.
<table>
<thead>
<tr>
<th>Orientation</th>
<th>Use case</th>
<th>Purpose</th>
<th>Specific example</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Improving the content and structure of VET qualifications - comparison of</td>
<td>The analysis and comparison of VET qualifications and their content (the intended learning outcomes), which helps to identify differences and similarities, allows national policy-makers and stakeholders to systematically reflect on and evaluate their own priorities and solutions and to draw inspiration from other countries’ decisions and solutions to design, revise or develop their own qualifications.</td>
<td>Using ESCO occupational profiles for the cross-country comparison of qualifications</td>
</tr>
<tr>
<td></td>
<td>VET qualifications based on intended learning outcomes</td>
<td>This can provide insights into how the learning outcomes acquired by qualification holders are perceived in the labour market and, in particular, by their employers. This type of feedback, also in a comparative perspective, can help to better shape the specific profile of qualifications and therefore to provide important information for qualifications authorities and for providers offering these qualifications for ensuring their labour market relevance.</td>
<td>Using an employer reflections survey (ERS) approach that allows a direct reflection on VET qualifications’ content (i focusing on learning outcomes)</td>
</tr>
<tr>
<td>Supporting</td>
<td>Supporting the levelling of VET qualifications - showing differences and similarities of qualifications in the EQF context</td>
<td>The EQF aims to provide a comprehensive map of all types and levels of qualifications in Europe, which are increasingly accessible through qualification databases and, thus, to serve as a translation tool. However, when looking at qualifications linked to the same EQF level, it is not always clear at first sight why they are actually linked to the same level, as the qualifications themselves can be quite different in scope or specific content. Therefore, in order to understand the allocation decisions, it is necessary to have a deeper insight into the content of the qualifications.</td>
<td>Using a VQTS-based Competence Matrix for indicating qualification profiles and the steps of competence developments covered</td>
</tr>
<tr>
<td>the transfer-ability of learning outcomes and flexible learning pathways – national &amp; international context</td>
<td>Supporting mobility in VET</td>
<td>The use of learning outcomes is an important element to help ensure the quality of VET mobility, and to make sure that the learning achieved in another country or context can be recognised, and if possible, that mobility-related achievements can be fully integrated into existing or new learning pathways. The recognition of learning outcomes acquired abroad is likely to become more important if longer duration mobility becomes more common. However, descriptions of qualifications, programmes or parts thereof, even if described in terms of learning outcomes, vary greatly and very often are not immediately comparable at</td>
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<td></td>
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<td>Using the World Skills Standards Specifications (WSSS) for identifying learning outcomes that can be addressed in mobilities</td>
<td></td>
</tr>
</tbody>
</table>
4.1.3. Conclusions related to research question 3. What is needed in terms of methodologies and necessary conditions to implement the use cases?

4.1.3.1 Conclusion 4: National VET system characteristics and developments greatly influence the relevance and applicability of the potential use cases for methodologies to improve the relevance of VET qualifications and to support transferability of VET qualifications.

As mentioned above, the use cases presented rather serve the purpose of indicating orientations for future application of comparative methodologies than providing immediately applicable solutions. There are, besides generic challenges related to applying use cases (see next conclusion), specific national VET characteristics that impact the relevance and applicability of the use cases. This depends on the particular application, but overall it can be observed that some countries are less likely to use the methodologies explored and developed. For
example, in countries where VET is already closely organised in cooperation with
labour market stakeholders and their engagement in the governance of VET and
the renewal process of qualifications is insured, the methodologies and the use
case related to enhancing the relevance of VET by applying an employer reflection
survey seem to be less relevant compared to countries where the distance
between the world of work and the world of education is larger. In countries where
the labour market side is traditionally less involved, the methodology developed
might be regarded as helpful in offering new perspectives and orientations to
bridge the gaps. Furthermore, it should be mentioned that as VET systems are not
static and are subject to periodical reforms, methodologies for analysing and
comparing VET qualifications and the potential use cases can show their relevance
also at a later stage when national stakeholders seek instruments and approaches
to support their reform agendas.

4.1.3.2 Conclusion 5: Generic challenges associated with applying the use
cases and the methodologies for analysing and comparing VET
qualifications relate mainly to the quality of the reference point (set of
skills included), to the learning outcomes descriptions of qualifications,
the issue of expressing the level of proficiency of learning outcomes as
well as to including context features in comparisons.

When further elaborating on the use cases, there are a number of generic
challenges that need to be addressed. The challenges are slightly different for each
use case, but refer to similar problems:

(d) **Set of skills included in a reference point**: Each use case puts different
demands on the reference point and the set of skills included. Thus, for each
use case, further conceptual work is required to support decisions related to
the content, scope and orientation of the reference point. One example is the
use of a reference point in employer survey approaches. Of key importance is
the availability of a suitable list of skills to allow in-depth reflections on the
content of the qualifications that is at the same time short enough to be used
in a survey without burdening the respondents with tiresome lists of skills
(good balance regarding complexity and simplicity). Generally, for each use
case, the reference point will have to reflect a balance between occupational
and transversal skills.

(e) **Learning outcomes descriptions of qualifications**: A key factor for
successfully applying comparative methodologies is the extent and how the
qualifications are described in terms of learning outcomes. Countries and VET
systems differ a lot in the level at which learning outcomes are described, how
the learning outcomes are structured (e.g. grouped per work task or subject)
and the degree of detail provided. This is specifically challenging when aiming at applying automated comparative approaches, as it requires the involvement of human expertise in making informed decisions whether specific learning outcomes are included in national qualification descriptions or not. While substantial progress has been made during the last years, descriptions of qualifications still need to be improved in many cases to better serve the needs in this context.

(f) **Level of proficiency expressed in learning outcomes:** In several potential use cases, the ability to distinguish the proficiency levels of learning outcomes is desired. Comparing qualifications might not mean much if the level of proficiency is not somehow reflected. While there are reference points that allow differentiating competence areas and higher and lower level abilities (such as the VQTS-based Competence Matrices), such reference points are not systematically available, are available for a few occupational fields and in few languages only. Furthermore, a differentiation of the steps of competence development, as presented in the VQTS-based Competence Matrices, makes the mapping process more time-consuming and requires deeper expertise related to the specific qualifications and the work processes in the respective occupational field.

(g) **Contextual factors not expressed in learning outcome statements:** A crucial challenge for applying comparative methodologies based on learning as expressed in the use cases, is that national contexts, conceptualisations, philosophies and approaches underlying the design of VET qualifications, the descriptions of learning outcomes and the assumptions behind these descriptions are not explicitly expressed in the learning outcome statements. This could result in identifying similarities between qualification descriptions from different countries while there are underlying key differences in terms of what these descriptions actually mean in their national context. This is a key conceptual challenge to be considered in any further developments.

4.1.3.3 Conclusion 6: To ensure zones of mutual trust based on comparative methodologies, these methodologies need to be based on solid research and evidence. This could be associated with cost implications that could exceed the potential benefits.

The background of comparative methodologies lies in the development of the EQF and the idea that within increased transnational mobility, there is a need to establish zones of mutual trust related to qualifications. Zones of mutual trust relate to trust in the levelling of VET qualifications, but also, for making zones of mutual trust applicable to end-users (citizens and employers) to better understand the content of qualifications. The comparative methodologies can support the
development of zones of mutual trust, but only if the comparative methodologies result in useful outcomes and benefits for the end-users. This can only take place when the comparisons are based on solid research approaches, sound conceptual clarifications and solid evidence on similarities and differences between qualifications.

Related to this, comparative methodologies could be associated with cost implications that exceed their potential benefits. Many of the potential use cases require investment to become fully operational. These investments relate, for example, to further conceptual clarifications and conceptual development of the reference points and tools to making national qualifications descriptions suitable and accessible to comparison, to implementing support structures to make the outcomes of the comparisons available for the right stakeholders and users, and to support structures to continuously keep reference points, national descriptions and the comparison of qualifications up-to-date.

4.2. Recommendations

This section presents recommendations based on the results of all parts of the study, further research and feedback from stakeholders. The recommendations also refer to future activities to strengthen the quality and relevance of VET qualifications. As concluded, methodologies for analysing and comparing the content of VET qualifications and further operationalisation of the use cases require additional work. The recommendations below do not focus on fully implementing the use cases, but more on preparing the conceptual ground for applying these methodologies and for further research on them and the use cases. In particular, the recommendations refer to the following aspects:

(a) Conducting further conceptual work;
(b) Identifying the needs of stakeholders that can be addressed with the methodologies for analysing and comparing VET qualifications and exploring the feasibility of applying the use cases in the national or sectoral context;
(c) Disseminating results in an attractive and accessible way.

4.2.1. Recommendation 1: Conduct further conceptual work

The research conducted in this project points to several needs for improvements related to reference points and sources of information on qualifications as well as to further conceptual work related to applying the learning outcomes approach for analysing and comparing qualifications and using digital tools for supporting comparison.
(e) **Further development of reference points:** The main advantages of ESCO include the fact that it has a wide coverage of occupations and a multilingual approach. However, the shortcomings of ESCO, as identified in this study but also in other activities, need to be addressed and its conceptual basis improved. There are a number of aspects in which ESCO requires further development, including the conceptual foundation for the set of skills included per occupation and the integration of transversal skills. Moreover, it is recommended to explore approaches to include proficiency levels related to the skills included in ESCO. In addition, even if ESCO has turned out to be the most promising reference system for many reasons, this is not to disregard the fact that other reference points may be more suitable for certain purposes of use. Conceptual development should therefore not focus exclusively on ESCO.

(f) **Further development of and conceptual work on sources of information on qualifications:** Although much has already been achieved in this respect, further work needs to be done regarding the transparent description of qualifications. In particular, further efforts are needed to develop common structures of presenting qualifications in the European context (e.g. in qualification databases, as suggested by the EQF Recommendation). In addition, it is recommended to further explore and develop learning outcomes descriptions and the concept of qualifications (without interfering with national priorities) as more clarity is needed on what role learning outcomes play in the overall qualification (e.g. do they refer to the overall profile or to parts/units of a qualification) and on what actually is a qualification (e.g. how to deal with qualifications that have a high number of optional parts; what could be the role of emerging micro-credentials).

(g) **Further conceptual work related to using the learning outcomes approach for analysing and comparing qualifications:** The use of learning outcomes provides a lot of opportunities but – as the research has shown – there are also many challenges and ambiguities that need to be addressed to improve this approach and its use for comparing qualifications. Further considerations would be important, for example, related to how contextual factors, that are of crucial importance for understanding qualifications and how they are embedded in the national context, could be better considered when interpreting the outcomes of comparisons. Learning outcomes are not neutral statements and need to be interpreted within the context for which they have been developed. Understanding this context is essential in understanding the outcomes of the analysis. Contextual factors that could be taken into account refer in particular to the design approach and the philosophy behind
developing learning outcomes. This relates to the guidelines used for
developing learning outcomes, understanding the level at which learning
outcomes are described for a qualification and the structure in which learning
outcomes are described. Moreover, the following contextual aspects should
be considered: the role qualifications play in linking VET to the labour market,
the extent to which labour market stakeholders are involved in the
development of qualifications, and the roles a VET qualification has in the
labour market and for society.

(h) **Further work on digital tools to support the analysis and comparison of qualifications:** In order for the methods for analysing and comparing qualifications based on learning outcomes to be used more widely, it is not possible to solely rely on manual mapping of learning outcomes to reference points. This would require far too many resources. There is a need for solutions that are at least semi-automatised. It is therefore recommended to further explore the use of artificial intelligence and digital tools, bearing in mind that it will not be possible in the near future to achieve valid results entirely without human intervention when using digital tools to compare qualifications.

4.2.2. **Recommendation 2: Identify needs and explore feasibility of application**

In order to ensure the engagement of stakeholders, it is recommended to explore in which countries, in which VET sub-systems, in which economic sectors, and by which stakeholders there actually is an interest in applying the methodologies developed. The interest could be due to the provision of specific solutions to their current or (anticipated) future needs. It is also possible that only by reflecting on the possible use cases they will get ideas about the extent to which these methodologies could be helpful for them.

As indicated, the potential use cases presented in this report are primarily aimed at orienting reflections on how comparative methodologies can support services to improve the relevance of qualifications and to support flexible pathways, mobility and career guidance. They are not directly applicable and might not always be relevant or needed in a given national or sectoral context. Further research is needed to explore which conditions need to be in place and in which contexts the use cases are relevant and add value to the existing structures and instruments. Aspects to be taken into account concern in particular the following:

(d) Would a specific use case solve an existing problem/challenge for which there are no other national/sectoral solutions available?

(e) What conditions need to be in place to have the use case solve the problem?
Would the benefits of developing and implementing the use case outweigh the costs?

In any case, this approach would help to identify those areas and sectors that have an interest in the further conceptual work described above and that can also be involved in these activities to generate ownership. The stakeholders identified in this way could be involved in further developments, feasibility testing and piloting in a bottom-up approach. This can ensure that the solutions actually meet their needs and requirements and that the methodologies further developed are ultimately applied.

Moreover, this exploration should also include an estimation of the resources needed and a clarification of the support structures required. Subsequently, it would of course be necessary to provide the corresponding resources and the required support. It is recommended to carry out a cost-benefit assessment to clarify to what extent the application of the methodologies actually represents an advantage over other approaches.

Furthermore, this approach could also help to find out from those stakeholders who clearly express a lack of interest in the methodologies what the reasons for this are (such as other priorities or better solutions in place). This could also be used to identify other solutions and approaches that could be integrated or at least considered in these methodologies.

4.2.3. Recommendation 3: Disseminate results in an attractive and accessible way

In order for stakeholders and beneficiaries (such as VET authorities, VET providers, employers, career guidance professionals) to make use of the methodologies developed, they need to be informed about the benefits involved for them in a way that spark their interest. Thus, potential use cases and (further developed and improved) methodologies and tools need to be tailored to their specific needs and presented in an attractive an accessible way.

One element of this approach could be to develop a database that is structured according to the purposes for which these methodologies can be used (and which need to be closely linked to the needs of the potential users and beneficiaries). This database could be designed to allow different search options, such as for specific purposes, context of use, profile of users and beneficiaries, reference points applied and examples presented.
## List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AI</td>
<td>Artificial Intelligence</td>
</tr>
<tr>
<td>CEFRL</td>
<td>Common European Framework of Reference for Languages</td>
</tr>
<tr>
<td>ECVET</td>
<td>European Credit System for Vocational Education and Training</td>
</tr>
<tr>
<td>ESCO</td>
<td>European Skills, Competences, Qualifications and Occupations</td>
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<tr>
<td>EQF</td>
<td>European Qualifications Framework</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communications Technologies</td>
</tr>
<tr>
<td>ISCED-F</td>
<td>International Standard Classification of Education - fields of education and training</td>
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<tr>
<td>KSC</td>
<td>Knowledge, skills, competences</td>
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<tr>
<td>NQF</td>
<td>National Qualifications Framework</td>
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<tr>
<td>O*NET</td>
<td>Occupational Information Network</td>
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<td>OSP</td>
<td>Occupational Skills Profiles</td>
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<tr>
<td>Skills OVATE</td>
<td>Online Vacancy Analysis Tool for Europe</td>
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<td>TSC</td>
<td>Transversal skills and competences</td>
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<tr>
<td>VET</td>
<td>Vocational education and training</td>
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<td>VQTS</td>
<td>Vocational Qualifications Transfer System</td>
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<tr>
<td>WSSS</td>
<td>World Skills Standards Specification</td>
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</tbody>
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References


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Annex 1. The research team

The following table provides a list of the research team who contributed to the study (WA4).

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karin Luomi-Messerer</td>
<td>Team leader overall FWC &amp; WA4</td>
</tr>
<tr>
<td>Simon Broek</td>
<td>Core team</td>
</tr>
<tr>
<td>Monika Auzinger</td>
<td>Country expert – Netherlands</td>
</tr>
<tr>
<td>Andrew McCoshan</td>
<td>Core team</td>
</tr>
<tr>
<td>Christopher Winch</td>
<td>Country expert – Austria</td>
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<tr>
<td>Mariya Dzhengozova</td>
<td>Country expert – Netherlands</td>
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<tr>
<td>Søren Kristensen</td>
<td>Country expert – UK-England</td>
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<tr>
<td>Jouko Luomi</td>
<td>Country expert – Bulgaria</td>
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<tr>
<td>Patrick Werquin</td>
<td>Country expert – Denmark</td>
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<tr>
<td>Vidmantas Tutlys</td>
<td>Country expert – France</td>
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<tr>
<td>Oriol Homs</td>
<td>Country expert – Lithuania</td>
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<td>Country expert – Spain</td>
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Abstract

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